

2012-13  
Catalog  
*Redefining Teaching & Learning*



University of Colorado **Boulder**



## Welcome to the CU-Boulder 2012–13 Catalog

THE 2012–13 UNIVERSITY OF COLORADO BOULDER CATALOG contains a summary of campus offerings, policies, and requirements; descriptions of colleges, schools, and individual departments; and degree requirements, course descriptions, and faculty listings as of February 2012. Students should refer to the degree, major, and certification requirements listed at the time they formally enter a program. For additional information, students should consult their dean's office. Because the catalog is compiled in advance of the academic year it covers, changes in programs and policies may occur. Up-to-date information may be obtained by consulting departmental advisors, checking departmental bulletin boards, visiting MyCUinfo ([mycuinfo.colorado.edu](http://mycuinfo.colorado.edu)), and reviewing registration materials distributed each semester. All catalog information is subject to change without notice or obligation.

### Other UCB Catalogs

*School of Law, Summer Session, Continuing Education, CAETE, and Independent Learning offer their own catalogs.*

### Main Catalog Archive

*The archive of the university's main catalogs for previous years.*

## About the Course Descriptions

The courses listed through the [Courses](#) tab above are offered on the Boulder campus during the 2012–13 academic year. This listing does not constitute a guarantee that any particular course will be offered during this year. Consult specific programs and major requirements within each school and college for more information. Also see the online Schedule Planner for details about course offerings.

### *Course Numbering*

Always consult specific departments and programs within schools and colleges for restrictions, requirements, and prerequisites.

- 1000–2000 courses are usually intended for lower-division students (freshmen and sophomores).
- 3000–4000 courses are intended for upper-division students (juniors and seniors), and may require instructor's consent. Consult the program or department for other restrictions.
- 5000-level courses usually require graduate-student status, but may be open to qualified undergraduates with instructor consent. Consult the program or department.
- Courses at the 6000, 7000, and 8000 level are usually open only to graduate students. Consult the program or department for restrictions.

## Abbreviations

**Coreq.**—corequisite

**Lab.**—laboratory

**Lect.**—lecture

**Prereq.**—prerequisite

**Rec.**—recitation

The *University of Colorado Boulder Catalog* is published yearly by University Communications in cooperation with the academic departments.

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### Nondiscrimination Statement

The University of Colorado Boulder does not discriminate on the basis of race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, or veteran status in admission and access to, and treatment and employment in, its educational programs and activities. The university takes affirmative action to increase ethnic, cultural, and gender diversity; to employ qualified disabled individuals; and to provide equal opportunity to all students and employees.

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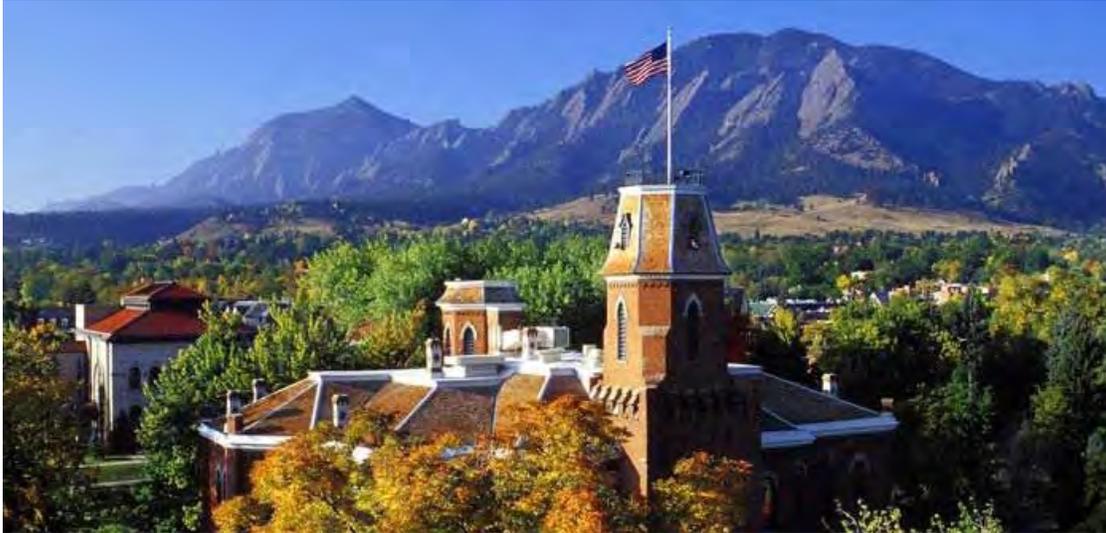
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## General Information



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## The University of Colorado's History

AT ITS FIRST SESSION IN 1861, Colorado's territorial legislature passed an act providing for a university in Boulder. Between 1861 and 1876, Boulder citizens donated land south of town and made gifts from \$15 to \$1,000 to match the \$15,000 the state legislature appropriated for the university's construction. In 1875, Colorado citizens laid the cornerstone for the university's first building, Old Main, and officially founded CU in 1876, the same year Colorado joined the union. The university opened its doors the following year with 44 students, a president, and one instructor.

Today, the University of Colorado is a four-campus system that includes the University of Colorado Boulder, the University of Colorado Colorado Springs, the University of Colorado Denver, and the University of Colorado Anschutz Medical Campus. The campuses have a combined enrollment of about 60,000 students. To meet the needs of its students, the university system offers an extensive number of undergraduate, graduate, and professional degree programs, as well as opportunities to study abroad, engage in public service, and conduct research.

CU ranks fifth among public universities in federally financed research and 12th among public universities in all research expenditures in the science and engineering fields, based on data collected by the National Science Foundation. Sponsored research within the university system represents annual awards totaling more than \$790 million. Federal agencies are the principal sources of these funds for research and training contracts and grants, but the state of Colorado also provides appropriations for university operations, teaching, and research activities. CU also relies on revenues from tuition and fees, contracts and grants, investments and interest income, health services, and the generous support of private foundations and donors.

An elected nine-member Board of Regents governs CU and is charged by the state constitution with the general supervision of the university and the exclusive control and direction of all its funds and

appropriations, unless otherwise provided by law. The board conducts its business at regular meetings open to the public and through committees. The president is the chief administrative officer and is responsible for providing leadership to the university.

For more information about the CU Board of Regents, go to [www.cu.edu/regents](http://www.cu.edu/regents); to learn more about the CU system, visit [www.cu.edu](http://www.cu.edu).

## Campuses

### *The Boulder Campus*

#### **Statutory Mission**

CU-Boulder's vision is grounded in its statutory mission as a national public research university. In Colorado statute, the university is defined as the "*comprehensive graduate research university with selective admissions standards . . . , offer(ing) a comprehensive array of undergraduate, master, and doctoral degree programs*" of what is now designated the University of Colorado System.

CU-Boulder recognizes the exceptional opportunities associated with its role as a research university, and values the unique strength and character research achievements bring to undergraduate education. It is keenly aware of its responsibility for educating the next generation of citizens and leaders, and for fostering the spirit of discovery through research. Indeed, CU-Boulder believes that its students, both graduate and undergraduate, benefit from the comprehensive mix of programs and research excellence that characterize a flagship university. Thus, CU-Boulder's statutory mission is relevant today and will remain relevant tomorrow.

Since 2007, CU-Boulder's strategic plan, *Flagship 2030* ([www.colorado.edu/flagship](http://www.colorado.edu/flagship)), has been guiding near-term actions and investments that will sustain CU's quality and competitiveness and, through visionary "flagship initiatives," will transform the university within the next quarter-century.

#### **General Information about CU-Boulder**

As a comprehensive university, CU-Boulder is committed to the liberal education of students via a broad curriculum ranging from the baccalaureate through the postdoctoral levels.

With an enrollment of more than 30,000 students, the University of Colorado Boulder is the largest campus in the four-campus system. The student population comes from every state in the nation and from more than 100 foreign countries. Many different ethnic, religious, academic, and social backgrounds are represented, fostering the development of a multicultural academic community that enriches each student's educational experience.

On the Boulder campus, the chancellor is the chief academic and administrative officer and is responsible for conducting campus affairs in accordance with the policies of the Regents, and overseeing the Athletic Department. Faculty participate in campus governance through the Faculty Senate and the Faculty Assembly. Students participate through the University of Colorado Student Government (CUSG) and the United Government of Graduate Students (UGGS).

CU-Boulder has over 1,100 tenure and tenure track faculty, with more than 98 percent holding doctorates or appropriate terminal degrees. The faculty includes nationally and internationally recognized scholars with many academic honors and awards, including several CU-Boulder research faculty from the National Snow and Ice Data Center who shared the 2007 Nobel Peace Prize with former Vice President Al Gore for their contributions to the international report of the Intergovernmental Panel on Climate Change; John Hall, winner of the 2005 Nobel Prize in physics; Carl Wieman and Eric Cornell, winners of the 2001 Nobel Prize in physics; and Tom Cech, winner of the 1989 Nobel Prize in chemistry. Seven faculty have received MacArthur Fellowships, the so-called "genius grant." Twenty-one active or retired faculty are members of the National Academy of Sciences; 19 are included in the membership of the American Academy of Arts and Sciences; 14 are members of the National Academy of Engineering; and six are members of the National Academy of

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Education. Most faculty members, including full professors, teach both undergraduate and graduate classes. Faculty members incorporate their research and creative activities directly into instructional programs.

Research conducted at CU-Boulder is supplemented by research institutes devoted both to the advancement of knowledge in particular areas and to graduate training. Many of these institutes have developed international reputations.

To enhance its research capabilities and to provide collaborative opportunities with government and business, CU-Boulder developed a 200-acre research park east of the main campus. The park provides expanded room for research institutes and centers that work closely with university researchers.

The educational environment of a research university is characterized by a broad range of experiences in many different settings. While the classroom is the location for most instructional activities, laboratories, seminars, and field work also are important features of the undergraduate and graduate experience. Some programs encourage off-campus internships and training; study abroad programs also have gained popularity. For students whose interests cross traditional disciplinary lines, a number of interdisciplinary programs are available.

## **The Campus Setting**

CU-Boulder is located at the foot of the Rocky Mountains, at an altitude of 5,400 feet. The Flatirons geologic formation is visible from nearly everywhere on campus. The climate is temperate, with generally pleasant days and cool evenings. On average, Boulder enjoys about 340 sunny or partly sunny days each year. The main campus covers 600 acres and includes about 200 buildings constructed of rough-cut Colorado sandstone with red tile roofs. The rural Italian (or Tuscan vernacular) architectural style evolved from a master plan developed by Philadelphia architect Charles Klauder in 1919. The Norlin Quadrangle, including the original Old Main building, is listed in the State and *National Register of Historic Places*. The campus has been noted as one of the most aesthetically pleasing in the country.

Boulder County encompasses five ecological zones, from 5,000 feet above sea level (plains grassland) to 14,000 feet (alpine tundra). Downtown Boulder is only 20 miles from the Continental Divide and boasts some of the most spectacular scenery in the United States. The city of Boulder, population 96,000, is committed to preserving its beautiful natural environment and is surrounded by 26,000 acres of open space.

Denver, the state's capital city, is 30 miles from Boulder. Denver offers the attractions and resources of a large metropolitan area and is accessible from Boulder by traveling on U.S. 36, also known as the Denver-Boulder Turnpike. Denver's international airport is served by most major carriers and is located approximately 60 minutes southeast of Boulder. Boulder and the Denver International Airport are connected by a public transportation system.

## **Undergraduate Enrollment and Graduation Rates**

CU-Boulder's fall 2011 entering freshman class numbered 5,663. Of these, 47 percent were females, 56 percent residents of Colorado, and 21 percent members of minority groups (African Americans, Asian Americans, Hispanics, and Native Americans). Seventy-one percent enrolled in the College of Arts and Sciences, 13 percent in the Leeds School of Business, 13 percent in the College of Engineering and Applied Science, and 4 percent, combined, enrolled in the College of Architecture and Planning, Journalism and Mass Communication, and the College of Music. About 10 percent of freshmen entering CU-Boulder transfer to another college or school within the university before they graduate.

Of the freshmen entering in summer or fall 2005 who enrolled full time, 40 percent graduated within four years; 63 percent graduated within five years; and 68 percent graduated within six years. Of the students who entered in fall 2010, 83 percent returned for their second fall semester.

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## CU-Boulder Academic Programs

The Boulder campus offers more than 3,400 different courses in approximately 150 fields of study. These courses represent a full range of disciplines in the humanities, the social sciences, the physical and biological sciences, the fine and performing arts, and the professions. CU-Boulder is accredited by the Higher Learning Commission and a member of the North Central Association ([www.ncahigherlearningcommission.org](http://www.ncahigherlearningcommission.org); 312-263-0456). (See individual colleges and schools for additional accreditation information.)

For information on the content of academic programs and official degree designations, refer to the appropriate catalog sections. Additional graduate and professional programs are located on other campuses of the university.

### *Colorado Springs Campus*

The University of Colorado Colorado Springs, located on Austin Bluffs Parkway in Colorado Springs, is one of the fastest growing universities in the nation. The university offers 36 bachelor's, 19 master's, and five doctoral degrees. The campus enrolls about 9,000 students annually. Schools and colleges on this campus include:

- College of Business and Administration
- College of Education
- College of Engineering and Applied Science
- Graduate School
- College of Letters, Arts, and Sciences
- Beth-El College of Nursing and Health Sciences
- School of Public Affairs

### *University of Colorado Denver*

The University of Colorado Denver offers comprehensive programs for undergraduate, graduate, and health sciences students on the Denver Campus and on the Anschutz Medical Campus in Aurora. Students study in more than 130 degree programs across 13 schools and colleges.

The university awards more than 4,000 degrees each year and confers more graduate degrees than any other institution in the state. More than \$421 million in sponsored research awards came to University of Colorado Denver in 2009–10.

## Denver Campus

Near the heart of downtown, the campus is conveniently located on the Auraria Campus with easy access to Denver's commercial and governmental hubs. Schools and colleges on this campus include:

- College of Architecture and Planning
- College of Arts & Media
- Business School
- School of Education & Human Development
- College of Engineering and Applied Science
- College of Liberal Arts and Sciences
- School of Public Affairs

## Anschutz Medical Campus

The Anschutz Medical Campus in Aurora delivers a broad network of health care programs. In addition to University of Colorado Hospital, a number of renowned institutes are affiliated with the

campus. The Anschutz Medical Campus presents state-of-the-art educational and research facilities with an adjoining biomedical park. Schools and colleges on this campus include:

- School of Dental Medicine
- School of Medicine
- College of Nursing
- School of Pharmacy
- Colorado School of Public Health
- Graduate School

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# Academic Calendar

The campus operates year round on a semester system, with fall and spring semesters of 16 weeks each, a 10-week summer session, and a three-week “Maymester” academic period between spring semester and summer session.

<b>Summer Session 2012</b>	
April 1 (Sun.)	Transfer application deadline for summer and fall sessions
May 1 (Tues.)	Freshman enrollment confirmation deadline
May 14 (Mon.)	Maymester begins
May 28 (Mon.)	<b>Memorial Day</b> holiday; campus closed
June 1 (Fri.)	Final exams for Maymester
June 4 (Mon.)	Classes begin for terms A, C, and D; 7:30 a.m.
July 4 (Wed.)	<b>Independence Day</b> holiday; campus closed
July 6 (Fri.)	Final examinations for Term A (first five-week term)
July 10 (Tues.)	Classes begin for term B (second five-week term)
July 27 (Fri.)	Final examinations for term C (eight-week term)
Aug. 10 (Fri.)	Final examinations for terms B and D (second five-week and 10-week terms)
Aug. 11 (Sat.)	Official graduation date. No summer ceremony.
<b>Fall Semester 2012</b>	
Aug. 27 (Mon.)	Classes begin; 8:00 a.m.
Sept. 3 (Mon.)	<b>Labor Day</b> holiday; campus closed
Oct. 1 (Mon.)	Freshman and transfer application deadline for spring semester
Sept. 28–30 (Fri.–Sun.)	Family Weekend
Nov. 19–21 (Mon.–Wed.)	Fall break; no classes
Nov. 22–23 (Thurs.–Fri.)	<b>Thanksgiving</b> holiday; campus closed
Dec. 1 (Sat.)	Freshman non-binding early notification application deadline for fall and summer sessions
Dec. 14 (Fri.)	Last day of classes
Dec. 15–20 (Sat.–Thurs.)	Final examinations
Dec. 21 (Fri.)	Commencement
<b>Spring Semester 2013</b>	
Jan. 14 (Mon.)	Classes begin; 8:00 a.m.
Jan. 15 (Tues.)	Freshman application deadline for summer and fall sessions

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Jan. 21 (Mon.)	<b>Martin Luther King Jr.</b> holiday; campus closed
Mar. 25–29 (Mon.–Fri.)	Spring break
April 1 (Mon.)	Transfer application deadline for fall and summer sessions
May 1 (Wed.)	Freshman enrollment confirmation deadline
May 3 (Fri.)	Last day of classes
May 4–9 (Sat.– Thurs.)	Final examinations
May 10 (Fri.)	Commencement
<b>Summer Session 2013</b>	
May 13 (Mon.)	Maymester begins
May 27 (Mon.)	<b>Memorial Day</b> holiday; campus closed
May 31 (Fri.)	Final exams for Maymester
June 3 (Mon.)	Classes begin for terms A, C, and D; 7:30 A.M.
July 4 (Thurs.)	<b>Independence Day</b> holiday; campus closed
July 5 (Fri.)	Final examinations for term A (first five-week term)
July 9 (Tues.)	Classes begin for term B (second five-week term)
July 26 (Fri.)	Final examinations for term C (eight-week term)
Aug. 9 (Fri.)	Final examinations for terms B and D (second five-week and 10-week terms)
Aug. 10 (Sat.)	Official graduation date. No summer ceremony.

*The university's calendar committee requests that make-up time be provided to students absent for religious reasons.*

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# Administration

## Board of Regents

**Kyle Hybl, Chair**, District 5; *term expires January 2013*

**Michael Carrigan**, Vice Chair, District 1; *term expires January 2017*

**Steve Ludwig**, At Large; *term expires January 2013*

**Tillman "Tillie" Bishop**, District 3; *term expires January 2013*

**Steve Bosley**, At Large; *term expires January 2017*

**James Geddes**, District 6; *term expires January 2015*

**Joseph Neguse**, District 2; *term expires January 2015*

**Sue Sharkey**, District 4; *term expires January 2017*

**Irene C. Griego**, District 7; *term expires January 2012*

## Administrative Officers

### *CU System*

**Bruce Benson**, President. *BS, University of Colorado Boulder.*

**Leonard Dinegar**, Senior vice president and chief of staff. *BA, Catholic University of America; MA, University of Colorado Denver.*

**Kelly Fox**, Vice president and chief financial officer. *BA, University of Nebraska; MA, University of Colorado Denver.*

**Daniel J. Wilkerson**, Vice president, university counsel, and secretary to the Board of Regents. *BA, Cornell University; JD, Willamette University.*

**Tanya Kelly-Bowry**, Vice president for government relations. *BA, University of Colorado Boulder; MA, Regis University.*

### *CU-Boulder*

**Philip P. DiStefano**, Chancellor; professor of education. *BS, PhD, Ohio State University; MA, West Virginia University.*

**Russell L. Moore**, Provost and executive vice chancellor for academic affairs. *BS, University of*

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*California, Davis; PhD, Washington State University.*

**Ric Porreca**, Senior vice chancellor and chief financial officer. *BA, North Adams State College.*

**Robert Boswell**, Vice chancellor for diversity, equity, and community engagement. *BA, Marietta College; PhD, University of Colorado Boulder.*

**Deborah J. Coffin**, Vice chancellor for student affairs. *BS, BA, MA, University of Northern Colorado.*

**Frances Draper**, Vice chancellor for strategic relations. *BA, Stanford University; MBA, University of California, Berkeley.*

**Jeffrey Lipton**, Interim vice chancellor for administration. *BS, State University of New York; MBA, MS, University of Colorado Boulder.*

**Stein Sture**, Vice chancellor for research. *BS, MS, PhD, University of Colorado Boulder.*

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# Academic Affairs

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## Academic Advising

Academic advising is an integral part of a college education. Its goal is to assist students in making responsible decisions as they develop educational plans compatible with their potential career and life goals. Advising is more than offering information about academic courses and programs; it also involves encouraging students to formulate important questions about the nature and direction of their education and working with them to find answers to these questions.

### *Responsibilities of Students and Advisors*

Within the advising system on the Boulder campus, both students and advisors have responsibilities.

Students are responsible for:

- attending a special orientation, advising, and registration program on campus before enrolling in their first semester;
- knowing the requirements of their particular academic program, selecting courses that meet those requirements in an appropriate time frame, and monitoring their progress toward graduation;
- consulting with their academic advisor several times every term;
- scheduling and keeping academic advising appointments in a timely manner throughout their academic career, so as to avoid seeking advising only during busy registration periods; and being prepared for advising sessions (for example, by bringing in a list of questions or concerns, having a tentative schedule in mind, and/or
- being prepared to discuss interests and goals with their advisor).

Academic advisors are responsible for:

- helping students clarify their values, goals, and abilities;
- helping students understand the nature and purpose of a college education;
- providing accurate information about educational options, requirements, policies, and procedures;
- helping students plan educational programs consistent with the requirements of their degree program and with their goals, interests, and abilities;
- assisting students in monitoring and evaluating their educational progress; and
- helping students locate and integrate the many resources of the university to meet their unique educational needs and aspirations.

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Note: The university cannot assume responsibility for problems resulting from students failing to follow the policies stated in this catalog or from incorrect advice given by someone other than an appropriate staff member of the college.

## *Academic Advising Center*

The Academic Advising Center coordinates academic advising, transfer credit evaluation, and graduation certification for all undergraduate students pursuing a program of study in the College of Arts and Sciences and for all open option students. All students in the college are assigned to a primary academic advisor in their major field of study. Students are expected to meet with their assigned advisor on a regular basis throughout the academic year.

The advising center also oversees the Preprofessional Advising Center, which provides advising to all students on the Boulder campus who are intending to pursue law or one of the health professions (dentistry, medicine, nursing, pharmacy, physical therapy, etc.).

In addition, through the open option advising program, the advising center provides comprehensive advising services to students who are undecided about their major, or who are considering changing their major. Open option primary advisors are familiar with the courses and degree requirements for all majors offered at CU-Boulder, and assist open option students in exploring majors related to their interests, aptitudes, and goals. Open option advisors also assist students in designing programs of study that meet graduation requirements while providing students with the academic flexibility to pursue whichever degree program they ultimately choose.

Open option or preprofessional students with general advising questions should visit the Academic Advising Center website at [advising.colorado.edu](http://advising.colorado.edu) to schedule an appointment with their advisor.

## Orientation

The CU-Boulder orientation programs are designed to facilitate a smooth transition to the university community for students and their parents. All new freshman and transfer students are required to attend orientation in order to be eligible to register.

A single orientation program for new spring semester students and their parents occurs during the week before classes begin in January.

All new fall students are expected to attend their college orientation program, the chancellor's convocation, and New Student Welcome prior to their first day of class. Detailed information regarding the steps of the orientation process is sent by e-mail or, in some cases, postal mail once students have confirmed their intent to enroll at the university. More information regarding orientation is available at [orientation.colorado.edu](http://orientation.colorado.edu).

## Summer Session

Summer Session at CU-Boulder, an integral part of the university's year-round program, offers students opportunities for study, individual development, and recreational activity. Summer students can choose from more than 500 courses, allowing progress toward a degree in most areas of study.

Summer Session begins with Maymester, an intensive three-week term offered immediately after spring semester ends. Courses are also offered in one-to-four, five-, eight-, and ten-week formats. Online and on-campus courses are available.

Complementing Summer Session offerings, a rich calendar of summer events includes performances in repertory by members of the Colorado Shakespeare Festival, musical productions presented by the

CU Summer Opera company, and performances by members of the Colorado Music Festival.  
Organized recreational activities are offered through the Student Recreation Center.

The summer catalog is usually available by mid-January. To request a catalog, call **303-492-5148**  
(toll free **1-800-331-2801**), go to [www.colorado.edu/summer](http://www.colorado.edu/summer), or write Summer Session, University of  
Colorado Boulder, 178 UCB, Boulder, CO 80309-0178.

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## Student Affairs

The Division of Student Affairs focuses on creating a positive learning environment that fosters successful personal development and learning both in and outside the classroom. Student learning and success are enhanced when the learning environment and community support students' full development as people, not isolated intellects, and when students are seen as important partners in the learning experience.

## Student Learning Environment

A spectrum of uniquely designed services and support programs is available to undergraduate and graduate students as members of the university community. These programs contribute to creating a positive learning environment and support student development and academic achievement. Examples include housing and dining services, recreation, health care and education, personal and career counseling, and opportunities to develop leadership skills. Student Affairs works in a liaison relationship with the University of Colorado Student Government, the Greek system, and the CU Parents Association. The division takes an active leadership role in supporting diversity on campus and in building a supportive and respectful campus learning environment. Campus and Student Affairs staffs are proud of the high ratings that students give to many services. The division continues its commitment to improving service delivery in all areas. Approximately 900 professional and highly skilled Student Affairs staff and faculty are responsible for the many programs and services available to all students during their educational careers.

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## Class Level

Class level is based on the total number of semester hours passed, as follows:

**Freshman:** 0–29.9 semester hours

**Sophomore:** 30–59.9 semester hours

**Junior:** 60–89.9 semester hours

**Senior:** 90–123.9 semester hours

**Fifth-Year Senior:** 124 and above semester hours

The normal course load for most undergraduates is 15 credit hours each semester.

## Course Load

The following are the most widely used general definitions of full-time course load. For further information and guidelines, students should see specific college and school sections of this catalog. *Students who receive financial aid or veterans benefits or who live in university housing should check with the appropriate office regarding course-load requirements for eligibility purposes.*

### *Undergraduate Course Load*

For financial aid purposes, full time is 12 or more credit hours for fall, spring, and summer terms.

For enrollment verification and academic purposes (*not related to financial aid*), 12 credit hours is considered a full-time load in the fall or spring semester, and 6 credit hours is considered full time in the summer.

### *Graduate Course Load*

A full-time graduate student in the fall or spring semester is one who is enrolled for 5 credit hours of graduate course work, 8 hours combined graduate/undergraduate course work, 12 hours of undergraduate course work, or thesis hours depending upon the student's status. These hours also apply for enrollment verification purposes. Consult the Graduate School's website

at [www.colorado.edu/GraduateSchool](http://www.colorado.edu/GraduateSchool) for requirements. For financial aid or program requirements for full- or part-time status, which are different than those set by the Graduate School, consult the Office of Financial Aid. Law students must be enrolled for a minimum of 10 credit hours to be considered full-time in the fall or spring (5 credit hours in the summer). A maximum of 15 credit hours may be applied toward a degree during the fall and spring semesters for graduate students and a maximum of 18 credit hours during the fall and spring semesters for law students. For more information, visit [www.colorado.edu/law](http://www.colorado.edu/law).

A full-time graduate student in the summer term is one who is enrolled for at least 3 credit hours in graduate course work, 4 hours combined graduate/undergraduate course work, 6 hours of undergraduate course work, or thesis hours depending upon the student's status. The maximum number of graduate credits that may be applied toward a degree during the summer session is 6 credit hours per five-week term and 10 credit hours per 10-week summer session, not to exceed 10 credit hours for the total summer session.

## Satisfactory Academic Progress

Satisfactory academic progress in most undergraduate colleges and schools requires a 2.000 grade point average (GPA). Students should consult their dean's office regarding college or school minimum GPA requirements and special policies on probation and dismissal. Students must maintain satisfactory academic progress to receive financial aid.

## Grading System

The following grading system is standardized for all colleges and schools of the university. Each instructor is responsible for determining the requirements for a class and for assigning grades on the basis of those requirements.

### Standard Grade Credit Points per Each Hour of Credit

**A** = superior/excellent, 4.0

**A-** = 3.7

**B+** = 3.3

**B** = good/better than average, 3.0

**B-** = 2.7

**C+** = 2.3

**C** = competent/average, 2.0

**C-** = 1.7

**D+** = 1.3

**D** = 1.0

**D-** = minimum passing, 0.7

**F** = failing, 0.0

### Grade Symbols

**I** = incomplete; changed to **F** if not completed within one year

**IP** = in progress; thesis at the graduate level or specified graduate-level courses

**P** = passing; under the pass/fail option, grades of **D-** and above convert to a **P**. Other specified courses may also be graded on a pass/fail basis.

**NC** = no credit

**W** = withdrawal or drop without discredit

**\*\*\*** = class grades were not submitted when final grades were processed, or the student is currently enrolled in the course.

### Explanation of an **I** (Incomplete) Grade

An **I** grade is an incomplete grade. If the requirements for the course are not completed within one year, the **I** grade will be converted to an **F**. Use of the **I** grade is at the discretion of the faculty and/or

the academic dean's office.

Students must ask for an incomplete grade. An incomplete is only given when students, for reasons beyond their control, have been unable to complete course requirements. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

If an instructor grants a request for an incomplete, the instructor sets the conditions under which the course work can be completed and the time limit for its completion or if the course should be retaken. If a course is retaken, it must be completed on the Boulder campus or in Boulder evening classes, and the student must re-register for the course and pay the appropriate tuition.

The final grade (earned by completing the course requirements or by retaking the course) does not result in the deletion of the *I* from the transcript.

## Grade Point Average

The overall University of Colorado grade point average (GPA) is computed as follows: the credit hours and credit points are totaled for all courses; then the total credit points are divided by the total credit hours. Courses with grade symbols of *P*, *NC*, \*\*\* (*grade not yet entered*), *W*, *I*, and *IP* are excluded when totaling the hours, however, grades of *F* earned for courses graded on a *pass/fail* option are included in the GPA. *I*s that are not completed within one year are calculated as *F*s in the GPA at the end of the one-year grace period. Below is example GPA calculation for a hypothetical semester:

Grade Earned: **A**; Credit Points per Hour: **4.0**; x Credit Hours: **4.0** = Credit Points in Course: **16.0**

Grade Earned: **A-**; Credit Points per Hour: **3.7**; x Credit Hours: **4.0** = Credit Points in Course: **14.8**

Grade Earned: **B+**; Credit Points per Hour: **3.3**; x Credit Hours: **4.0** = Credit Points in Course: **13.2**

Grade Earned: **P**; Credit Points per Hour: **—**; x Credit Hours: **3.0** = Credit Points in Course: **— (excluded)**

Grade Earned: **F**; Credit Points per Hour: **0**; x Credit Hours: **3.0** = Credit Points in Course: **0**

**Total of 15 credit hours with 44 credit points, so 44/15 = 2.93 GPA**

Students should refer to their academic dean's office for individual GPA calculations as they relate to academic progress and graduation from their college or school.

## Class Rank

Beginning in the summer of 2007, undergraduate students can get a document that indicates their rank in class compared to those students graduating within the last year. Students in the College of Arts and Sciences and the College of Engineering and Applied Science will have a ranking within their major degree program. Students at the Leeds School of Business, College of Music, College of Architecture and Planning, and School of Journalism and Mass Communication will have a ranking within students in their college. These forms are available via the Web.

## Official Transcripts

Official transcripts include the complete undergraduate and graduate academic record of courses taken at all campus locations or divisions of the University of Colorado. It contains the signature of the registrar and the official seal of the university. Official transcripts are primarily used to support applications for transfer to other academic institutions and for employment purposes. Transcripts sent to students are labeled "issued to student."

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Official transcripts may be ordered in a variety of ways. Visit [www.colorado.edu/transcripts](http://www.colorado.edu/transcripts) for detailed ordering information. There is no charge for official transcripts, which are prepared at the student's request. However, rush services are available for a fee. Typically, non-rush transcript requests are processed within seven to ten business days and placed in first-class mail. Transcripts can be withheld for both financial obligations to the university or disciplinary actions that are in progress.

Official transcripts that include end-of-term grades are available approximately two weeks after final examinations. Degrees are recorded approximately six weeks after graduation.

## Unofficial Transcripts

Unofficial transcripts are also a complete academic record of courses taken at the University of Colorado. They are primarily used for advising and counseling within offices on campus and within offices at other University of Colorado campuses. Unofficial transcripts do not carry the registrar signature or seal of the university. Currently enrolled students may access their unofficial transcripts via [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu). Students may print this unofficial transcript on any printer.

## Credit by Examination

In limited instances, students enrolled in a degree program may earn additional credit without otherwise registering for and taking certain courses if they pass a written examination. Information on participating colleges and schools and an application for credit by examination may be obtained from the Office of the Registrar in Regent Administrative Center 105. The application specifies procedures to be followed. The following signatures are required for approval: the instructor, the department chair, the dean of the college or school in which the course is offered, and the student's dean, if different. The fee for each examination is not included in the regular tuition, but it is assessed separately at a fixed rate equivalent to the minimum resident tuition rate charged for 0–3 credit hours for the current semester. Fees are payable in advance and are nonrefundable.

## Holds

A scholastic, dean's, financial, health, or advising hold may be placed on a student's record for a number of reasons. A hold prevents a student from registering, returning to school, obtaining an official transcript, or receiving a diploma. The student should resolve each hold as quickly as possible by contacting the campus office that placed it. General inquiries may be addressed to the Office of the Registrar.

## Confidentiality of Student Records

**Annual Notice to Students:** The University of Colorado complies fully with the provisions of the Family Educational Rights and Privacy Act (FERPA) of 1974. The act was designed to protect the privacy of education records, to establish the right of students to inspect and review their education records in all offices, and to provide guidelines for the correction of inaccurate or misleading data through informal and formal hearings. Students also have the right to file complaints with the FERPA office concerning alleged failures by the institution to comply with the act.

University guidelines explain in detail the procedures to be used by the institution for compliance with the provisions of the act. Copies of the guidelines may be obtained from the Office of the Registrar and at [registrar.colorado.edu/regulations/ferpa\\_guide.html](http://registrar.colorado.edu/regulations/ferpa_guide.html).

Students wishing to review their education records must come to the Office of the Registrar and present proper identification. All other records inquiries must be directed to the proper office, i.e., financial aid, bursar, etc.

Students may not inspect the following, as outlined by the act: financial information submitted by their parents, confidential letters that they have waived their rights to review, or education records containing information about more than one student, in which case the institution will permit access only to that part of the record that pertains to the inquiring student. Records that may be inspected include admissions, academic, and financial aid files, and cooperative education and placement records.

The Family Educational Rights and Privacy Act affords students certain rights with respect to their education records. They are:

- 1. The right to inspect and review education records within 45 days of the day the university receives their request for access.** Students should submit to the registrar, dean, head of the academic department, or other appropriate official, written requests that identify the educational record(s) they wish to inspect. The university official will make arrangements for access and notify them of the time and place where the records may be inspected. If the records are not maintained by the university official to whom the request was submitted, that official shall advise them of the correct official to whom the request should be addressed.
- 2. The right to request the amendment of students' education records that they believe are inaccurate or misleading.** They may ask the university to amend a record that they believe is inaccurate or misleading. They should write the university official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the university decides not to amend the record as requested by the student, the university will notify the student of their right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to them when notified of the right to a hearing.
- 3. The right to consent for disclosures of personally identifiable information contained in their education records, except to the extent that FERPA authorizes disclosure without consent.** One exception that permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic, research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the university has contracted (such as an attorney, auditor, collection agent, University of Colorado Foundation, or employment or degree verification agency such as the National Student Clearinghouse); a person serving on the Board of Regents; a student employee; or a student serving on an official committee; or one assisting another school official in performing his or her task. In addition, a student's records may be disclosed to their parent(s) upon request if their parent(s) claim them as a dependent for income tax purposes. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility. Upon request, the university discloses education records without consent to officials of another school in which a student seeks or intends to enroll.
- 4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of FERPA.** The name and address of the office that administers FERPA is: The Family Compliance Office, U.S. Department of Education, 600 Independence Avenue, SW, Washington, DC 20202-4605, 202-260-3887

The following items of student information have been designated by the University of Colorado Boulder as public or "directory" information: names; student address (including designated local mailing and permanent); telephone number listed with mailing address; student e-mail address; dates of attendance; registration status; class; college or school; previous educational institutions attended; major/minor fields of study; awards, honors, degree(s) applied for or conferred (including certificates, thesis, and dissertation titles) and dates received; past and present participation in officially

recognized sports and activities; physical factors (height and weight) of athletes; prior schools attended; employment related to student status (e.g., teaching assistant, resident assistant, or tutor); class seat assignment; College Opportunity Fund application and authorization status; expected date of completion in enrolled course of study; and student photo (including Buff OneCard photo in certain circumstances). Such information may be disclosed by the institution at its discretion.

### *Withholding Directory Information*

Students have the right to withhold directory information from inquirers. To restrict the release of directory information, go to the Office of the Registrar to complete a "Privacy Form."

### *Student Consent for Release of Confidential Information*

Students may complete a "Student Permission" form that gives parents, spouses, or third parties access to educational records. Students must bring a photo ID to the Office of the Registrar, Regent Hall room 105, between 9:00 a.m. and 5:00 p.m. to complete this form.

### *Release of Disciplinary Information*

Provisions of the Family Educational Rights and Privacy Act of 1974, as amended by the Higher Education Amendments of 1998, govern access to a student's academic transcript or conduct file. The student and/or those university officials who demonstrate a legitimate educational need for disciplinary information may have access to the student's conduct file. Parent(s), who provide proof that a student is a dependent as defined in Section 152 of the Internal Revenue Code of 1954 (i.e., a copy of the last federal income tax return listing the student as a dependent), can have access to the student's conduct file without written consent of the student. In this case, parents may also have access to a conduct file, even if the student has requested otherwise.

In addition, parent(s) may be notified if a student under 21 is found responsible for a violation involving use or possession of alcohol and controlled substances. All other inquiries, including but not limited to inquiries from employers, government agencies, news media, family, friends, or police agencies, require a written release from the student before access to university conduct files is granted. Exception: Information may be released pursuant to a lawfully issued subpoena and as provided by the Campus Security Act as amended by the Higher Education Amendments of 1992.

The Campus Security Act permits higher education institutions to disclose to alleged victims of any crime of violence (e.g., murder, robbery, aggravated assault, burglary, motor vehicle theft, arson) the results of the conduct proceedings conducted by the institution against an alleged perpetrator with respect to such crime. The Campus Security Act also requires that both the accused and the accuser be informed of campus conduct proceedings involving a sexual assault.

## **In-State and Out-of-State Tuition Classification**

Tuition classification is governed by Colorado statutes and by judicial decisions that apply to all state-funded institutions in Colorado and is subject to change without notice.

New students are classified as in-state or out-of-state residents for tuition purposes on the basis of information provided on their application for admission and other relevant information. Applicants may be required to submit evidence substantiating their claim of in-state eligibility.

Applicants and students who feel their classification is incorrect or who have become eligible for a change to in-state status must submit a petition with documentation in order to have their status changed. The necessary petition forms, deadlines for submission, and an explanation of the Colorado tuition classification statute are available from the Tuition Classification Officer, Regent Administrative Center 105, University of Colorado Boulder, 68 UCB, Boulder, CO 80309-0068, **303-492-0907**, fax: **303-492-8748**, e-mail: [tuitclass@colorado.edu](mailto:tuitclass@colorado.edu), website: [registrar.colorado.edu/students/tuition\\_classification.html](http://registrar.colorado.edu/students/tuition_classification.html).

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## *Basic Requirements for Establishing Colorado Residency*

Colorado in-state tuition classification requires domicile (legal residence) in Colorado for 12 consecutive months. Domicile is defined as a person's true, fixed, and permanent home and place of habitation. To establish domicile, a person must reside in Colorado and demonstrate that Colorado is his or her permanent home.

In addition to establishing domicile in Colorado, a person must be either 22 years of age or older, married, a graduate student, or an emancipated minor to begin the 12-month period. Unemancipated minors qualify for in-state status if their parents have been domiciled in Colorado for one year.

### **Emancipation**

To be emancipated, students cannot be supported by their parents in any way. College savings funds and other income-producing assets established by the parents prior to the 12-month period are considered to be parental support.

### **Evidence of Domicile**

Evidence of Colorado domicile includes actions that would normally be expected of any permanent resident. Factors that constitute evidence of domicile are:

- Payment of Colorado state income tax
- Colorado driver's license
- Colorado vehicle registration
- Voter registration in Colorado
- Ownership and permanent occupancy of residential real property in Colorado
- Permanent employment or acceptance of future permanent employment in Colorado (Note: employment offered by the university to students is not considered permanent)
- Graduation from a Colorado high school
- Continued residence in Colorado while not enrolled as a student

No single factor constitutes conclusive proof of domicile. All factors, positive and negative, are considered. All of the listed factors are not necessary, but individuals should take action on those factors that are appropriate in their circumstances.

### **Unemancipated Minors**

Students as old as 22 may qualify for in-state tuition if either of their parents, regardless of custody, has been domiciled in Colorado for 12 consecutive months preceding the first day of class in a given semester, even if the students reside elsewhere. In certain circumstances, students may qualify through their parents up to age 23.

Students lose eligibility for in-state tuition if they (or their parents, if the students are unemancipated minors) maintain domicile outside Colorado for one year or more, unless the parents have lived in Colorado at least four years and meet other requirements.

In-state classification becomes effective at the beginning of the first term after one year of legal residence in Colorado. Changes of classification never take effect midterm.

Students who give false information to evade payment of out-of-state tuition or who fail to provide timely notice of their loss of in-state eligibility are subject to retroactive assessment of out-of-state tuition, as well as disciplinary and legal action.

## *In-State Status: Other Circumstances*

Exceptions to the one-year residence requirement exist for the following:

- Colorado National Guard members
- Active-duty military stationed in Colorado
- Honorably-discharged members of the U.S. armed forces
- Returning active-duty military members
- Canadian military stationed in Colorado
- Employees of companies moving to Colorado receiving government economic incentives
- Children of new faculty members at Colorado state colleges and universities
- Western Regional Graduate program enrollees
- U.S. citizens who are Colorado high school graduates and who attend a Colorado high school for three years immediately preceding enrollment, or Colorado G.E.D. holders who reside in Colorado the three years immediately preceding enrollment

For detailed explanations of the requirements for these exceptions, including spouse and child eligibility, go to [registrar.colorado.edu/students/tuition\\_classification.html](http://registrar.colorado.edu/students/tuition_classification.html).

#### University Catalog 2012-2013

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# Expenses

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## College Opportunity Fund

In May 2004, an act of the Colorado state legislature established a new way for the State of Colorado to provide state tax-dollar support for higher education at the undergraduate level. The state is no longer appropriating monies to institutions for undergraduate education, but providing direct funding to undergraduate students through the College Opportunity Fund (COF).

This program, also known as “vouchers” or “stipends,” requires in-state undergraduate students to request that COF vouchers be applied to their university bills.

Details of the COF program are determined by the Colorado Commission on Higher Education (CCHE) and the College Assist Program. Updated details are available at [www.cu.edu/ums/cof/faq.html](http://www.cu.edu/ums/cof/faq.html) and [cof.college-assist.org](http://cof.college-assist.org). Students need to *apply* and *authorize* (two separate steps) the COF stipend in order to receive it. For instructions, see COF information at [registrar.colorado.edu](http://registrar.colorado.edu).

## Confirmation Deposit

All new students (both in-state and out-of-state) must confirm their enrollment at the university by official notification and deposit of \$200. The deposit is nontransferable and must be paid by all students, regardless of financial aid awards. Students who have paid the deposit and who decide not to attend CU-Boulder forfeit their deposit. Students who submit deposits after enrollment levels have been reached will not be accepted, and their deposits will be returned.

The confirmation deposit is not credited toward tuition and fees. It is refunded when a student graduates or officially withdraws from CU-Boulder within established dates and guidelines after paying any outstanding university obligations. Students should update their direct deposit bank account information before they graduate or withdraw to be sure they receive their refund.

## Estimated Expenses

Expenses for students attending the University of Colorado Boulder vary, depending on housing (on or off campus), program of study, state residency (tuition classification), personal needs, and

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individual interests.

It is difficult, therefore, to provide exact statements of total expenses. The following estimated costs per academic year were calculated for the range of full-time undergraduate students living on the Boulder campus during the 2011–12 academic year.

Tuition and fees for 2012–13 were not set at the time of publication. Check the Bursar's Office website for current tuition and fee rates: [bursar.colorado.edu/tuition-fees/tuition-and-fees-rate-sheets](http://bursar.colorado.edu/tuition-fees/tuition-and-fees-rate-sheets).

## **Costs for 2011–12 Year at CU-Boulder**

*The figures below are estimates based on a single undergraduate student enrolled full time for an academic year of two semesters.*

### ***Resident Expenses***

Tuition and Fees: \$9,152–\$13,742

On-campus Room and Board (*based on double occupancy*): \$11,278

Books and Supplies: \$1,992

On-campus Estimated Total: \$22,422–\$27,012

### ***Nonresident Expenses***

Tuition and Fees: \$30,330–\$33,880

On-campus Room and Board (*based on double occupancy*): \$11,278

Books and Supplies: \$1,992

On-campus Estimated Total: \$43,600–\$47,150

### ***Notes***

1. Residency classification is determined by Colorado state law. The resident tuition amount assumes eligibility for, and authorization for the use of, the College Opportunity Fund (COF) stipend, which was \$62 per credit hour in 2011–12.
2. Special residential academic fees, program fees, course fees, and transportation, medical, and personal cost estimates are not included in the estimated total because costs can vary depending upon individual circumstances and spending habits.

Students planning to attend summer session should take into account estimated expenses indicated in the *Summer Session Catalog*, available online and from the Office of the Registrar in mid-February.

In-state tuition is charged per credit hour. Out-of-state tuition is a flat rate, regardless of the number of credit hours.

In-state undergraduate students must apply and authorize for the College Opportunity Fund tuition voucher program to help offset part of their tuition. See [www.cu.edu/ums/cof/faq.html](http://www.cu.edu/ums/cof/faq.html) and [cof.college-assist.org](http://cof.college-assist.org) for additional information.

Out-of-state students are guaranteed the same tuition rate for four years. Students first registering summer 2012 through spring 2013 are guaranteed the same tuition rate through summer 2016. See [www.colorado.edu/pba/budget/tuitionfees/guarantee.html](http://www.colorado.edu/pba/budget/tuitionfees/guarantee.html) for more information.

Zero or fractional credit is treated as one hour in assessing tuition and fees. Tuition for no-credit (NC) courses is the same as for courses taken for credit.

Students simultaneously enrolled in programs leading to two different degrees will be assessed tuition for the college or school with the higher tuition rate.

## ***Housing Security Deposit***

All students who live in the residence halls are required to pay a one-time security deposit of \$300

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(deposit is subject to change). This security deposit is held by Housing & Dining Services and is released to the tuition and fee account within 60 days after the expiration of the housing contract.

The security deposit required for housing is in addition to the confirmation deposit required for admission to the university.

## Fees

### *New Student Fee*

The new student fee is a one-time nonrefundable fee assessed at the time of initial registration for students entering a degree program. Nondegree students who are admitted to degree status are charged the new student fee at the time they first register. It covers expenses for registration and transcripts, undergraduate orientation, Buff OneCard, immunization management, Forever Buffs alumni membership, and orientation for international students. The fee varies depending upon degree and international status.

- Undergraduate students: \$182
- Graduate students: \$62
- International undergraduate students: \$225
- International graduate students: \$105

### *Program and Course Fees*

Instructional fees are charged on an individual basis to help offset the higher costs of specialized supplies and equipment unique to these programs and courses. Program and course fees for 2011–12 ranged from \$1–\$90 per credit hour, \$5–\$225 per course, and \$297–\$375 per semester. Visit [bursar.colorado.edu](http://bursar.colorado.edu) for a list of specific program and course fees. Lab courses not linked to a lecture course may also require payment of a course fee. In addition, certain colleges charge a fee for enrollment in that college, even if the student is not currently taking courses that apply to their major.

### *Late Registration Fee*

A late registration fee may be charged to students who are authorized to register for a fall or spring semester (but who are not registered in any classes by the third Friday of the semester). The late registration fee is \$100. This fee should not be confused with late and finance charges assessed for late payments.

### *Student Health Insurance Plans*

CU-Boulder has a policy requiring all CU students taking six or more credit hours to have health insurance coverage. To help students comply with this policy, all students are automatically enrolled in the university-sponsored Student Gold Health Insurance Plan.

Enrollment is not automatic for spouses/domestic partners and dependents; or for students in continuing education, study abroad programs including Semester at Sea, and the evening MBA program.

Students enrolled in a health insurance plan other than the university's (i.e., from their employer, through an individual insurance plan, or their parent's insurance) must waive the university health insurance coverage by the semester deadline. The deadline to waive insurance is September 5, 2012, for fall 2012 and January 23, 2013, for spring 2013. The student health plan selection automatically extends through the spring/summer 2013 unless another plan is selected. Students enrolled in a university health plan will be billed each semester.

The university is not responsible for a student's health care costs. If a student participates in one of the university health plans, Wardenburg Health Center will provide covered services as set forth in

the plan selected.

For more information about CU health insurance visit [healthcenter.colorado.edu/insurance](http://healthcenter.colorado.edu/insurance), call **303-492-5107**, or stop by the Student Insurance Office located in Wardenburg Health Center.

## *2011–12 Mandatory Fees per Semester*

### **Activity Fee (assessed by CUSG)<sup>1</sup>**

#### ***Undergraduate Students<sup>2</sup>***

One class of 5 or fewer credit hours: \$62.11

One class of more than 5 credit hours: \$340.22

More than one class (any amount of credit hours): \$340.22

#### ***Graduate Students<sup>2</sup>***

Master's, beginning doctoral, doctoral thesis only, and law (status A, B, C, E): \$340.22

Doctoral candidate (status D): \$125.75 with health plan, \$62.11 without health plan

### **Arts and Cultural Enrichment Fee**

All students: \$10.00

### **Athletic Fee<sup>3</sup>**

Credit hours of 3 or fewer: \$0.00

Credit hours of 4 or more: \$28.50

### **Capital Construction Fee**

Credit hours of 6 or fewer: \$100.00

Credit hours of 7 or more: \$200.00

### **Career Services Fee**

All students except law and doctoral candidates: \$9.00

### **Computing Fee**

Credit hours of 6 or fewer: \$33.62

Credit hours of 7 or more: \$67.24

### **Health Insurance**

Student Gold health plan is mandatory (but may be waived if proof of other insurance is shown).

Plans are Student Gold (\$1,215) or Wardenburg Campus Care (\$165, supplemental to other insurance).

### **International Student Processing Fee (CU SEVIS Compliance Fee)**

International students only: \$22

### **Student Bus and Bike Programs Fee<sup>4</sup>**

All students: \$78.00

### **Student Information System Fee**

Mandatory for all students: \$7.00

### **Notes**

1 Undergraduate students: Payment of full CUSG student fees in the amount of \$340.22 is mandatory for undergraduate students unless enrolled in only one class of five or fewer credit hours in which case base fees in the amount of \$62.11 are charged.

2 Graduate status is determined by the Graduate School. Additional Graduate Student Fees: Law Students are assessed two additional fees: Graduation Fee (\$30) and Law Student Services Fee (\$150). The UGGS Graduate Fee is \$4.50.

3 Not assessed to doctoral candidate or doctoral thesis.

4 The student bus and bike program fee entitles students to unlimited free rides on local, regional, and express bus routes.

For detailed student fee information, visit [bursar.colorado.edu](https://bursar.colorado.edu).

## Tuition and Fee Regulations

### *Drop/Add Tuition Adjustment*

Adjustment of tuition and fees is made on drop/add changes as published at [registrar.colorado.edu](https://registrar.colorado.edu).

### *Tuition Classification*

Students are classified as residents or nonresidents for tuition purposes on the basis of answers provided on their application for admission and other relevant information. For more information, go to the tuition classification link at [registrar.colorado.edu/students/tuition\\_classification.html](https://registrar.colorado.edu/students/tuition_classification.html).

### *Students Registered on More than One Campus*

Students registering for courses on more than one campus of the university during a single term pay tuition and fees to each campus at the rate appropriate to the number of credits for which they are registered on that campus. Students may be eligible to use the concurrent registration option, in which case they pay the tuition rate of their home campus rates for the total hours enrolled at all campuses.

### *Nondegree Students*

Nondegree students enrolled in undergraduate courses are assessed tuition at the undergraduate student rate. Nondegree students enrolled in graduate courses are assessed tuition at the graduate student rate. Nondegree students enrolled in both graduate and undergraduate courses are assessed tuition at the undergraduate student rate.

### *University Employees*

Full-time permanent employees may enroll in up to 9 credit hours per year tuition-free (certain mandatory fees still apply). Part-time permanent employees are eligible for a decreased tuition benefit based on their percentage of appointment. Enrollment is on a space available basis and must be done no sooner than the first date of open enrollment for the semester, which is typically the day before classes begin for fall and spring and the first day of classes for summer. Courses must be offered through main campus; Continuing Education courses do not qualify for the benefit. Courses must be job- or career-enhancing and the employee must get their supervisor's permission to utilize this benefit. There is an application process and deadlines that must be met in order to receive the benefit. Time taken to attend classes during normal working hours shall be made up and may be limited to one course during any term. Persons appointed for less than full time are not eligible for release time during assigned hours. For details, visit the tuition benefit link under "Resources" at [bursar.colorado.edu](https://bursar.colorado.edu).

### *Concurrent Bachelor's/Master's Degree Programs*

The Graduate School, in cooperation with the other colleges and schools, has instituted a concurrent bachelor's/master's degree option.

Students need to talk with specific departments regarding programs offered and verification of the following statements:

1. Students who complete the requirements for the concurrent bachelor's/master's degree receive both degrees simultaneously.

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2. Students admitted to concurrent programs may register for graduate courses before they receive a bachelor's degree.
  3. Students admitted to bachelor's/master's programs will pay tuition according to their graduate/undergraduate status throughout the five to six years required to complete the concurrent bachelor's/master's degrees.
  4. Students admitted to concurrent degree programs will be regarded as undergraduate students for the purposes of receiving financial aid throughout the five years of their program, unless they are advanced to graduate status. Students may advance to graduate status upon the recommendation of their department, only after the completion of all their undergraduate requirements.

### *Approved Doctoral Candidates*

A student who has passed the comprehensive exam and is admitted as an approved doctoral candidate is registered for five dissertation hours. Students not making use of campus facilities may choose to register for three dissertation hours and will be considered part-time students. Continuous registration for appropriate dissertation hours during fall and spring semesters is required until completion of the dissertation defense. During the semester of the dissertation defense, a student must be a full-time student, registered for five dissertation hours. A DMA student who has passed the comprehensive exam must maintain continuous registration by registering for DMA dissertation credits (courses 8200–8399) or TMUS 8029 through the semester in which the final dissertation exam or final exam is completed.

## Payment of Tuition and Fees

### *University Bills*

Any student who completes registration agrees to pay CU-Boulder according to the payment terms documented at [bursar.colorado.edu](https://bursar.colorado.edu) under "Payments." The bill includes tuition, fees, university residence hall charges (room and board), financial aid awards, student loan proceeds, research and teaching assistant tuition waivers, and other credits to tuition and fees. Bills are only online. An e-mail notification is sent to the student's CU-Boulder e-mail address when the bill is available online. A student may also authorize parents and others (up to five people) to view and pay the bill online at CUBill&Pay.

Payment methods include:

- Online payment from checking or savings account: see [MyCUInfo.colorado.edu](https://mycuinfo.colorado.edu) or [bursar.colorado.edu](https://bursar.colorado.edu).
- Cash
- Check (personal, certified, cashier's, traveler's, convenience checks, or money orders). Include student's identification number on the check.

***Credit and debit cards are not accepted, due to the high cost of merchant fees.***

Payment can be delivered via the Internet, wire, overnight express, standard U.S. Postal Service, or dropped in one of two payment drop boxes located outside the north and south entrances of Regent Administrative Center. (See detailed information for all payment options at [bursar.colorado.edu](https://bursar.colorado.edu).)

Failure to receive the official e-mail notification of the bill does not relieve any student of responsibility for payment by the published deadline. To avoid assessment of finance charges (1 percent per month on the unpaid balance), a late fee (up to \$50 per semester), and possible loss of future semester classes, tuition and fees must be paid by the deadline published at [bursar.colorado.edu](https://bursar.colorado.edu). Subsequent bills will reflect adjustments and additional charges made throughout the semester. Tuition and fee billing information is available at [bursar.colorado.edu](https://bursar.colorado.edu).

## *Two-Payment Plan*

Students may select a two-payment plan online by the first tuition payment deadline each semester. For more information about the two-payment plan, visit [bursar.colorado.edu](https://bursar.colorado.edu).

## *Failure to Make Payment*

Failure to make the required payment by the stated deadline will result in any or all of the following actions:

- Registration for future terms will not be allowed. If the student is already registered for courses for a future term, those courses may be dropped.
- No transcripts, diplomas, or certification materials are issued for the student until the bill is paid in full.
- The student will still be responsible for full tuition and fees, as well as a finance charge (1 percent per month on the unpaid balance) and a late charge per semester according to the following schedule:

### ***Balance Due and Late Charge***

\$1.00–99.99: **\$ 5.00**

\$100.00–299.99: **\$10.00**

\$300.00–499.99: **\$20.00**

\$500.00–699.99: **\$30.00**

\$700.00–899.99: **\$40.00**

\$900.00 and over: **\$50.00**

- All past due accounts are referred to the university's Student Debt Management department for collection, where collection costs may be assessed.
- If an account is referred to a private collection agency, the delinquency may be reported to national credit bureaus and the student must pay collection costs, charges, and reasonable attorneys' fees allowed by the Uniform Consumer Credit Code. For more information, see [bursar.colorado.edu](https://bursar.colorado.edu).

## *Returned Payment Policy*

A \$20 fee is assessed for all payments returned (regardless of the amount). Late and finance charges may be assessed and certified funds may be required when payment is made. A financial hold will be placed on the student's record and students may also be liable for the collection costs, reasonable attorneys' fees, and prosecution under the Colorado Criminal Statutes. Specific inquiries regarding returned payments should be directed to the Student Debt Management department in the Bursar's Office.

## *Dispute Rights*

To dispute tuition and mandatory fee charges, you must make a formal appeal to the Tuition Dispute Committee by the end of the semester (last day of finals). Disputes will only be considered under extenuating circumstances, such as university error, recent medical condition, immediate family emergency, recent unanticipated financial problems, and verified non-attendance. Official documentation must be provided to substantiate the circumstances. You may obtain a dispute form at [bursar.colorado.edu/billing/tuition-dispute/](https://bursar.colorado.edu/billing/tuition-dispute/) or by contacting the Bursar's Office Student Billing

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Department, Regent Administrative Center, 43 UCB, Boulder, CO 80309-0043, **303-492-5381**, or [bursar@colorado.edu](mailto:bursar@colorado.edu). If you disagree with the charges and fail to avail yourself of the dispute process by the end of the semester, you will have been deemed to have waived your right to dispute the charges. For additional information on the dispute process, visit [bursar.colorado.edu](http://bursar.colorado.edu).

## Withdrawal Policy Regarding Tuition and Fees

Students who pay the \$200 confirmation deposit and register for classes for any given semester are obligated to pay full tuition and fees for that semester, unless they officially withdraw from the university.

Tuition and fee obligations for withdrawing students are as follows (for fall and spring semesters):

- **Continuing students:** If withdrawal is by the “deadline to withdraw and not be assessed a financial penalty,” continuing students and students returning from the Time Off Program receive a refund of the confirmation deposit less any outstanding charges.

**New and readmitted students:** New, readmitted, and transfer students are not eligible for a refund of the confirmation deposit.

Deadlines to withdraw with no financial penalty vary by semester but occur some time before the first day of instruction. Visit [registrar.colorado.edu/students/withdraw.html](http://registrar.colorado.edu/students/withdraw.html) for the refund and assessment schedule.

If students withdraw after the “deadline to withdraw and not be assessed a financial penalty” but before 11:59 p.m. on the third Wednesday of instruction, they are assessed a \$200 withdrawal processing fee. (The confirmation deposit is applied to this charge.)

- No refunds will be made for students who withdraw after the third Wednesday of instruction. However, students who feel they have circumstances that may warrant a tuition adjustment and who withdraw after the third Wednesday of instruction through the fifth Wednesday of instruction, may petition the Registrar's office to be assessed 40 percent of total tuition (not including the portion of tuition paid by COF for in-state undergraduate students) and mandatory fees (CUSG student fees, athletic fee, and capital construction fee). Students who withdraw after the fifth Wednesday of instruction through the seventh Wednesday of instruction may petition to be assessed 60 percent of total tuition (not including the portion of tuition paid by COF for in-state undergraduate students) and mandatory fees (CUSG student fees, athletic fee, and capital construction fee). After the seventh Wednesday of instruction students may not petition the Office of the Registrar for any tuition adjustment. If there are extenuating circumstances (university error, recent medical condition, immediate family emergency, recent unanticipated financial problems, verification of non-attendance), students may dispute tuition and mandatory fee charges through the Bursar's office. College Opportunity Fund hours are expended and not refunded with withdrawals after the published deadline.

To comply with federal financial aid regulations, financial aid recipients' loan and scholarship awards may be adjusted.

Students should visit [registrar.colorado.edu](http://registrar.colorado.edu) for any changes, as the Board of Regents reserves the right to revise this schedule at any time. Refer to the *Summer Session Catalog* for information on the withdrawal policy and refund schedule for summer terms.

It is the responsibility of students to have all special services fees removed at the time of withdrawal. Otherwise, these fees become a financial obligation.

Students who do not pay the full amount due the university at the time of withdrawal must make

arrangements for payment with the Student Debt Management department in the Bursar's Office. All withdrawals are handled through the Office of the Registrar, Regent Administrative Center 105.

## Auditing

Individuals who wish to attend regularly scheduled classes for fall or spring terms may do so by obtaining auditor's status.

To qualify for auditor's status, the individual must be at least 18 years of age. Registered enrolled students and suspended students are not permitted to audit courses. If a registered student is interested in participating in a class without receiving credit, then the student must enroll in the course for no credit. *Note: courses taken for no credit are assessed the same tuition rate as courses taken for credit.*

Before purchasing the audit card, the auditor must first receive permission from the instructor to audit the class. Audit cards can be purchased at the Bursar's Office located in the Regent Administrative Center one week prior to and including the first day of class. The cost of an audit card is set to the rate for three credit hours at the in-state undergraduate tuition rate for the College of Arts and Sciences. The cost is a flat rate regardless of how many classes are audited and regardless of the auditor's residency status. Auditors will receive class instruction and library privileges only. Auditors must present their audit card to the instructor on the first day of class.

Audit cards are not refundable and expire at the end of the respective term. With instructor permission, auditors may audit as many classes as desired. Spanish and Portuguese language classes and classes with a lab component or equipment use are not eligible for audits. Auditors should note that the Office of the Registrar does not record audited courses, therefore credit of these courses cannot be established.

Those 55 years and older qualify for the **Senior Auditor Program's** reduced audit rates. Those interested should contact the CU Alumni Association at 303-492-8484, or visit [www.cualum.org/services/senior-auditors](http://www.cualum.org/services/senior-auditors).

## University Employees

Full-time permanent employees may enroll in up to 9 credit hours per year tuition-free (certain mandatory fees still apply). Faculty and staff can share their 9 credit hours with a dependent. Enrollment is on a space available basis and must be done no sooner than the first day of classes for fall and spring semesters and the first day of each session for summer. Courses must be offered through main campus; Continuing Education courses do not qualify for the benefit. Dependents can only use the benefit for undergraduate course work on the campus where the employee works. There is an application process and deadlines that must be met in order to receive the benefit. For details, visit the tuition benefit link under Resources at [bursar.colorado.edu](http://bursar.colorado.edu) and the Payroll and Benefits website at <https://www.cu.edu/pbs/tuition-benefit>.



# Tuition Tables

## Tuition per Semester, fall 2011 through spring 2012

(For planning purposes only. Rates for 2012–13 were not available at time of publication. Tuition charged is affected by residency status, degree, and number of credit hours. Dual degrees are charged at the higher of the two rates.) Tuition and fee rates are determined by the Board of Regents prior to fall of each academic year. Check the [Bursar's Office website](#) for the most current tuition rates.

## Undergraduate Tuition

### IN-STATE Tuition

The state of Colorado provides direct funding to in-state undergraduate students through the **College Opportunity Fund (COF)**. In the Undergraduate Tuition table below, the amount shown in **boldface** was the in-state tuition for those receiving the COF voucher (\$62 per credit hour for academic year 2011–12). The amount in parentheses was the tuition for those who did not apply for the COF stipend. The COF stipend amount is subject to legislative change every year. See [Colorado Opportunity Fund](#) in this section. For undergraduate and graduate fees, see [Fees](#).

For credit hours over 18, add \$62 per credit hour. COF remains the same.

Credit Hours	A&S/Other	Business	Engineering	Journalism/Music
1	\$ (1,085) <b>1,023</b>	\$ (1,697) <b>1,635</b>	\$ (1,484) <b>1,422</b>	\$ (1,124) <b>1,062</b>
2	\$ (1,147) <b>1,023</b>	\$ (1,759) <b>1,635</b>	\$ (1,546) <b>1,422</b>	\$ (1,186) <b>1,062</b>
3	\$ (1,209) <b>1,023</b>	\$ (1,821) <b>1,635</b>	\$ (1,608) <b>1,422</b>	\$ (1,248) <b>1,062</b>
4	\$ (1,612) <b>1,364</b>	\$ (2,428) <b>2,180</b>	\$ (2,144) <b>1,896</b>	\$ (1,664) <b>1,416</b>
5	\$ (2,015) <b>1,705</b>	\$ (3,035) <b>2,725</b>	\$ (2,680) <b>2,370</b>	\$ (2,080) <b>1,770</b>
6	\$ (2,418) <b>2,046</b>	\$ (3,642) <b>3,270</b>	\$ (3,216) <b>2,844</b>	\$ (2,496) <b>2,124</b>
7	\$ (2,821) <b>2,387</b>	\$ (4,249) <b>3,815</b>	\$ (3,752) <b>3,318</b>	\$ (2,912) <b>2,478</b>
8	\$ (3,224) <b>2,728</b>	\$ (4,856) <b>4,360</b>	\$ (4,288) <b>3,792</b>	\$ (3,328) <b>2,832</b>
9	\$ (3,627) <b>3,069</b>	\$ (5,463) <b>4,905</b>	\$ (4,824) <b>4,266</b>	\$ (3,744) <b>3,186</b>
10	\$ (4,030) <b>3,410</b>	\$ (6,070) <b>5,450</b>	\$ (5,360) <b>4,740</b>	\$ (4,160) <b>3,540</b>
11	\$ (4,433) <b>3,751</b>	\$ (6,677) <b>5,995</b>	\$ (5,896) <b>5,214</b>	\$ (4,576) <b>3,894</b>
12	\$ (4,580) <b>3,836</b>	\$ (6,875) <b>6,131</b>	\$ (6,077) <b>5,333</b>	\$ (4,727) <b>3,983</b>
13	\$ (4,642) <b>3,836</b>	\$ (6,937) <b>6,131</b>	\$ (6,139) <b>5,333</b>	\$ (4,789) <b>3,983</b>
14	\$ (4,704) <b>3,836</b>	\$ (6,999) <b>6,131</b>	\$ (6,201) <b>5,333</b>	\$ (4,851) <b>3,983</b>
15	\$ (4,766) <b>3,836</b>	\$ (7,061) <b>6,131</b>	\$ (6,263) <b>5,333</b>	\$ (4,913) <b>3,983</b>

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16	\$ (4,828) <b>3,836</b>	\$ (7,123) <b>6,131</b>	\$ (6,325) <b>5,333</b>	\$ (4,975) <b>3,983</b>
17	\$ (4,890) <b>3,836</b>	\$ (7,185) <b>6,131</b>	\$ (6,387) <b>5,333</b>	\$ (5,037) <b>3,983</b>
18	\$ (4,952) <b>3,836</b>	\$ (7,247) <b>6,131</b>	\$ (6,449) <b>5,333</b>	\$ (5,099) <b>3,983</b>

## OUT-OF-STATE Tuition

<i>Group/First Enrolled</i>	<i>A&amp;S/Other</i>	<i>Business</i>	<i>Engineering</i>	<i>Jour/Music</i>
A/B/C/D: spring 2009 or earlier	\$ 12,700	\$ 14,300	\$ 13,620	\$ 12,830
E: summer 2009–spring 2010	\$ 13,350	\$ 15,010	\$ 14,500	\$ 13,475
F: summer 2010–spring 2011	\$ 14,000	\$ 15,750	\$ 15,200	\$ 14,150
G: summer 2011–spring 2012	\$ 14,425	\$ 16,200	\$ 15,650	\$ 14,575

## Graduate Tuition

### Tuition Status

**Standard Graduate Student** (master's and beginning doctoral): **Grad Status A and C**

**Master's Candidate** courses #6940–6949 (defending or completing thesis): **Grad Status B**

**Doctoral Candidate** courses #8990–8999 (passed comps, working on dissertation): **Grad Status D**

**Doctoral Thesis Only** courses #8990–8999 (some requirements not filled, not passed comps): **Grad Status E**

**Law Student: Grad Status Law**

### Tuition Table 1: IN-STATE Tuition, All Graduate Students

<i>Credit Hours</i>	<i>A&amp;S/Other</i>	<i>MBA 1st Yr.</i>	<i>MBA 2nd Yr.</i>	<i>BUSN</i>	<i>ENGR</i>	<i>JOUR/MUSC</i>	<i>LAW 1st Yr.</i>	<i>LAW 2nd Yr.</i>	<i>LAW 3rd Yr.</i>
1–3	\$1,563	\$2,583	\$2,325	\$2,241	\$2,043	\$1,563	\$4,869	\$4,512	\$4,044
4	\$2,084	\$3,444	\$3,100	\$2,988	\$2,724	\$2,084	\$6,492	\$6,016	\$5,392
5	\$2,605	\$4,305	\$3,875	\$3,735	\$3,405	\$2,605	\$8,115	\$7,520	\$6,740
6	\$3,126	\$5,166	\$4,650	\$4,482	\$4,086	\$3,126	\$9,738	\$9,024	\$8,088
7	\$3,647	\$6,027	\$5,425	\$5,229	\$4,767	\$3,647	\$11,361	\$10,528	\$9,436
8	\$4,168	\$6,888	\$6,200	\$5,976	\$5,448	\$4,168	\$12,984	\$12,032	\$10,784
9+	\$4,689	\$7,749	\$6,975	\$6,723	\$6,129	\$4,689	\$14,607	\$13,536	\$12,132

NOTE: **LAW LLM** for any number of hours is a flat rate of \$16,550.

### Tuition Table 2: OUT-OF-STATE Tuition, Status A, C, E, and Law

<i>Credit Hours</i>	<i>A&amp;S/Other</i>	<i>MBA</i>	<i>BUSN</i>	<i>ENGR</i>	<i>JOUR/MUSC</i>	<i>LAW JD</i>
1–3	\$4,209	\$4,800	\$4,728	\$4,593	\$4,257	\$5,937
4	\$5,612	\$6,400	\$6,304	\$6,124	\$5,676	\$7,916
5	\$7,015	\$8,000	\$7,880	\$7,655	\$7,095	\$9,895

6	\$8,418	\$9,600	\$9,456	\$9,186	\$8,514	\$11,874
7	\$9,821	\$11,200	\$11,032	\$10,717	\$9,933	\$13,853
8	\$11,224	\$12,800	\$12,608	\$12,248	\$11,352	\$15,832
9+	\$12,627	\$14,400	\$14,184	\$13,779	\$12,771	\$17,811

NOTE: LAW LLM for any number of hours is a flat rate of \$18,400.

### Tuition Table 3: OUT-OF-STATE Tuition, Status B and D

<i>Credit Hours</i>	<i>A&amp;S/Other</i>	<i>BUSN</i>	<i>ENGR</i>	<i>JOUR/MUSC</i>
1-3	\$2,525	\$2,837	\$2,756	\$2,554
4	\$3,367	\$3,782	\$3,674	\$3,406
5	\$4,209	\$4,728	\$4,593	\$4,257
6	\$5,051	\$5,674	\$5,512	\$5,108
7	\$5,893	\$6,619	\$6,430	\$5,960
8	\$6,734	\$7,565	\$7,349	\$6,811
9+	\$7,576	\$8,510	\$8,267	\$7,663

For further information on tuition see [bursar.colorado.edu/tuition-fees/tuition-and-fees-rate-sheets](http://bursar.colorado.edu/tuition-fees/tuition-and-fees-rate-sheets).

#### University Catalog 2012-2013

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# Financial Aid

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The Office of Financial Aid's primary goal is to ensure that students who have been admitted to the university will have access to the resources necessary to complete their education. CU-Boulder students receive financial aid each year from federal, state, university, and private sources. Total aid for graduates and undergraduates is approximately \$310 million and is a combination of loans, work-study, grants, and scholarships.

## Applying for Financial Aid

Students apply for financial aid by completing the Free Application for Federal Student Aid (FAFSA) at [www.fafsa.gov](http://www.fafsa.gov). Based on a federal formula, the FAFSA determines a student's eligibility for need-based and non-need-based financial aid, as well as some scholarships. Students must reapply for financial aid every year.

For financial aid for fall 2012, spring 2013, and summer 2013, the 2012–13 FAFSA must be submitted. Students should apply as soon as possible after January 1, 2012.

After submitting the FAFSA, applicants receive a Student Aid Report (SAR) from the federal processor. The Office of Financial Aid receives the SAR results electronically if CU-Boulder is listed on the application.

Students must be admitted to the university before their financial aid application can be considered. However, prospective students do not need to wait for formal acceptance to CU-Boulder before applying for financial aid or scholarships.

## *Eligibility*

Eligibility for financial aid is based on the cost of attending CU-Boulder and the amount students and their families are expected to contribute toward the cost of attendance. Each year the financial aid office calculates the cost of attendance using local and national cost-of-living data.

The expected family contribution (EFC) is determined by an analysis of the student's FAFSA. A student's financial need is calculated by subtracting the EFC from the cost of attendance.

The financial aid award is funded from a combination of need-based and non-need-based financial aid sources in an effort to meet each applicant's total financial eligibility. Students may need to borrow educational loans and work part-time while they are in school.

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# Financial Aid Awards

Most financial aid is awarded in April, but aid is offered as long as funds are available. Freshman and transfer students applying for aid for the 2012–13 academic year are encouraged to submit their FAFSA applications by April 1, 2012, in order to receive aid information in time to make an informed decision. Awards available to CU-Boulder students are listed below.

## *Loans*

Students submit the FAFSA to be considered for the following loan programs.

**Federal Direct Stafford Loan.** Funds are awarded and disbursed by CU-Boulder. Undergraduate students may qualify for a combination of subsidized (federal government pays the interest) and unsubsidized loans. The interest rate is fixed at 6.8 percent. Annual limits depend on the year in school; freshmen can be awarded up to \$5,500; sophomores, \$6,500; and juniors and seniors, \$7,500. Independent students may borrow additional unsubsidized loans; freshmen and sophomores, \$4,000; juniors and seniors, \$5,000.

The maximum loan a graduate student can borrow is \$20,500. The loan is unsubsidized and the interest rate is 6.8 percent.

Interest on unsubsidized loans can be repaid while the student is in school. Repayment begins six months after the student graduates or ceases to be enrolled at least half-time (6 credit hours for undergraduates; 4 credit hours for graduates).

**Federal PLUS Loan.** This federal loan is available to graduate students and parents of dependent undergraduate students. The interest rate is fixed at 7.9 percent for loans disbursed on or after July 1, 2006. Repayment begins within 60 days of full disbursement of the loan. Typically, repayment begins in March for an academic year loan; however borrowers may now request a deferment on payments until their student has finished with school. Borrowers must complete a credit check. Note: Borrowing a PLUS loan will be regarded as parental support on in-state residency petitions for dependent students.

## *Work-Study*

Students submit the FAFSA to be considered for need-based work-study. Work-study students earn their award by working for on-campus or approved off-campus agencies. Students may apply for a variety of jobs at competitive rates. Jobs can be found online through the portal for students. Students who are not awarded work-study may call **303-492-7349** to have their name added to the work-study waitlist.

## *Grants*

Grants are awards that do not have to be repaid. Students submit the FAFSA to be considered for federal, state, and institutional need-based grants (including Pell, SEOG, Colorado Responsibility Grant, etc.).

## *CU-Boulder Scholarships*

Students may apply for scholarships offered by the Office of Financial Aid through the student portal beginning December 1 each year. Your FAFSA results must be on file in the financial aid office no later than the first business day in March to be considered for scholarships with a financial need requirement.

Scholarships are highly competitive at CU-Boulder. The selection committee considers academic achievement, honors, leadership, school activities, and service to the community. Students should also search for scholarship opportunities within their academic program, college, club, or campus organization.

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## *Private External Scholarships*

Students who receive a private scholarship from an organization outside the university must report the scholarship via the student portal. In addition, students are encouraged to write to their donors and express their gratitude.

When a scholarship donor does not specify how to disburse the funds, the financial aid office equally divides awards of \$1,000 or more between the fall and spring semesters. Private scholarships less than \$1,000 are applied in full to the current semester bill.

Donors should mail their checks, payable to the University of Colorado, with a cover letter to:

**University of Colorado Boulder, Office of Financial Aid**, ATTN: Scholarship Services, 77  
UCB, Boulder, CO 80309-0077

If a student's scholarship check is not received by the bill payment deadline, he or she should make other arrangements to pay the bill.

## Drug Conviction

In accordance with the Higher Education Reconciliation Act of 2005, students who have been convicted under federal or state law for possession or sale of a controlled substance will be suspended from Title IV aid eligibility if the offense occurred while the student was receiving Title IV aid.

If a student is convicted for possession, the ineligibility period begins as of the date of the conviction and is:

- first offense = one year
- second offense = two years
- third offense = indefinite

If a student is convicted for sale of an illegal substance, the ineligibility period begins as of the date of the conviction and is:

- first offense = two years
- second offense = indefinite

A student may regain eligibility by successfully completing a drug rehabilitation program that complies with criteria established by the Department of Education. More information is available by calling the U.S. Department of Education at **1-800-433-3243**.

## Financial Aid Policies

### *Satisfactory Academic Progress*

Students who apply for financial aid at CU-Boulder are responsible for knowing and complying with the satisfactory academic progress policy. Briefly, the policy outlines the requirements to maintain satisfactory progress (i.e., minimum grade point average [GPA], completion rate, etc.), the consequences of failing to meet the requirements, and the process for appealing if the student loses eligibility.

### *Study Abroad*

Students must be enrolled in a CU-Boulder study abroad program to be eligible for financial aid

through CU-Boulder's financial aid office. Students participating in a study abroad program through another university are not eligible for financial aid from CU-Boulder.

## *Withdrawing*

If a student enrolls at CU-Boulder, receives financial aid, then withdraws, his or her financial aid is adjusted according to federal regulations. The student may owe a bill to the university after the financial aid is adjusted. Visit [www.colorado.edu/finaid/finaidpolicies.html](http://www.colorado.edu/finaid/finaidpolicies.html) for more information regarding these policies and others.

## Other Resources

### *Student Employment*

Jobs provide students with income, work experience, and the opportunity to explore career options. Research studies indicate that students who work are as successful academically as those who do not. Freshmen usually work 8–15 hours per week. The Student Employment Office posts an average of 800 part-time on-campus and off-campus jobs for students. In addition, an on-call temporary employment service allows students to register for occasional work including one-time child care, yardwork, and clerical jobs.

Visit the Student Employment Office in Regent Administrative Center 205 or call **303-492-7349** for more information.

### *Student Work Assistance Program (SWAP)*

This program gives students who are living in the residence halls a credit against their housing bill in exchange for hours worked in one of the dining centers. More information is available at **303-492-6325** or [SWAP@housing.colorado.edu](mailto:SWAP@housing.colorado.edu).

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# Housing

## On This Page:

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- [Graduate and Family Housing](#)
- [Off-Campus Student Services](#)

## Residence Halls

Living on campus in a university residence hall is considered an important part of student life. Almost 7,000 students are accommodated in single rooms, double rooms, multiple occupancy rooms, and apartments in 22 residence halls. All halls are coeducational, but in the majority of cases, specific wings and floors house occupants of the same gender.

Each fall the residence halls provide a new home for over 5,100 entering freshmen. Subject to the availability of space, all freshmen are required to live in a residence hall for two academic semesters (a summer term does not count as an academic semester), unless they are married or live with parents and have permission to commute. Requests for permission to reside off campus for other reasons are considered on their merits, taking into account individual circumstances.

The residence halls provide a range of services and programs designed to support the intellectual, social, and personal growth of single student residents. All residence halls, for example, offer tutoring services to residents at no cost. Some halls offer special facilities, such as an academic skills lab, or a music room. A variety of academic and social programs are sponsored by residence hall and other university staff.

The residence hall dining service hours are planned to be convenient for most students' schedules, and self-serve salad bars are available at noon and evening meals. Steak nights, ice cream socials, and late-night coffee and cookie breaks during exam week are among the special activities planned during the semester. The dining program permits students (regardless of hall assignment) to eat in any residence hall dining room.

For more information about university housing options and/or permission to reside off campus, prospective students may contact Occupancy Management via e-mail at [reservations@colorado.edu](mailto:reservations@colorado.edu) or by mail at **Occupancy Management**, Center for Community, Room S300, 159 UCB, Boulder, CO 80309-0159.

## *Residential Academic Programs*

A number of the residence halls are home to residential academic programs (RAPs), whereby students live in and take special classes in their hall that meet core curriculum and/or other course requirements. These special academic programs are described in the [College of Arts and Sciences](#) and [Other Academic Programs](#) sections. Most of these programs charge additional fees. They include:

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- **The Baker Residential Academic Program** is designed for freshmen and sophomores in the College of Arts and Sciences interested in the natural sciences and environmental studies.
- **The Communication and Society Residential Academic Program** in Buckingham Hall offers 200 first- and second-year students a program to explore many different areas of communication, ranging from processes of face-to-face interaction to the impact of media and technology on daily life.
- **The Engineering Honors Program** in Andrews Hall combines a commitment to excellence with the cultivation of a community that is ambitious without being competitive. Comprised of first- through fourth-year students and a faculty-in-residence (and his family), the program offers special courses, in-hall and campus research opportunities, leadership experience, and design projects.
- **The Farrand Residential Academic Program** offers small seminar courses in the liberal arts taught by award-winning faculty selected to help create a close intellectual and social community. About 400 mostly first-year students from the College of Arts and Sciences participate. The program focuses on the study of the humanities within the larger frame of culture and society.
- **The Global Studies Residential Academic Program** promotes the recognition of global interdependence, encourages the study of foreign languages and international affairs, and emphasizes the value of international education. This year-long program is housed in the newly renovated Smith Hall and connects participants with a peer group of students who have similar interests and goals. The staff is knowledgeable about CU-Boulder's many international resources, and the faculty incorporate international work into their teaching and research.
- **The Health Professions Residential Academic Program** opens in 2012 with space for 75 students interested in exploring course work and career options in the health professions such as practitioners, researchers, or policymakers. Courses offered will include both natural science and social science, as well as other general education courses appropriate for first- and second-year students interested in study or careers related to health care or health care policy.
- **The Honors Residential Academic Program** is the residential component of the Honors Program of the College of Arts and Sciences. It is open to approximately 300 first-year and continuing honors-qualified students. Participants live in Arnett Hall and the East wing of Smith Hall.
- **The Leadership Residential Academic Program** at Williams Village is dedicated to the study and practice of leadership for the purpose of educating culturally competent leaders who champion an ethic of civic and social responsibility. The Leadership RAP offers two studies programs: the Ethnic Living and Learning Community Leadership Studies Program (ELLC) and the Chancellor's Leadership Studies Program (CLSP).
- **The Libby Arts Residential Academic Program** (LRAP) is designed primarily for first- and second-year College of Arts and Sciences students interested in the arts. LRAP offers a curriculum in the arts, including visual arts, theatre and dance, film studies, and writing. The program also offers a variety of courses that fulfill university core requirements from a number of disciplines including economics, art history, and integrative physiology. In addition to small class sizes in a living and learning environment, co-curricular activities provide a sense of community and a unique opportunity to interact with faculty and LRAP advisors across art disciplines.
- **The Sewall Residential Program** is a co-educational program for first- and second-year students enrolled in the College of Arts and Sciences or the Leeds School of Business who have an interest in the study of history and culture. Its award-winning faculty offer small seminar-style courses and a variety of co-curricular activities and outreach opportunities that emphasize the connections between modern culture and its historical roots.
- **The Sustainable by Design Residential Academic Program** (SbD) offers unique interdisciplinary educational opportunities in a residential community setting. The program will

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help to develop students who are globally focused leaders, well-versed in both the technical and societal aspects of sustainable designs. Along with its program partner, Social Entrepreneurship for Equitable Development and Sustainability (SEEDS), SbD creates a shared vocabulary and literacy to enable students to develop successful approaches to meeting emerging challenges to human society and the planet. Open to all majors.

- **Social Entrepreneurship for Equitable Development and Sustainability (SEEDS)** includes interdisciplinary faculty and students interested in developing innovative, self-sustaining solutions for critical social environmental issues around the globe. Small courses emphasize collaborative problem-solving and hands-on projects. Core classes relevant to the SEEDS focus are available. Open to all majors.

## *Living and Learning Communities*

Living and Learning Communities also enhance the learning environment. Several communities offer themed housing without the formal connection to faculty found with the RAPs.

- **Active Living** offers students in Darley North a living community in which all participants strive to lead an intentionally active lifestyle. Events in the program inspire the holistic development of mind, body, and spirit. Ultimately, Active Living participants aim to achieve academic success and fulfillment of their personal needs and goals.
- **The B<sup>3</sup> Business Living and Learning Community** is located in Darley South Residence Hall. The program provides a multiyear, all-inclusive, student-development-centered experience to a select group of 140 business undergraduate students. Areas of focus include business ethics, leadership, and the role of business on the environment. Students will benefit from developing connections within their peer group as well as faculty, academic advisors, support staff, and current student leaders.
- **The Hallett Diversity Program** is a community that provides a safe space for students to talk and learn more about social justice issues through conferences, events, and dialogue. This program partners with the Spectrum Living & Learning Community.
- **The Quadrangle Engineering and Sciences Living and Learning Community** is comprised of students studying engineering, applied science, or mathematics who live in Aden, Brackett, Cockerell, or Crosman halls. This program offers residents on-site tutoring, access to a computer lab configured to match that in engineering computer labs, enhanced academic support services, wireless computer access, and calculus work groups in residence. An additional fee of \$130 per academic year was charged in 2011–12 to cover support activities (fee is subject to change).
- **Spectrum**, part of the Hallett Diversity Program, offers a variety of social and educational activities including leadership opportunities. Spectrum is designed to provide a supportive place for individuals of all sexual identities including gay, lesbian, bisexual, transgender, and queer people and their allies. The Spectrum living area has gender neutral bathrooms.
- **SPIN** (Student Peer Initiative Network) provides support and resources for sophomore and upperclass residents within Willard Hall. This LLC focuses on both academic programming and social activities for non-freshmen.
- **Transfer WEST** (Welcoming Exceptional Students in Transition) is a unique social, academic, and resource community just for transfer students. Participants have previously attended other universities or colleges but are new to CU. The program hosts various social events and activities as well as academic advisement and career-oriented programs geared to help transfer students be successful at CU-Boulder.

## *Other Academic Programs in the Residence Halls*

The Community on Academic Programs in the Residence Halls (CAPRH) develops academic programs in CU-Boulder's residence halls. Funded projects include a faculty luncheon program in the halls, informal activities that promote out-of-the-class-room interaction between faculty and students, and special arts and sciences core curriculum courses presented directly in the halls. All programs

facilitate greater interaction between faculty and students, and foster the integration of students' academic life with their campus residence hall life. Interested students, faculty, and staff are encouraged to participate in the planning and submission of projects to the council.

### *Room and Board Rates per Semester*

Residence hall room and board rates per person, per semester, for the 2011–12 academic year were as follows:

19 meals/week and double room: \$5,639

19 meals/week and single room: \$6,498

Different meal plans are available. A modest rate increase should be expected for the 2012–13 year.

### *Application for Residence Hall Housing*

New freshman and transfer students receive information from Housing & Dining Services about applying for accommodations after they have confirmed their intent to attend the university. Housing assignments are made on a first-come, first-served basis. The earlier applications are submitted, the better chance students have of being assigned to the residence hall of their choice. (Please note that Housing & Dining Services does not guarantee assignment to a particular building or program, type of accommodation, or a specific roommate.)

*Note: Application for admission to the university and application for housing are two separate transactions. Application for housing does not guarantee admission to the university, nor does admission to the university guarantee that housing will be available. For information regarding admission notification and confirmation procedures, see the Undergraduate Admission section.*

A security deposit (\$300 for 2012–13) is required to apply for residence hall accommodations. (Deposit is subject to change.)

All housing contracts are for the full two-semester academic year or remainder thereof. An early termination of contract is subject to financial penalties as stated in the residence halls contract.

## Graduate and Family Housing

The university offers studio, one-, two-, and three-bedroom furnished and unfurnished apartments for student, staff, and faculty families. The university's Children's Center provides day care for the children of family housing residents, staff, and faculty. For information on applying to graduate and family housing, write the Graduate & Family Housing Office, 1350 20th Street, University of Colorado at Boulder, Boulder, CO 80302, call **303-492-6384**, or e-mail [familyhousing@colorado.edu](mailto:familyhousing@colorado.edu). The housing website is [housing.colorado.edu](http://housing.colorado.edu).

## Off-Campus Student Services

Off-Campus Student Services (a service of CUSG) maintains listings of apartments, houses, and rooms for rent in the Boulder area. Currently enrolled students may view these listings online at [www.colorado.edu/ocss](http://www.colorado.edu/ocss). The office also maintains a detailed list of apartments available for pickup in the office.

The department has a staff attorney available to advise students about leases, security deposits, and ways to avoid landlord/tenant problems. Office assistants will help students locate properties and answer questions about the surrounding neighborhoods. During the spring semester, the office sponsors two off-campus housing fairs where landlords, property managers, and related businesses offer their services to students in a tradeshow fashion.

For additional information, call **303-492-7053** or visit [www.colorado.edu/OCSS](http://www.colorado.edu/OCSS). Office hours are 9:00 a.m.–5:00 p.m., Monday–Friday. Summer hours are 7:30 a.m.–4:30 p.m.

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# Registration

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Students should refer to the academic calendar on the registrar's website ([registrar.colorado.edu](http://registrar.colorado.edu)) for specific dates and deadlines that apply to the registration process. Students should also consult individual college and school sections of this catalog and their dean's office for additional information on special requirements and procedures. The following registration policies are intended to serve as general guidelines.

Registration generally involves three steps: registering for courses, obtaining a bill before classes begin, and dropping and adding classes during drop/add periods, if needed.

Students who require accommodations because of a disability should notify the Office of the Registrar, University of Colorado Boulder, 20 UCB, Boulder, CO, 80309-0020, or call **303-492-6970**.

## Confirmation Deposit

All degree students pay a one-time-only \$200 confirmation deposit that allows them to enroll without paying a registration deposit each term.

Confirmation deposits are refunded to students upon graduation or official withdrawal from CU-Boulder within established dates and guidelines. All refunds are reduced by any outstanding financial obligations. Interest earned from confirmation deposits is used for student financial aid.

The \$200 deposit is required of all degree students. New students are required to pay the deposit when they first confirm their intent to enroll at CU-Boulder and are not permitted to register until the confirmation deposit is paid.

All questions regarding the confirmation deposit policy should be directed to the Office of Admissions, Regent Administrative Center 125, **303-492-6301**.

## Registering for Courses

All CU-Boulder students register for courses via the student portal, [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu).

Registration information is sent to new freshmen as well as new transfer, new graduate, and readmitted students when they have confirmed their intent to enroll, with the exception of new

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freshmen and transfer students in arts and sciences, who receive their registration information at orientation. Continuing students are notified each semester of times, places, and requirements for registration.

## Bill Distribution

Bills are online on CUBill&Pay before each semester begins, depending on when students have registered. Bill distribution information is at [www.colorado.edu/bursar](http://www.colorado.edu/bursar) and in the *Summer Session Catalog*. Students access their online bill on [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu).

## Drop/Add

Students can adjust their schedules by dropping and adding classes via the student portal, [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu). For fall and spring semesters, drop/add activity takes place by time assignment during the Friday prior to the first day of the semester. After that, the system is available to all students through the drop and add deadlines.

For more information, visit the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu).

### *Drop/Add Deadlines*

Specific drop and add deadlines for each fall and spring semester are listed on the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu). Summer deadlines appear in the *Summer Session Catalog*.

1. Students are allowed to add courses through the add deadline with no authorization signatures required (second Wednesday of instruction in the fall or spring semester; the deadline varies in the summer). After the add deadline in fall and spring semesters, the instructor's approval is required to add a course through the "deadline to add a course without petitioning the dean" (third Friday of instruction), unless enrollment levels are reached earlier. Courses cannot be added after this deadline. In summer, courses cannot be added after the add deadline.
2. Students can drop courses through the drop deadline with no authorization signatures required (third Wednesday of instruction in the fall or spring semester; the deadline varies in the summer). Tuition and fees are not assessed for courses dropped by this deadline. After the drop deadline, the instructor's signature is required to drop a course through the "deadline to drop a course without petitioning the dean." The signature indicates that the student is passing the course; students who are failing their courses are not permitted to drop. Courses dropped after the drop deadline appear on the transcript with a *W* grade and no tuition adjustment is made.
3. After the "deadline to drop a course without petitioning the dean" (six weeks after classes begin in the fall or spring semester; the deadline varies in the summer), courses may not be drop-ped unless there are documented circumstances clearly beyond the student's control (e.g., accident or illness). In addition to obtaining the instructor's signature, students must petition their dean's office for approval to drop the course. Petitions normally are not approved after this date.
4. Students dropping all of their courses should refer to the Withdrawal Procedures section for more information.

## Credit/No Credit

Students who wish to take course work for no credit should indicate this at the time they register for courses or during the final drop/add period; changes in credit registration are not permitted after the drop/add deadline in the summer or after the third Friday of the semester in the fall and spring.

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Tuition is the same whether or not credit is received in a course.

## *Pass/Fail (P/F)*

Students should refer to the college and school sections of this catalog to determine the number of *pass/fail* credit hours that may be taken in a given semester or credited toward a bachelor's degree. Exceptions to the *pass/fail* regulations are permitted for certain courses that are offered only on a *pass/fail* basis. Procedures for requesting *pass/fail* enrollment can be found on the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu) or in the *Summer Session Catalog*.

Students who wish to register for a course on a *pass/fail* basis should do so when first registering for their courses. The *pass/fail* option is only available for courses that allow a *pass/fail* option. If a student decides to change from graded to *pass/fail*, this can be done using the Edit button in the student portal in the "Add Deadline" feature. Changes to or from a *pass/fail* basis are not permitted after the third Friday of the semester in the fall and spring or after the drop/add deadline in the summer.

All students who register on a *pass/fail* basis appear on the class roster, and a letter grade is assigned by the instructor. When grades are received in the Office of the Registrar, those courses that have a *pass/fail* designation are automatically converted from letter grades to *P* or *F*. Grades of *D-* and above are considered passing grades. A *P* grade does not affect a student's GPA. An *F* grade does not affect a student's GPA.

## *Variable Credit*

All independent study courses, and occasionally regular courses, are offered on a variable-credit basis. Students must designate the number of credit hours they wish to receive for the course at the time of registration. Consult the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu) or the *Summer Session Catalog* for variable-credit hour ranges for particular courses.

## Time Off Program (TOP) *(for Graduate Students Only)*

The Time Off Program (TOP) is a planned-leave program for degree-seeking CU-Boulder graduate students who wish to take a leave of absence from the university. Students must be in good ethical and academic standing with the university. Students on TOP will be allowed three inactive semesters, including summer, to pursue academic or nonacademic interests, and they do not need to reapply to the university to return.

TOP guarantees participating students a place in their current college or school and in their current major when they return to the university.

Additional information and a TOP application can be obtained from the Office of the Registrar, Regent Administrative Center 105, or at the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu). A nonrefundable \$50 program fee is required at the time of application to TOP.

Note: Graduate students registered for the semester they plan to begin TOP must formally withdraw. See the withdrawal section below. Call **303-492-6970** for more information, or visit the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu), or e-mail [timeoff@colorado.edu](mailto:timeoff@colorado.edu).

## StayConnected *(Optional for Undergraduate Students Only)*

The optional StayConnected program is a benefits-only program. This program gives certain

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advantages to eligible degree-seeking undergraduate students who are taking leave from the university for the 3-4 semesters they are not registered for courses.

Some of the benefits offered through the program are only available for an additional fee. A StayConnected application and a nonrefundable \$50 administrative fee is required. For an application and more information, visit the Office of the Registrar, Regent Administrative Center 105, call **303-492-6970**, visit the registrar's website at [registrar.colorado.edu](http://registrar.colorado.edu), or e-mail [stayconnected@colorado.edu](mailto:stayconnected@colorado.edu).

## Withdrawal Procedures

Students may officially withdraw from the university by filling out a withdrawal form in the Office of the Registrar, Regent Administrative Center 105, by scanning and e-mailing a withdrawal form to [withdraw@colorado.edu](mailto:withdraw@colorado.edu), by mailing a withdrawal form to the Office of the Registrar, University of Colorado Boulder, 20 UCB, Boulder, CO 80309-0020, or by faxing a withdrawal form to **303-492-8748**. Using ONLY the student's official colorado.edu e-mail account, they may e-mail a request to withdraw (no need for the form). Students should include the full name and identifying information (student ID number), semester or semesters for which they are withdrawing, reason for withdrawal (without a reason, refunds may be denied), permanent address, and telephone number. If providing this information in a letter, they should also include the date and student signature.

In all terms, students are not permitted to withdraw after the last day of classes.

Failure to withdraw will result in a failing grade being recorded for every course taken in a term and makes a student liable for the full amount of tuition and fees for that term. For refund stipulations, see the withdrawal policy in this catalog regarding tuition and fees.

Rules for withdrawing may vary with each college and school. Students anticipating a withdrawal should consult with their dean's office and read the withdrawal information on the registrar's website at [registrar.colorado.edu/students/withdraw.html](http://registrar.colorado.edu/students/withdraw.html) or in the *Summer Session Catalog* for specific withdrawal procedures. More information is available in the Office of the Registrar, Regent Administrative Center 105, **303-492-6970**, on the Web at [registrar.colorado.edu](http://registrar.colorado.edu), or by e-mailing [withdraw@colorado.edu](mailto:withdraw@colorado.edu).

Withdrawing students (including students applying for the Time Off Program) with Federal Perkins/NDSL loans must complete a loan exit interview before leaving the university. Failure to do so will result in a "hold" on the student's record. This hold will prevent the student from receiving a diploma or an academic transcript from the university and from registering for future terms. In order to complete a loan exit interview, contact the university Student Loans department in the Bursar's Office at **303-492-5571**, or **1-800-925-9844**.

Beginning fall semester 2010, students who withdraw and then wish to return to the university will have three semesters, including summer, to return to the university without having to reapply for admission. See information and exclusions under "Readmit Students" or visit [registrar.colorado.edu/students/withdraw.html](http://registrar.colorado.edu/students/withdraw.html).

## Other Registrations

### *Concurrent Registration*

Boulder-campus students who are unable to obtain courses required for their degree program on the Boulder campus may be allowed to register for up to two courses or 6 credit hours, whichever is greater, on another University of Colorado campus. (Note: Application forms and registration are done by the "home" campus.) Participating students must be enrolled for at least one course on the Boulder campus.

Note: Graduate students should check with the Office of the Registrar for exceptions to the home-campus registration requirement and limitation on credit hours at the host campus.

Students taking required courses in the Leeds School of Business or in the Graduate School of Business Administration may only exercise the concurrent registration option if they are in their graduating semester; business students who are two semesters from graduating and who cannot obtain courses necessary to complete a prerequisite sequence may also be allowed to use this option. The courses must either be required for graduation or unavailable on the Boulder campus, or the courses must conflict with another required course in which the student is enrolled.

Boulder students exercising this option will pay tuition for their total credit hours at Boulder-campus rates. Concurrent registration forms and instructions are available at the Office of the Registrar, Regent Administrative Center 105, 9:00 a.m.– 5:00 p.m. Registration takes place only during the designated schedule-adjustment period of the host campus.

### *Registration on Another CU Campus*

Boulder-campus students who wish to take course work on another campus of the University of Colorado and not through the concurrent registration program may be able to register on that campus independent of Boulder-campus registration. However, students must apply for admission to and follow the registration procedures established by the other campus. Students should check with their dean's office for approval.

### *Late Registration*

Students in certain categories may be allowed to register late for a fall or spring semester if not registered in any classes as of the third Friday of the semester. These students are assessed a \$100 late registration fee, if eligible for late registration.

Graduate students registering as candidates for degree or for thesis hours must register by the third Friday of classes in a fall or spring semester or be subject to the \$100 late registration fee, if late registration is held for their category. For more information, call **303-492-6970**.

### *Registration for Faculty and Staff*

All permanent faculty and staff with a 50 percent or greater appointment are eligible to use the faculty/staff tuition benefit to have up to 9 credit hours of tuition waived each year, beginning with the summer semester. The tuition benefit can also be extended to eligible dependents of faculty and staff. All participants of this program must be admitted to the university as non-degree or degree-seeking students. Faculty, staff, and their dependents who wish to enroll in courses using the tuition benefit must submit a faculty/staff tuition waiver form to Payroll and Benefits Services. Faculty and staff who are not continuing students (i.e., enrolled in one of the last three semesters) must also submit the appropriate admission application as well as the tuition benefit form. Applications and the tuition waiver forms are available at the Bursar's Office or at [bursar.colorado.edu/resources/tuition-benefit](https://bursar.colorado.edu/resources/tuition-benefit).

The tuition waiver form must be submitted by the deadline published on the Payroll and Benefits website. To take advantage of the tuition benefit, faculty, staff, and their dependents must wait until the first day of classes for the semester. For summer semester, registration starts the first day of classes for the summer session in which you plan to enroll. Additional classes that will be paid by the student may be registered for prior to the first day of class. Detailed information is available under the faculty/staff link at [bursar.colorado.edu](https://bursar.colorado.edu) and on the Payroll and Benefits website at: <https://www.cu.edu/pbs/tuition-benefit>.

## Commencement

Students must apply to their dean's office for graduation at least one semester before they intend to graduate. Graduation ceremonies are held in May and December and are open to the public. No tickets are required. The May commencement is held at Folsom Stadium and the December ceremony is held in the Coors Events/Conference Center. Students receiving their degrees in August should check with their dean's office if they wish to attend the May or December ceremony. Details concerning the ceremony are e-mailed to graduating students approximately one month before each ceremony. Students may also access the current semester's ceremony information at [www.colorado.edu/commencement](http://www.colorado.edu/commencement).

Only doctoral and law graduates receive their diplomas at commencement. Diplomas are mailed to all other students approximately two months after the ceremony. Standard diploma size is 8 x 10 inches.

Graduating students with Federal Perkins/NDSL loans must complete a loan exit interview and clear all outstanding financial balances before leaving the university. Failure to do so will result in a "stop" on the student's record. This stop prevents receipt of a diploma or an academic transcript of work at the university and registration for future terms. Students can complete a loan exit interview by contacting the university Student Loans department in the Bursar's Office at **303-492-5571**, TTY **303-492-3528**.

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## Academic Integrity

A university's intellectual reputation depends on maintaining the highest standards of intellectual honesty. Commitment to those standards is a responsibility of every student, faculty member, and staff member on the University of Colorado Boulder campus.

### *Honor Code*

A student-run Honor Code was instituted on the Boulder Campus in 2002. The intent of the Honor Code is to establish a community of trust in which students do not plagiarize, cheat, or obtain unauthorized academic materials. An Honor Code Council collaborates with the colleges and schools in addressing allegations and instances of academic dishonesty and in assisting to educate all members of the university community on academic integrity issues.

Breaches of academic honesty include but are not limited to cheating, plagiarism, and the unauthorized possession of examinations, papers, and computer programs.

A student accused of academic dishonesty may either accept the accusation made by a faculty member or request a hearing before a student panel, which will make a decision on the accusation of academic dishonesty. In addition to academic sanctions imposed by the faculty, students found responsible for academic dishonesty also face consequences from the Honor Code Council including but not limited to Honor Code probation, education seminars concerning academic writing and ethics, suspension, and expulsion from the university. More information about CU-Boulder's Honor Code may be found at [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode).

The following terms are defined here for the benefit of all members of the university community.

### *Cheating*

Cheating is defined as using unauthorized materials or receiving unauthorized assistance during an examination or other academic exercise. Examples of cheating include: copying the work of another student during an examination or other academic exercise or permitting another student to copy one's work; taking an examination for another student or allowing another student to take one's examination; possessing unauthorized notes, study sheets, examinations, or other materials during

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an examination or other academic exercise; collaborating with another student during an academic exercise without the instructor's consent; using unauthorized technologies, such as calculators, computers, and smart phones; and/or falsifying examination results.

## *Plagiarism*

Plagiarism is defined as the use of another's ideas or words without appropriate acknowledgment. Examples of plagiarism include: failing to use quotation marks when directly quoting from a source; failing to document distinctive ideas from a source; fabricating or inventing sources; and copying information from computer-based sources, i.e., the Internet.

## *Unauthorized Possession or Disposition of Academic Materials*

Unauthorized possession or disposition of academic materials may include: selling or purchasing examinations, papers, reports or other academic work; possessing unauthorized solutions, instruction manuals, or texts; taking another student's academic work without permission; possessing examinations, papers, reports, or other assignments not released by an instructor; and/or submitting the same paper for multiple classes without advance instructor authorization and approval.

## Academic Program Discontinuance

In the event a degree program is discontinued, students currently enrolled in the program have a four-year period in which to complete their degree requirements. This four-year period starts at the end of the academic year in which the Colorado Department of Higher Education (CDHE) takes action to discontinue the program. No new or returning students will be admitted into a discontinued degree program. Students not completing the degree requirements in the four-year period are not permitted to receive the discontinued degree. In such cases, credits accumulated may be applied to the overall number of credits required toward graduation, but the student must seek the advice of their college or school to determine how these credits might apply to a new degree program.

## Alcohol and Other Drugs Policy

In order to create the best possible environment for teaching and learning, the University of Colorado Boulder affirms its support for a responsible campus policy that addresses the inappropriate use of alcohol and other drugs.

The university complies with all federal, state, and local laws concerning alcohol and illegal drugs. CU-Boulder students are responsible for acquainting themselves with the laws and university policies regarding alcohol and illegal drugs. University policies regarding alcohol consumption and illegal drug use are described in several publications: *Students' Rights and Responsibilities Regarding Standards of Conduct and Alcohol and Drug Policy*, available in the Office of Student Conduct; *A Guide to Residence Hall Living*, available at the Department of Housing; and *Ralphie's Guide to Student Life*, distributed online to new and continuing students.

For more information on the CU-Boulder alcohol and other drugs policy, go to [housing.colorado.edu/policies-procedures/residence-hall-handbook](https://housing.colorado.edu/policies-procedures/residence-hall-handbook). Wardenburg Health Center provides individual and group counseling for students with substance abuse problems. They can be reached at **303-492-5654**. For information regarding policies within campus housing, contact Residence Life, **303-492-7260**. For information regarding the Student Conduct Code, contact the Office of Student Conduct, **303-492-5550**. For information on alcohol and drug enforcement, including municipal and state laws, call the University Police, **303.492.8168**.

## Colorado Creed

The Colorado Creed, developed by students in 2003, is a code of conduct, a lifestyle, by which

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students at CU-Boulder live. The text of the Creed is:

**As a member of the Boulder community and the University of Colorado, I agree to:**

- **Act with honor, integrity, and accountability in my interactions with students, faculty, staff, and neighbors.**
- **Respect the rights of others and accept our differences.**
- **Contribute to the greater good of this community.**

**I will strive to uphold these principles in all aspects of my collegiate experience and beyond.**

For further information, go to [coloradocreed.org](http://coloradocreed.org) or call **303-492-8476**.

## Copyright and File Sharing

Unauthorized distribution of copyrighted materials, regardless of the medium, is illegal. In order to deter unauthorized use, the university utilizes technological solutions to curb this activity. Still, the university regularly receives notices of copyright violations and is required by law to take action. Initial action taken by the university includes a three-strike rule, which includes a mandatory educational component as well as the possibility of suspension of network privileges. The copyright website ([ucblibraries.colorado.edu/copyright](http://ucblibraries.colorado.edu/copyright)) provides additional resources about the legitimate use of copyrighted materials in academic and other work. Be informed and understand copyright and fair use guidelines and apply them appropriately!

## Discrimination and Harassment, Office of

The University of Colorado Boulder is committed to fostering a collegial academic community whose mission requires a positive learning, working, and living environment. As a place of work and study, CU-Boulder should be free of sexual harassment as well as discrimination and harassment based upon race, color, national origin, sex, age, disability, creed, religion, sexual orientation, or veteran status and related retaliation. Discrimination, harassment, and related retaliation are prohibited on campus and in university programs. The university is committed to taking appropriate action against those who violate the university's policies prohibiting discrimination and harassment.

No retaliation of any kind shall be taken against an individual for complaining about or participating in any procedure to address a complaint of discrimination or harassment. It is a violation of the policies if an individual intentionally alleges false complaints of discrimination, harassment, or retaliation or provides false information during the course of an investigation.

For information or copies of the University of Colorado Policy on Sexual Harassment, the University of Colorado Policy on Conflict of Interest in Cases of Amorous Relationships, or the University of Colorado Boulder Policy on Discrimination and Harassment, please call **303-492-2127** or visit the Office of Discrimination and Harassment website at [www.colorado.edu/odh](http://www.colorado.edu/odh).

## Final Examination Policy

It is the policy of the University of Colorado Boulder to adhere to the final examination schedule as published in the online at the registrar's website ([registrar.colorado.edu](http://registrar.colorado.edu)) each semester. While it may be appropriate not to give a final in some cases, such as laboratory courses, seminars, and colloquia, final examinations are integral parts of the instructional program and should be given in all other undergraduate courses. Unless notified otherwise in writing during the first week of classes, students should assume that an examination will be given.

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In addition to the principles stated above, the following guidelines should be followed by all faculty members and administrators in order to assure fairness and the best possible educational experience for students.

1. The final examination in a course must be given as scheduled and not at other times, even if the faculty member and all students in a course agree to such a change.
2. The week of classes preceding the scheduled final examination period should be used primarily for continued instruction and may include the introduction of new material. No hourly examinations are to be given during the seven days preceding the start of the final examination period. However, lab practicums and seminar presentations may be scheduled during this week.
3. Individual students may be granted a variance from these policies, provided the instructor is satisfied that the exception is based on good and sufficient reasons, and that such an exception for an early or late examination will not prejudice the interests of other students in the course.
4. When students have three or more final examinations on the same day, they are entitled to arrange an alternative examination time for the last exam scheduled on that day. Such arrangements must be made no later than the end of the sixth week of the semester. Students are expected to provide evidence that they have three or more examinations to qualify for exceptions.
5. This policy applies to all undergraduate students, including seniors. Graduating seniors are not exempted from final examinations. Such exemptions are inappropriate on both procedural and academic grounds.

## Personal Safety on Campus

While the University of Colorado Boulder is a relatively safe place to be, the campus is not a haven from community problems. Through the joint effort of various organizations on campus, CU is committed to providing ample safety resources for faculty, staff, and students.

Specific efforts to promote safety on campus include the provision of adequate lighting, police protection, educational programs, and special prevention programs, such as the CU NightRide escort services and laptop and bicycle registration programs. Emergency telephones are located on campus to provide direct access to the police dispatcher. See the university's parking and traffic map in the Parking Services Office or *Ralphie's Guide to Student Life* for exact locations of these phones.

In compliance with the Federal Crime Awareness and Campus Security Act of 1990 and the Higher Education Amendments of 1992, 1998, 2000, and 2008, students and employees receive (at the start of the fall semester) information on campus security policies and programs, including crime rate information. In any emergency or life-threatening situation, always call **9-1-1**.

Members of the university community are encouraged to report any incident of threatening or harmful behavior to the administrator closest to the situation and/or the University Police at **303-492-6666**. Other resources include the Office of Student Conduct at **303-492-5550**, the Ombuds Office at **303-492-5077**, and the CU-Boulder Alcohol and Other Drugs Program at **303-492-5703**.

Additional safety information can be found at [www.colorado.edu/police](http://www.colorado.edu/police) and [www.colorado.edu/safety](http://www.colorado.edu/safety).

## Smoking Policies

Campuswide smoking regulations are not intended to deny smokers their prerogatives, but rather to limit the potential adverse effects of smoking on others.

The Boulder campus smoking policy states:

- There will be no smoking or sale of tobacco products in any Boulder campus-owned or leased building, except as provided below. This includes hallways, classrooms, offices, restrooms, meeting rooms, lobbies, elevators, shops, cafeterias, snack bars, waiting rooms, indoor or open-air athletics facilities, and performance halls. There also will be no smoking in campus-owned or leased vehicles.
- Smoking may be permitted in accordance with the policies of Boulder Campus Housing Administration in buildings providing overnight accommodations. Boulder Campus Housing Administration will provide information regarding its policies to all housing residents and guests.
- Smoking is not permitted in the seating areas of Folsom Stadium and the Mary Rippon Theatre and their contiguous buildings. Designated smoking zones have been created in well-ventilated areas outside the seating areas.
- Smoking and the sale of tobacco products may be permitted in designated food service areas and lounges in accordance with the policies of that facility. Designated smoking areas must be well posted and have adequate ventilation and separation for nonsmokers. Designated smoking areas must be reviewed and approved by the Department of Environmental Health and Safety (EH&S). Any disputes regarding the recommendations of EH&S will be referred to the vice chancellor for administration for resolution.
- Smoking may be permitted in laboratories conducting sponsored research on the effects of smoking. Designated laboratories must be well posted and have adequate ventilation and separation for nonsmokers. These labs must be reviewed and approved by EH&S. Any disputes regarding the recommendations of EH&S will be referred to the vice chancellor for administration for resolution.
- Smoking areas are permitted outside of university facilities provided that these areas are located far enough away from doorways, windows, and ventilation systems to prevent smoke from entering enclosed buildings and facilities. Check with EH&S for details.
- Signs posted at all building entrances shall state that smoking is prohibited in the building.
- Smokers and nonsmokers need to remain courteous to each other. Since smokers cannot smoke while working, they may want to take "smoke breaks." As long as their absences fall within applicable work-break policies, accommodations should be made by supervisors and colleagues. Smokers are reminded that a wish to smoke is not a sufficient reason to be gone in excess of the standard work-break.
- All members of the university community are responsible for compliance with this policy. Violations of this policy by university employees will be referred first to the violator then, if agreement cannot be reached, the violation should be reported to the appropriate appointing or supervisory authority for resolution.

Those employees who wish to stop smoking may call the Employee Assistance Program (**303-492-6766**) for information on available programs. For more information on the campus smoking policy, contact the office of the vice chancellor for administration.

## Student E-mail Policy

All CU students receive an e-mail account from the university, which is an official means of sending information to students. Students are responsible for maintaining this CU e-mail address. The official e-mail address can be used by professors to contact students and provide course-related information. Administrative offices, such as the Office of the Registrar, use official e-mail addresses to contact students and provide important information. Students are responsible for frequently checking their official CU e-mail address. For more information on the student e-mail policy, visit [www.colorado.edu/policies/student-e-mail-policy](http://www.colorado.edu/policies/student-e-mail-policy) or call the IT Service Center at **303-735-HELP** or e-mail them at [HELP@colorado.edu](mailto:HELP@colorado.edu). To learn more about student e-mail accounts, visit

# Student Conduct Policies and Procedures

## *Student Conduct Code*

The purpose of the Student Conduct Code is to maintain the general welfare of the university community. The university strives to make the campus community a place of study, work, and residence where people are treated, and treat one another, with respect and courtesy. The university views the student conduct process as a learning experience that can result in growth and personal understanding of one's responsibilities and privileges within both the university community and the greater community. All students must follow these standards. Students who violate these standards will be subject to the actions described below. These procedures are designed to provide fairness to all who are involved in the conduct process.

## *Authority*

Article 7, Part B, of the Laws of the Regents requires each campus to develop a student code of conduct. The Office of Student Conduct is authorized to establish and administer this policy.

Any questions regarding interpretation of this code or any of its provisions should be directed to the vice chancellor for student affairs or his/her designee for final determination. Questions regarding behavioral problems should be directed to the Office of Student Conduct, University of Colorado Boulder, 10 UCB, Boulder, CO 80309; phone **303-492-5550**.

## *Jurisdiction*

This policy governs:

- Student conduct that occurs on or as it relates to university property, or at official functions and university-sponsored programs conducted away from the campus. University property is defined as land, buildings, and facilities in possession of or owned, used, or controlled by the university or funded by university budgets.
- Student conduct that occurs off university property is subject to this policy if it: (1) adversely affects the health, safety, or security of any member of the university community or the mission of the university; or (2) involves any records or documents of the university. For purposes of this policy, the university's mission is broadly defined to include both its academic goals and the importance of developing civic responsibility in its students.

All students residing in Housing & Dining Services facilities are subject to the applicable Housing & Dining Services procedures, except:

- Cases in which the potential sanction is suspension or expulsion.
- Cases which are referred to Student Conduct by Housing & Dining Services.

Proceedings initiated under this policy are separate from civil or criminal proceedings that may relate to the same incident. Investigations or conduct proceedings by the university are not postponed while criminal or civil proceedings are pending, unless otherwise determined by the conduct officer.

The unexcused failure of a student to appear and/or respond to the conduct process does not prevent the university from proceeding with the conduct process.

## *The Office of Student Conduct*

The mission of the Office of Student Conduct is to establish an ethic of care at the University of Colorado Boulder, through its preventive, behavioral, and accountability practices. Establishment of an ethic of care will assist in providing a safe, respectful, and supportive community where students,

parents, faculty, and staff will be challenged to develop their critical thinking, values, connectedness to the community, sense of identity, understanding of independence and interdependence, and multicultural awareness.

An “ethic of care” model is a holistic approach to engage community members regarding their behaviors and responsibilities, recognizing that concern for self and others in a community of individuals can have a powerful impact. The Office of Student Conduct supports this holistic model in an effort to aid in student development and contribute to a positive, successful and respectful, living and learning environment throughout the university community.

The values of the Office of Student Conduct are:

- Civic responsibility and student involvement
- Education and development of all students
- Respect, dignity and equity
- A socially just community
- Responsibility, accountability and critical thinking
- Fairness, honesty, and integrity

### *Duties and Expectations of Students*

It is the duty of all students involved in the conduct process to participate conscientiously. Students have a duty to discuss the incident with an investigator and a conduct officer over the telephone or in person, adhere to stated deadlines, attend scheduled meetings, and participate in all proceedings. Failure to meet these duties may result in a decision being made without the benefit of the student’s participation or may result in a student being charged with failing to comply with the directions of a university official. It is the responsibility of a charged student to seek modification of any criminal or civil restraining orders to allow for the completion of any conduct process defined in the [Student Conduct Code](#).

The Office of Student Conduct views the conduct process as a learning experience that helps students to understand their responsibility to both themselves and their living and learning community. Individuals strive to learn from one another in an educational community that holds both mutual respect for individuals and community and self-responsibility for behaviors in high regard. Behavior that conflicts with established standards, policies, and guidelines of the University of Colorado will be referred for campus conduct proceedings.

Every member of the living and learning community must assume responsibility for becoming educated about the various university standards, policies, and guidelines. Each individual community member who works, lives, studies, teaches, does research, conducts business, or is involved in the living and learning community is a part of that community by choice. By making that choice, each community member agrees to contribute to an educationally purposeful community. It is against the basic nature of this community for anyone to demean or discriminate against another human being. A caring, educational community does not tolerate physical or psychological threats, harassment, intimidation, or violence directed against a person. Such behavior is subject to the university’s conduct processes.

Students must accept responsibility for maintaining an atmosphere conducive to education and scholarship by respecting the personal safety and individual rights of all in the university community, by conducting himself/herself in accordance with accepted standards of social behavior, and by abiding by the regulations of the university and the laws of the city, state, and nation.

### *Appendices*

Students should pay special attention to the appendices in the *Student Conduct Policies and Procedures* PDF at [www.colorado.edu/studentaffairs/studentconduct](http://www.colorado.edu/studentaffairs/studentconduct), in which specific definitions and

procedures for sexual misconduct, intimate partner violence, and stalking are outlined. Excerpts from the Colorado Revised Statutes regarding hazing, ethnic intimidation, and riots are also presented. Colorado law prohibits persons convicted of rioting from enrolling in state-supported universities/colleges for 12 months following the date of a conviction.

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# Glossary of Terms

The following are terms students encounter throughout their orientation experience as well as their first semester on campus. This glossary was created by the Academic Advising Center.

**Bursar's Office** Coordinates the billing and collection of payments from university students, including tuition, fees, and residence hall expenses. ([bursar.colorado.edu](http://bursar.colorado.edu))

**Catalog** The online *University of Colorado Boulder Catalog* provides definitive information on university academic and administrative policies, degree requirements, and course descriptions. This website IS the main catalog. For archives of previous *University of Colorado Boulder Catalogs* or other CU-Boulder types of catalogs, click the buttons on this site's homepage.

**Corequisite** A course that is required to be taken simultaneously with another course.

**Core curriculum** Requirements in the College of Arts and Sciences in various skill and content areas. The skills areas are: foreign language; quantitative reasoning and mathematical skills (QRMS); and written communication. The content areas are: historical context; human diversity; United States context; literature and the arts; contemporary societies; ideals and values; and natural science.

**Course reservation** The Course Reservation Program helps undergraduate degree-seeking students get the courses they need to graduate. The Course Reservation Program allows eligible students who have been wait-listed for a course but did not get in to reserve their enrollment in that course the next time it's offered. ([registrar.colorado.edu/students/registration/course\\_reservation.html](http://registrar.colorado.edu/students/registration/course_reservation.html))

**Course schedule** Consists of all courses for which a student has registered in a single academic term.

**Course section number** This three-digit number refers to the specific meeting pattern of the course.

**Credit hours (semester hours/credits/hours/units)** Credit earned for the successful completion of a course in an academic term. A unit of academic credit is based on the number of contact hours spent in class per week. For example, a 3-credit course requires three hours in class per week.

**Degree (vs. major)** A major is the area of study within the larger college degree program. For example, students may earn a bachelor of arts degree in the College of Arts and Sciences, with a major in sociology.

**Degree audit** A web-based tool that displays your progress toward graduation. It tracks students' MAPS, core, major, and elective requirements and lists courses that fulfill each requirement students still need. Degree audits may be viewed via MyCUinfo.

**Departmental advisor** A professional staff or faculty member who advises declared majors in one or more academic departments. Students with a declared major at the end of the first year will transition to a departmental advisor for their sophomore year through graduation.

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**Disability Services** Provides students with disabilities the tools, reasonable accommodations, and support services to participate fully in the academic environment. DS works cooperatively with students as they develop self-awareness and independence, learn self-advocacy, and create a network of resources. Their services are based on evaluation of each individual's diagnostic/assessment information. DS addresses students' needs and concerns on a case-by-case basis. Emphasis is placed on developing strategies so that students feel empowered and self-reliant. 303-492-8671 ([www.colorado.edu/disabilityservices](http://www.colorado.edu/disabilityservices))

**Double degree** Two different degrees earned within the College of Arts and Sciences or from two schools or colleges at CU-Boulder.

**Double major** Two declared majors within one degree program. For example, a student in Arts and Sciences with a double major in history and philosophy will earn one bachelor of arts degree.

**Drop/add** Period after registration a student can add or drop courses and change credit designations without instructor signatures.  
([registrar.colorado.edu/students/registration/registration\\_packet/drop\\_add.html](http://registrar.colorado.edu/students/registration/registration_packet/drop_add.html))

**Elective hours** Hours students can choose out of interest or toward a minor or certificate program. Elective hours are simply hours that students need toward graduation that are not used to fulfill core or major requirements.

**Enrollment Appointment (registration time)** Time designated for student to start registering for courses. Generally designed so that seniors register first, followed by juniors, sophomores, and freshmen. This time can be found on your MyCUinfo portal.

**FAFSA (Free Application for Federal Student Aid)** The leading provider of student higher education financial assistance, located at [www.fafsa.gov](http://www.fafsa.gov).

**FERPA (Family Educational Rights and Privacy Act of 1974)** A federal law designed to protect the privacy of education records, to establish the right of students to inspect and review their education records, and to provide guidelines for the protection from inaccurate and misleading data through informal and formal hearings.

**Final exams** Students may find the final exam schedule on the registrar's office website each fall and spring semester. Exams are listed by class meeting time. If a student has three or more final exams scheduled on the same day, they are entitled to arrange an alternative exam time for the last exam or exams scheduled on that day. To qualify for rescheduling final exam times, students must provide evidence that they have three or more exams on the same day, and arrangements must be made with their instructor no later than the end of the sixth week of the semester. ([registrar.colorado.edu](http://registrar.colorado.edu))

**First-year advisor** A professional staff member who supports students in their transition to college life and encourages exploration of academic interests. A first-year advisor works with students in all majors and offers support through individual appointments, walk-in hours, workshops, small group meetings, and classroom presentations.

**"Full-time" status** To be considered a full-time student, students must be registered for a minimum of 12 credit hours in a single term. "Full-time" status may affect eligibility regarding housing, tuition, health insurance, etc.

**General education requirements (core curriculum)** Refers to those requirements that apply to all students within a particular college regardless of major. Such requirements, in addition to major requirements, must be fulfilled at the time of graduation.

**GPA (grade point average)** The overall CU-Boulder GPA is computed as follows: the credit hours and credit points are totaled for all courses; then the total credit points are divided by the total credit hours. Transfer work is not calculated into your CU-Boulder GPA.

**Holds** A hold can prevent a student from registering, returning to school, obtaining an official transcript, or receiving their diploma. Students can check their registration status for any holds and follow up with the originating office about how to have them released.

**Honor code** The honor code at the University of Colorado Boulder exists to secure for students an environment in which all individuals have responsibility for, and are appropriately recognized for, their individual academic and personal achievements. ([honorcode.colorado.edu](http://honorcode.colorado.edu))

**Honors** Distinction achieved through general honors courses or a departmental honors program (requires special courses and a thesis).

**IdentiKey** Automatically assigned to all incoming students, an IdentiKey account consists of your CU login name and a unique password. New students need to activate their accounts via MyCUinfo. For help, call 303-735-4357.

**Linked activity** A course that has at least two components that are linked together; a lecture and a lab, for example, or a lecture and a recitation. Where a course has a linked activity, students select the lecture first and then select a corresponding lab or recitation.

**Lower division/upper division** Courses numbered 1000–2999 are lower division. Courses numbered 3000–4999 are upper division. It is rare for first-year students to take upper-division classes.

**Major (vs. degree)** A specific area of concentrated study, usually within one department. Required major credit hours vary.

**Major restriction** A restriction placed on certain courses in order to ensure that only students with a particular major have access to those courses.

**MAPS (minimum academic preparation standards)** Admission requirements for all students graduating from high school. MAPS deficiencies must be completed after starting at CU-Boulder through course work or equivalency tests.

**Matriculation date** Serves as the official date of initial registration as a degree-seeking student.

**MyCUinfo** Student web portal serving as the official source for information on everything from registration and billing to final exams and student employment. ([MyCUinfo.colorado.edu](http://MyCUinfo.colorado.edu))

**Open option** Major category in the College of Arts and Sciences for freshmen and sophomore students who have not yet declared a major.

**Pre-law** If a student is thinking about attending law school after graduating from CU, then the pre-law advisor at the Pre-Professional Advising Office can help you achieve their goal. Each year, several hundred CU graduates are accepted by law schools across the nation. A pre-law advisor can help a student determine, first, if law school is the right choice, and then help determine a student's path through undergraduate preparation and the application process. No specific prerequisites are required to apply to law school. Students will be expected to complete the requirements for an undergraduate major and to get involved in campus activities and take advantage of leadership opportunities.

**Prerequisite** A course that is required to be taken before taking a more advanced course.

**Recitation** A small discussion class, usually led by a teaching assistant, that clarifies lecture information and offers individualized attention. Attendance in recitations is generally required.

**Registrar's Office** Assists students in the processes of registration, orientation, and many specialized services such as transcript distribution, enrollment verification, and withdrawal. ([registrar.colorado.edu](http://registrar.colorado.edu))

**SID (student identification number)** SIDs are assigned to all students. SIDs are system-generated and unique, and students will be asked to use their SID as their primary student identifier on campus.

**Student Academic Services Center (SASC)** The Student Academic Services Center provides eligible students with comprehensive academic support services designed to improve their learning potential and reach educational goals. The center helps students develop effective academic strategies for college courses and obtain tutoring when necessary. 303-492-3842 ([www.colorado.edu/SASC](http://www.colorado.edu/SASC))

**Syllabus** Course outline provided by professors that lists course requirements, grading criteria, course content, expectations, and other relevant course information.

**Upper division/lower division** Courses numbered 1000–2999 are lower division. Courses numbered 3000–4999 are upper division. It is rare for first-year students to take upper-division classes.

**Wait lists** Throughout the registration and drop/add periods, if a student is eligible to take a course but finds it is full, the student may put their name on a computerized wait list. As spaces open in a course, they may be automatically enrolled in the class. It is their responsibility to monitor if they have been enrolled in a course from the wait list. If they do not attend a course they have been enrolled in, they will receive an *F* for that course.

**Withdrawal** A formal leave from all a student's classes for a given term at the university. ([registrar.colorado.edu/students/withdraw.html](http://registrar.colorado.edu/students/withdraw.html))

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# Programs of Study

THE UNIVERSITY'S PROGRAMS OF STUDY listed below are organized under School or College, then program name and degrees or certificates, when available.

The university offers degree programs at the bachelor's, master's, and doctoral levels, and a Juris Doctor degree from the Law School. It also offers certificate programs at the undergraduate, graduate, and professional levels, and a variety of additional academic programs. The latest approved degrees may be found at the Office of Planning, Budget, and Analysis website at [www.colorado.edu/pba/degrees/approve/OfficialCatalogApprovedDegreesList2012-13.htm](http://www.colorado.edu/pba/degrees/approve/OfficialCatalogApprovedDegreesList2012-13.htm).

CU-Boulder has dual-degree, double-degree, concurrent degrees, and interdisciplinary programs that are too numerous for these lists. Please see the specific program of study in this catalog for details or contact the sponsoring department.

NOTE: In the tables below, the designation (MS) or (MA) indicates master's degree offered as part of the PhD program only. The IBA is the new International Bachelor of Arts degree.

## College of Architecture & Planning

<a href="#">Environmental Design</a>	BEnvd
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## College of Arts & Sciences

<a href="#">Actuarial Studies and Quantitative Finance Certificate Program</a> Actuarial Studies Certificate Quantitative Finance Certificate	certificate certificate
<a href="#">Anthropology</a>	BA, IBA, MA, PhD
<a href="#">Applied Mathematics</a> Mathematics	BA, MS, PhD
<a href="#">Art and Art History</a> Art History Studio Arts	BA, MA BA, BFA, MFA
<a href="#">Asian Languages and Civilizations</a> Chinese Japanese	MA, PhD BA BA
<a href="#">Asian Studies</a>	BA
<a href="#">Astrophysical and Planetary Sciences</a> Astronomy	MS, PhD BA, IBA
<a href="#">Atmospheric and Oceanic Sciences</a>	MS, PhD
<a href="#">Bibliography</a>	
Biological Sciences. See <a href="#">Ecology and Evolutionary Biology</a> ; <a href="#">Molecular, Cellular, and Developmental Biology</a> ; or <a href="#">Integrative Physiology</a>	

<b>British and Irish Studies</b>	certificate
<b>Central and East European Studies</b>	certificate
<b>Chemistry and Biochemistry</b> Biochemistry Chemistry Chemical Physics	BA, IBA, (MS), PhD BA, IBA, (MS), PhD PhD
<b>Classics</b>	BA, MA, certificate
<b>Communication</b>	BA, MA, PhD
<b>Comparative Literature</b>	MA, PhD
<b>Distributed Studies</b>	BA
<b>Ecology and Evolutionary Biology</b>	BA, IBA, MA, PhD
<b>Economics</b>	BA, (MA), PhD
<b>English</b> Creative Writing	BA, MA, PhD MFA
<b>Environmental Studies</b>	BA, IBA, MS, PhD
<b>Ethnic Studies</b>	BA
<b>Film Studies</b>	BA, BFA
<b>French and Italian</b> French Italian	BA, MA, PhD BA
<b>Geography</b>	BA, IBA, MA, PhD
<b>Geological Sciences</b> Geology Geophysics	BA, IBA, MS, PhD PhD
<b>Germanic and Slavic Languages and Literatures</b> German Studies Hebrew Studies Nordic Studies (Scandinavian) Russian Studies	BA, MA, PhD  BA
<b>History</b>	BA, MA, PhD
<b>Humanities</b>	BA
<b>Integrative Physiology</b>	BA, IBA, MS, PhD
<b>International Affairs</b>	BA, certificate
<b>INVST Community Studies</b>	
<b>Jewish Studies</b>	BA
<b>Lesbian, Gay, Bisexual, Transgender, and Queer Studies</b>	certificate
<b>Linguistics</b>	BA, MA, PhD
<b>Mathematics</b>	BA, MA, PhD
<b>Molecular, Cellular, and Developmental Biology</b>	BA, IBA, (MA), PhD
<b>Peace and Conflict Studies</b>	certificate
<b>Philosophy</b>	BA, MA, PhD
<b>Physics</b>	BA, IBA, MS, PhD
<b>Political Science</b>	BA, MA. PhD
<b>Psychology and Neuroscience</b> Psychology Neuroscience	BA, IBA, (MA), PhD certificate
<b>Religious Studies</b>	BA, MA

<b>Sociology</b>	BA, (MA), PhD
<b>Spanish and Portuguese</b> Spanish	BA, MA, PhD
<b>Speech, Language, and Hearing Sciences</b> Audiology	BA, IBA, MA, PhD AuD
<b>Theatre and Dance</b> Theatre Dance	BA, BFA, MA, PhD BA, BFA, MFA
<b>Western American Studies</b>	certificate
<b>Western Civilization Studies</b>	certificate
<b>Women and Gender Studies</b>	BA, certificate
<b>Writing and Rhetoric, Program for</b>	

## Leeds School of Business

<b>Business Administration</b>	BS, MS, MBA, PhD, certificates
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## School of Education

<b>Curriculum and Instruction</b>	Post-BA licensure, MA, MA + licensure, PhD
<b>Educational/Psychological Studies</b>	MA, PhD
<b>Research and Evaluation Methodology</b>	PhD
<b>Social, Multicultural, and Bilingual Foundations</b>	MA, PhD

## College of Engineering & Applied Science

<b>Aerospace Engineering Sciences</b>	BS, MS, PhD
<b>Applied Mathematics</b> <i>(see also A &amp; S)</i>	BS
<b>Architectural Engineering</b>	BS, MS, PhD
<b>Chemical and Biological Engineering</b> Chemical Engineering	BS BS, MS, PhD
<b>Civil Engineering</b>	BS, MS, PhD
<b>Computer Science</b>	BS, MS, PhD
<b>Electrical, Computer, and Energy Engineering</b> Electrical and Computer Engineering Electrical Engineering	BS BS, MS, PhD
<b>Engineering</b> <i>(see also Mechanical Engineering)</i>	ME, certificates
<b>Engineering Management</b>	certificates
<b>Engineering Physics</b>	BS
<b>Environmental Engineering</b>	BS
<b>Mechanical Engineering</b>	BS, MS, PhD
<b>Telecommunications</b>	MS, PhD

## Graduate School

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<b>Aerodynamics and Satellite Navigation Systems</b>	certificate
<b>Atmospheric and Oceanic Sciences</b>	certificate
<b>Behavioral Genetics</b> Biotechnology	certificate certificate
<b>Cognitive Science</b>	PhD, certificate
<b>Critical Theory</b>	certificate
<b>Embedded Systems</b>	certificate
<b>Engineering Management</b>	certificate
<b>Environment, Policy, and Society</b>	certificate
<b>Geophysics</b> Hydrologic Sciences	certificate PhD, certificate
<b>Graduate Teacher Program</b>	certificate
<b>Human Language Technology</b>	certificate
<b>Information and Communication Technology for Development</b> ( <i>see also ATLAS</i> )	MS
<b>Molecular Biophysics</b>	certificate
<b>Museum and Field Studies</b> Museology	MS certificate
<b>Neuroscience</b>	PhD
<b>Peace Corps</b> Master's International Program	
<b>Population Studies</b>	certificate
<b>Power Electronics</b>	certificate
<b>Remote Sensing</b>	certificate
<b>Renewable and Sustainable Energy</b>	certificate
<b>Science and Technology Policy</b>	certificate
<b>Software Engineering</b>	certificate
<b>Technology, Media, and Society</b>	PhD
<b>Software Engineering</b>	certificate
<b>Technology, Media, and Society</b>	PhD
<b>Telecommunications</b>	certificate
<b>Women and Gender Studies</b>	certificate

## Journalism & Mass Communication

<b>Journalism</b>	BS, MA
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## Law

<b>Master of Laws</b> <b>Law</b>	LLM JD
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## Music

<b>Music</b>	BMus, MMus, PhD, certificates
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Arts in Music  
Music Education  
Musical Arts

BAMus, certificates  
BMusEd, MMusED, certificates  
DMusA

## Other Academic Programs

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# Actuarial Studies and Quantitative Finance Certificate Program

The Actuarial Studies and Quantitative Finance Certificate Program is an interdisciplinary program provided by the Departments of Mathematics, Applied Mathematics, and Economics; and the Leeds School of Business. The program trains students in two tracks. The **Actuarial track** prepares students for the actuarial profession while the **Quantitative Finance track** trains students for financial and economics analyst positions. The admission policies and contact information are given for each track.

## *Certificate Program*

### The Actuarial Studies Certificate

The **Actuarial Studies Certificate** offered by the College of Arts and Sciences is designed to help students obtain the expertise in mathematics, economics, and finance necessary to become actuaries—the mathematical planners of the insurance and pension industries.

Students in the program can be of any major or college, or can be nondegree candidates. The entrance requirements are three semesters of calculus completed with grades of B+ or better. There are a number of courses in mathematics, economics, and business required to earn the certificate. The certificate is awarded by the dean of the College of Arts and Sciences.

Besides taking courses, students are encouraged to take the professional exams offered by the various actuarial societies. The entrance requirements can be waived for students who receive a score of eight out of 10 on the first actuarial examination.

Interested students should contact one of the co-directors: David Grant at **303-492-7208** or Anne Dougherty at **303-492-4011**, who will also provide advice on actuarial studies to students who are not in the program. For more information, see [www.colorado.edu/asqf](http://www.colorado.edu/asqf).

### The Quantitative Finance Certificate

The **Quantitative Finance Certificate**, offered jointly by the College of Arts and Sciences and the Leeds School of Business, was initiated in the fall of 2004 and is designed to prepare students for financial and economics analyst positions that require outstanding quantitative skills. Often employers hire graduate students for such positions due to a shortage of undergraduates with the required combination of skills and training. This program is designed to meet this need.

The required curriculum is extensive and rigorous. Potential participants are encouraged to begin work early in their studies, preferably during the first year. Course work draws from the Departments of Mathematics, Applied Mathematics, and Economics; and the Leeds School of Business. Qualified students enrolled in any college are invited to participate. For admittance to the program, a student must earn a GPA of 2.870 or higher in Calculus I through III. However, students may be provisionally admitted after completion of Calculus I (MATH 1300 or APPM 1350) with a grade of B or better or through advanced placement. Additional GPA requirements must be met to earn the certificate.

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### **Actuarial Studies and Quantitative Finance Certificate Program**

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- > [Asian Languages and Civilizations](#)
- > [Asian Studies](#)
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- > [Central and East European Studies](#)
- > [Chemical Physics](#)
- > [Chemistry and Biochemistry](#)

Participants may be given preference when enrolling in certain courses in the Leeds School of Business.

Interested students should contact Gerald Madigan, Leeds School of Business, at [Madigan@colorado.edu](mailto:Madigan@colorado.edu). Additional information can be found at [www.colorado.edu/asqf](http://www.colorado.edu/asqf).

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# Aerospace Engineering Sciences

The mission of Aerospace Engineering Sciences is to provide quality education, including hands-on learning, and to conduct foremost research in aerospace engineering sciences. These goals are accomplished through fundamental and multidisciplinary research and by preparing aerospace engineering students to meet the needs of 21st-century society through the conception, design, and application of aerial and spacecraft systems.

## Educational Objectives

During their first three to five years after graduation, Aerospace Engineering Sciences graduates will have:

- established themselves in professional careers or received a graduate degree;
- demonstrated ethical leadership, project management, and/or innovation; and
- played significant roles in the research and development of engineering systems and products.

## Desired Outcomes

Students completing the undergraduate degree in aerospace engineering will be knowledgeable in the following areas:

- the professional context of the practice of aerospace engineering and expectations of new graduates in aerospace engineering organizations, including an awareness of ethics issues, economics, and the business environment;
- the history of aerospace engineering, providing a perspective on current events;
- aerospace engineering as a highly multidisciplinary endeavor, requiring a systems perspective to integrate technologies and manage complexity; and
- major principles and scientific methods underlying the technologies comprising aerospace vehicles and systems.

Upon graduation, students will have developed the following general skills and abilities:

- written, oral, and graphical communication skills;
- an ability to quantitatively estimate, model, analyze, and compute;
- an ability to define and conduct experiments using modern laboratory instruments, and to interpret experimental results;
- an ability to seek out and gather information, enabling independent and lifelong learning;
- interpersonal and organizational skills that enable individuals to work effectively in teams and assume leadership positions;
- an ability to identify needs, requirements, and constraints, and to design appropriate reliable engineering solutions;
- an ability to formulate technical problems clearly, and to correctly apply appropriate methods and procedures for their solution;
- an ability to program computers, and skills in the use of modern engineering analysis,

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- simulation software, and operating systems; and
- an ability to understand societal needs, business issues, and the ethical concerns and responsibility of the industry.

## *Bachelor's Degree Program(s)*

# Bachelor's Degree in Aerospace Engineering Sciences

## Degree Requirements

The undergraduate curriculum, Aerospace Curriculum 2000, is designed to prepare students to advance to a distinguished professional career in the aerospace industry or for graduate school, consistent with our stated Program Educational Objectives. In particular, this involves providing students with an interdisciplinary systems perspective of aerospace engineering. The curriculum accomplishes these goals by:

- providing a strong basis in mathematics, science, and engineering fundamentals;
- extending these fundamentals to advanced topics in aerospace engineering;
- complementing the engineering education with sufficient exposure to the humanities and social sciences; and
- beginning and ending in major design experiences that stress an interdisciplinary systems perspective.

AES students are also encouraged to consider a technical minor or double major in electrical engineering, computer science, applied math, engineering physics, astrophysical and planetary sciences, or atmospheric and oceanic sciences. In most cases, the junior- and senior-level courses required for the above-mentioned minors can be applied to the professional area elective requirements.

For students having sufficient ability and interest, planning for graduate study should begin by the start of the junior year. Such a plan should consider the foreign language requirements of appropriate graduate schools and an advanced mathematics program. Students who wish to combine the business and aerospace engineering sciences curricula are advised to consider obtaining the BS degree in aerospace and a master's degree in business rather than a combined BS degree. Space in the undergraduate aerospace engineering program is limited; some restrictions may apply.

## Bioengineering Option/Premedical Curriculum

Courses can be specifically designed for students who wish either to attend medical school or to enter graduate work in bioengineering after receiving the BS degree. Students should consult their advisor regularly to assure the adequacy of their curricula.

## *Curriculum for BS in Aerospace Engineering Sciences*

The BS curriculum in aerospace engineering sciences is revised annually to keep up with new advances in technology, to make use of new educational methodologies, and to satisfy updated program accreditation criteria. A total of 128 semester credit hours is required.

### *Required Courses and Semester Credit Hours*

#### Freshman Year

##### **Fall Semester—14**

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 Engineering General Chemistry Lab—2
- CHEN 1211 Engineering General Chemistry—3
- GEEN 1400 Engineering Projects/ASEN 1400 Gateway to Space—3

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- GEEN 1500 Introduction to Engineering—2

### ***Spring Semester—17***

- APPM 1360 Calculus 2 for Engineers—4
- PHYS 1110 General Physics 1—4
- Computing requirement: GEEN/CSCI 1300/ECEN1030—3
- Humanities or social science elective—6

### **Sophomore Year**

#### ***Fall Semester—14***

- APPM 2350 Calculus 3 for Engineers—4
- ASEN 2001 Introduction to Statics, Structures, and Materials—4
- ASEN 2002 Introduction to Thermodynamics and Aerodynamics—4
- ASEN 2012 Experimental and Computational Methods in AES—2

#### ***Spring Semester—17***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- ASEN 2003 Introduction to Dynamics and Systems—5
- ASEN 2004 Aerospace Vehicle Design and Performance—5
- Humanities or social science elective—3

### **Junior Year**

#### ***Fall Semester—16***

- ASEN 3111 Aerodynamics—4
- ASEN 3112 Structures—4
- ASEN 3113 Thermodynamics and Heat Transfer—4
- PHYS 1120 General Physics 2—4

#### ***Spring Semester—18***

- ASEN 3128 Aircraft Dynamics—4
- ASEN 3200 Orbital Mechanics/Attitude Determination and Control—4
- ASEN 3300 Electronics and Communications—4
- College-approved writing course—3
- Humanities or social science elective (upper-division)—3

### **Senior Year**

#### ***Fall Semester—16***

- ASEN 4013 Foundations of Propulsion—3
- ASEN 4018 Senior Projects 1: Design Synthesis—4
- Professional area electives—6
- Humanities or social science elective (upper-division)—3

#### ***Spring Semester—16***

- ASEN 4012 Aerospace materials—3

- 
- ASEN 4028 Senior Projects 2: Design Practicum—4
  - Professional area electives—6
  - Free elective—3

Courses selected must meet humanities and social science requirements as detailed at [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss).

### **Professional Area Electives**

- Any ASEN course at the 4000 level or above that is not a required course can be used as a professional area elective.
- A professional area elective is generally a course in math, engineering, or science at the 3000-level or above. Elective courses most likely to help an aerospace engineer's career development are ASEN, math, CSCI, ECEN, and physics courses. It is suggested that students secure advance approval for professional area elective courses from their advisor.
- Independent study is acceptable for up to 6 credit hours of professional area elective credit. The upper-division ROTC courses AIRR 3010, NAVR 3030, and NAVR 3040 are acceptable for 3 semester hours of professional area elective credit.

### **Prerequisites and Passing Grades**

The minimum passing grade for a course that is a prerequisite for another required course is C. If a grade of C- or lower is received in a course which is a prerequisite to another, the student may not register for the subsequent course until the first grade has been raised to a C or higher.

The minimum passing grade for a course that is not specifically a prerequisite for another required course is D-.

The AES department reserves the right to drop students enrolled in ASEN courses who have not met the minimum prerequisite requirements. It is the student's responsibility to communicate with the department if summer course work and/or transfer credit will be used to meet the prerequisite requirement.

Course code for this program is ASEN.

## *Graduate Degree Program(s)*

### **Graduate Degrees in Aerospace Engineering Sciences**

The Department of Aerospace Engineering Sciences at the University of Colorado is one of the top aerospace engineering departments in the nation with annual research expenditures that exceed \$10 million. Aerospace engineers work on Earth and in space not only to extend frontiers but also to understand more fully and to preserve our terrestrial environment. Few fields offer more exciting and diverse careers: becoming an astronaut (15 graduates to date have become astronauts), designing the next generation of aircraft and spacecraft, monitoring our global habitat via remote sensing from space, in situ sensing with unmanned vehicles, and helping to develop environmentally clean energy and transportation systems.

Aerospace graduate students often formulate degree plans on the basis of the student's interests and needs. Portions of the program are designed to promote the student's engineering and professional development. Graduate students are admitted into a specific focus area that provides research advising, financial support, and sets specialized admission and program requirements and recommendations for course work within and outside the department. The four focus areas are:

- Aerospace Engineering Systems
- Astrodynamics and Satellite Navigation Systems

- 
- Bioastronautics
  - Remote Sensing, Earth and Space Science

Each focus area has defined the required characteristics of its successful graduates at the MS and PhD level, and defined the required and elective courses that support its educational program.

Aerospace-related research centers in the college include the Colorado Center for Astrodynamics Research, the Center for Aerospace Structures, the Research and Engineering Center for Unmanned Vehicles, and BioServe Space Technologies. Other research centers within the university that are involved in space-related research activities are the Center for the Study of Earth from Space, the Center for Astrophysics and Space Astronomy, the Laboratory for Atmospheric and Space Physics, JILA, and the Cooperative Institute for Research in Environmental Sciences.

## Requirements for Advanced Degrees

Graduate students applying for admission to aerospace engineering sciences are required to submit the results of the analytical, quantitative, and verbal sections of the general examination, Graduate Record Examination (GRE).

The department offers graduate programs leading to the MS and PhD degrees in aerospace engineering sciences. Portions of the program are designed to promote the student's engineering and professional development.

Courses below the 5000 level in aerospace engineering cannot count toward graduate degree requirements; up to 6 credits at 4000 level relevant courses from approved departments outside aerospace may be accepted for master's degree credit if they fit with the student's degree plan. Such courses must have academic content consistent with graduate study in aerospace engineering sciences.

**Advising.** Once students have selected a research area for the thesis, academic advising is done by their thesis advisor.

## Master of Science Degree (Plan I/II)

- A total of 30 semester hours (including both course and thesis hours), at least 24 semester hours of which must be completed at the 5000 level or above, and no more than 12 semester hours can be outside of ASEN.
- Two to four required courses (6–12 semester hours) must be taken in the student's primary focus area and one course (3 semester hours) must be taken in a second focus or thrust area.
- One graduate level math course (3 semester hours) in ASEN, APPM, or MATH.
- Students may take a 5000/6000 level seminar for credit only once (1 semester hour).
- Students may take a 6000 level seminar (where they present research) once (2 semester hours).
- Students must complete 6 semester hours consisting of either (1) MS thesis (Plan I), (2) approved certificate or program (Plan II), or (3) a two-semester team projects course (Plan II). The Plan I project culminates with an oral presentation and/or written report or oral examination.
- Completion of all degree requirements within four years of the date of commencing course work, normally completed in one to two years.
- Master's degree residence requirements can be met only by residence on the CU-Boulder campus for two semesters or three summer sessions, or a combination of at least one semester and two summer sessions.
- Pass all courses with a grade of *B-* or better.

# Doctoral Degree

**Course Requirements.** A minimum of 36 semester credit hours of courses numbered 5000 or above (at least 18 of these must be in ASEN) with a minimum of 3.250 GPA, and 30 credit hours of thesis credit are required for the degree. A maximum of 21 credit hours may be transferred from another accredited institution and applied toward a PhD degree if approved by the graduate committee of the department and the Graduate School. All courses taken for the master's degree at the 5000 level or above at the University of Colorado may be applied toward the doctoral degree at the university. The formal course work must include a minimum of 18 hours of courses or their equivalent in aerospace engineering sciences.

**Preliminary Examination.** Students must pass a preliminary examination by no later than the end of the third semester if the student already has an aerospace master's degree upon entry to the program, or the fifth semester if the student does not have an aerospace master's degree. The exam is administered by a committee consisting of three regular or research aerospace faculty members, two of whom must be from the student's main focus area and the third from a secondary focus or thrust area. The exam will include a written and an oral element, as determined, prepared, and evaluated by the exam committee.

**Comprehensive Examination.** By no later than the fifth semester, or seventh semester, students must also pass an oral examination before the student's doctoral committee of five or more graduate faculty members chosen by the student and approved by the department and the Graduate School. This should be preceded by individual examinations or interviews, either written or oral or both, by every committee member. The oral examination before the committee is based primarily on a written proposal for the thesis research provided by the student to committee members in advance.

**PhD Thesis.** Students must write a thesis based on original research conducted under the supervision of a graduate faculty member. The thesis must fulfill all Graduate School requirements. After the thesis is completed, an oral final examination on the thesis and related topics is conducted by the student's doctoral committee.

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# Anthropology

Anthropology is the study of people, both ancient and modern, in their cultural context. The field involves a global look at human cultures from prehistoric times to the present, integrating findings from the social sciences, natural sciences, and humanities. Students of anthropology learn to appreciate the variety of cultures throughout human history and to understand the meaning of human biological and cultural development as well as diversity.

The undergraduate degree in anthropology emphasizes knowledge and awareness of:

- basic methods, concepts, alternative theories and approaches, and modes of explanation appropriate to each of the three main subfields of the discipline (archaeology, biological anthropology, and cultural anthropology);
- basic archaeological techniques, including stratigraphy, dating, and inference of human behavior from archaeological data, as well as human history from its beginning through the emergence of complex societies;
- variation, patterning, and creativity in human communities and symbolic systems, including ecological, social structural, and cultural factors exemplified in a diverse array of the world's societies, including those undergoing change as a result of globalization and the impact of contemporary social and political movements; and
- theories of primate and human evolution and the basic data of the hominid fossil record, as well as biological variation in contemporary human populations.

In addition, students completing the degree in anthropology are expected to acquire the ability and skills to:

- identify trends or patterns in anthropological data from different cultures or periods, identify an appropriate context of explanation or interpretation, and formulate a testable explanation or reasonable interpretation, including the ability to identify data that constitute credible evidence for an explanation or interpretation; and
- identify and define a significant problem or topic in anthropology and analyze and interpret data in a systematic manner.

Course code for this program is ANTH.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Anthropology

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. (A minimum of 30 credit hours in anthropology, 18 of which must be upper division, is required for the degree.)

#### *Required Courses and Semester Credit Hours*

- ANTH 2010-3 Introduction to Physical Anthropology 1—3

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- ANTH 2100-3 Frontiers of Cultural Anthropology—3
- ANTH 2200-3 Introduction to Archaeology—3
- One upper-division topical course in cultural anthropology—3
- One upper-division ethnographic area course in cultural anthropology—3
- One upper-division course in archaeology—3
- One upper-division course in physical anthropology—3
- Electives in anthropology (6 credits must be at the upper-division level; students planning to pursue graduate work in anthropology are advised to take ANTH 4000 and ANTH 4530)—9

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for more information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in anthropology, students should meet the following requirements:

- Declare a major in anthropology by the beginning of the second semester.

## Graduate Degree Program(s)

### Graduate Study in Anthropology

**Prerequisites.** To be considered for admission as a regular degree student, applicants should have a minimum undergraduate grade point average of 3.00 (4.00 = A) or a master of arts degree in anthropology. Graduate Record Examination scores for verbal and quantitative aptitude tests are required. Letters of recommendation and evidence of previous anthropologically oriented experience and work are carefully considered. Students with fewer than 18 credit hours of previous course work in anthropology are considered deficient and may be asked to present a greater number of hours for a degree.

**Application.** Inquiries concerning applications should be directed to the main departmental office. Completed applications are reviewed once each year and are due by January 15. Students with no previous graduate work should apply for entrance into the MA program which, if successfully completed, will prepare them for the PhD program. Students who have or will have completed an MA degree in anthropology by the time of their admission may apply for direct admission into the PhD program, but they may be required to complete specific remedial requirements in some cases.

**Course Requirements.** Students may have a primary specialization in any of the major subfields of anthropology: archaeology, cultural, or biological anthropology. The department expects graduate students to maintain a breadth of competence in general anthropology through the master’s degree with specialization intensifying with progress toward the PhD degree.

All entering graduate students must have had the equivalent of ANTH 4000 or 5000 (Quantitative Methods in Anthropology) or take the course, or in the case of cultural anthropology students an appropriate “tool course,” during their first year in residence.

As partial fulfillment towards a graduate degree, all students must complete the graduate proseminar that covers the three subdisciplines of anthropology (cultural, biological, and archaeology). The proseminar should be taken during the first semester in residence, if possible. In addition, students are required to take one graduate seminar focusing on one of the two subdisciplines outside of their primary specialization.

Other specific course requirements are established through a consultation with an academic advisor. MA students in archaeology and biological anthropology are normally expected to write a thesis (plan I). In consultation with their advisor, students in cultural anthropology have the option of writing a thesis or completing their MA degree by examination only (plan II).

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Additional information about other specific areas of specialization and other requirements for the degree may be obtained by writing directly to the Department of Anthropology, and by referencing the Graduate School section. Information is also available at the departmental website ([www.colorado.edu/anthropology](http://www.colorado.edu/anthropology)).

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# Applied Mathematics

The Department of Applied Mathematics in the College of Arts and Sciences offers courses and degree programs for undergraduate and graduate students. Course offerings at the undergraduate level focus on providing students with the mathematical tools and problem-solving strategies that are useful in science and engineering. The undergraduate bachelor of science degree is offered through the College of Engineering and Applied Science.

The department offers a range of courses and research opportunities in many areas, including computational mathematics, mathematical biology, nonlinear phenomena, physical applied mathematics, and probability and statistics. Each of these areas is described below.

## *Computational Mathematics*

The study of computational mathematics has grown rapidly in recent years and has allowed mathematicians to answer questions and to develop insights not possible just a decade or two ago. Modern computational methods require in-depth knowledge of a variety of mathematical subjects including linear algebra, analysis, ordinary and partial differential equations, asymptotic analysis, elements of harmonic analysis, and nonlinear equations. Since computers are invaluable tools for an applied mathematician, students are expected to attain a highly professional level of computer literacy and to gain a substantial knowledge of operating systems and hardware. Computational mathematics courses include the study of computational linear algebra, optimization, numerical solution of ordinary and partial differential equations, solution of nonlinear equations, and advanced seminars in wavelet and multiresolution analysis and in multigrid methods, radial basis functions, and algorithm design and development, more generally.

## *Dynamical Systems and Mathematical Biosciences*

Recent advances in our ability to quantitatively study biological phenomena have provided a tremendous number of exciting opportunities for applied mathematicians. The careful modeling, analysis, and simulation of these systems using the standard and state-of-the-art tools of applied mathematics has led to novel and non-intuitive insights into biology. Furthermore, deeper understanding of the inherently complex and multiscale nature of biological systems, in many cases, requires the development of new mathematical tools, techniques, and methodologies (a challenge to which applied mathematics is particularly well suited). For students interested in pursuing research in mathematical biology, good preparatory classes would include differential equations, advanced calculus, numerical analysis, and probability and statistics, as well as supplemental courses in the appropriate biological, biomedical, or bioengineering fields. Research areas at CU encompass immunology, virology, bacteriology, population genetics, and cardiac nonlinear dynamics. Specifically, current topics of interest include model selection and control of in vivo HIV pathogenesis dynamics, modeling of intracellular calcium dynamics, the analysis of heart rhythm instabilities, the role of aggregation and fragmentation in bacteremia and bacterial pneumonia, inverse problems arising in the use of population genetics and bioinformatics to identify geographic features, and the analysis of patterns in biological sequences such as DNA and RNA.

## *Nonlinear Phenomena*

In recent years, there has been an explosion of interest in the study of nonlinear waves and

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dynamical systems with analytical results, often motivated by the use of computers. The faculty in the Department of Applied Mathematics are actively and intensively involved in this growing field.

Research areas include qualitative analysis and computational dynamics, conservative and dissipative systems, bifurcation theory, the onset and development of chaos, wavelets and multiresolution analysis, integrable systems, solitons, cellular automata, analytic dynamics, pattern formation and symmetry, synchronization, dynamics on networks, fluid dynamics, and transport and mixing. Department courses in this field include dynamical systems, nonlinear wave motion, and many advanced seminars. Suitable background courses are analysis, computation, and methods in applied mathematics. Valuable supplemental courses include mechanics and fluid dynamics.

### *Physical Applied Mathematics*

Physical applied mathematics is a term that generally refers to the study of mathematical problems with direct physical application. This area of research is intrinsically interdisciplinary. In addition to mathematical analysis, it requires an in-depth understanding of the underlying applications area, and usually requires knowledge and experience in numerical computation. The department has approximately 40 affiliated faculty who can direct thesis research in areas such as atmospheric and fluid dynamics, theoretical physics, plasma physics, genetic structure, parallel computation, etc. The department's course requirements are designed to provide students with a foundation for their study (analysis and computation). The department also requires supplemental courses in one of the sciences or engineering fields necessary for thesis research in physical applied mathematics.

### *Statistics and Applied Probability*

Almost all natural phenomena in the technological, biological, physical, and social sciences have random components with complex levels of interactions, part stochastic, part deterministic. Applied probability is the application of probabilistic and analytic methods to model, understand, and predict the behavior of real-life problems that involve random elements. Statistics is the science of using data that typically arise from the randomness inherent in nature to gain new knowledge. Areas of current interest by applied math and their affiliated faculty include optimization of stochastic networks; the study of stochastic processes, and stochastic differential equations in hydrology and telecommunications; probabilistic models, nonparametric regression methods, shrinkage estimation, gene expression microarray data analysis, false discovery rate control, classification methods, and statistical tests based on these models, in genetics and RNA sequencing; and extreme value theory in estimation of maximal wind speeds. Appropriate course work includes analysis, stochastic processes, simulation techniques, mathematical statistics, as well as background courses in one of the sciences or engineering fields in which one intends to do research.

For details on the range of courses and research opportunities available through the Department of Applied Mathematics, visit [amath.colorado.edu](http://amath.colorado.edu).

Course code for this program is APPM.

### *Bachelor's Degree Program(s)*

## Bachelor's Degree in Applied Mathematics

A bachelor of science degree in applied mathematics is offered by the College of Engineering and Applied Science.

The undergraduate curriculum in applied mathematics trains students in the applications of mathematics in engineering and science. The use of computational methods and implementation of algorithms on computers is central. Technical electives may be selected from mathematics, engineering, physics, chemistry, computer science, biology, astrophysics, geology, economics, finance, and accounting.

In general, nontechnical electives should be broadening and have multicultural value. Students interested in research also are encouraged to take a foreign language as early as possible. French,

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German, or Russian are recommended.

Interested students should contact the applied mathematics office in the College of Arts and Sciences for information on specific major and degree requirements.

### *Minor Program*

A minor is offered in applied mathematics. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. For more information, see [www.colorado.edu/artssciences/students/undergraduate/academics/minors.html](http://www.colorado.edu/artssciences/students/undergraduate/academics/minors.html).

A minor in applied mathematics indicates that a student has received in-depth training in mathematical techniques and computational methods well beyond the training usually received by science and engineering majors.

### *Concurrent Bachelor's/Master's Program*

## Concurrent BS/MS in Applied Mathematics

The concurrent BS/MS program in applied mathematics enables well-qualified and motivated students to experience graduate-level course work earlier in their education and to obtain an MS degree in a reduced time period. Applied math majors may apply for this program during their junior year. Minimum requirements for admission include completion of at least two APPM courses numbered 3000 or higher, an overall GPA of 3.400 or higher, an APPM and MATH GPA of 3.400 or higher, and two letters of recommendation from APPM faculty. Students interested in this program are encouraged to consult with an applied mathematics faculty advisor early in their undergraduate career.

## Combined MS and MA Program with MCD Biology

This three-year interdisciplinary program offers two master's degrees: an **MS in applied mathematics** and an **MA in MCD biology**. The goal of the program is to produce well-trained applied mathematics students who are capable of making serious contributions leading to advancements in molecular biology. Such students will be well educated in computational sciences, statistics, probability, and molecular biology.

Students are expected to meet all requirements for admission to the graduate program in the Department of Applied Mathematics and to possess a basic science background suitable for pursuit of this dual degree. Students also are expected to meet minimum requirements for admission to the graduate program in MCD Biology. Adequate undergraduate preparation consists of successful completion of basic courses on cell and molecular biology. Any student deemed deficient in either area will be required to take Molecular Cell Biology I and II (MCDB 3135 and 3145) after enrollment. Students will be required to apply to both programs, with APPM the primary one. Subject to joint recommendation and approval by APPM and MCDB, incoming students will be admitted to this dual degree program as a regular part of the applied mathematics recruitment process.

### *Graduate Degree Program(s)*

## Graduate Study in Applied Mathematics

Prerequisites for graduate study in applied mathematics include three semesters of calculus and a course in differential equations and linear algebra. Other strongly recommended courses are Methods in Applied Mathematics (APPM 4350 and 4360); Intermediate Numerical Analysis (APPM or MATH 4650 and 4660); either Matrix Methods (APPM 3310) or Linear Algebra (MATH 3130); and Analysis (APPM 4440). The overall grade point average for mathematics and applied mathematics must be *B* or better.

Students should carefully read the Requirements for Advanced Degrees in the Graduate School section. What follows is an abbreviated summary of specific requirements for the department. A

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precise description of the degree requirements is available from the *Applied Mathematics Supplement to the Catalog* available from the applied mathematics office or at [amath.colorado.edu](http://amath.colorado.edu).

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## MS with Computational Science and Engineering Track

The purpose of this program is to meet the needs of students who want to learn the basic concepts and skills of computational science and engineering, and then to continue toward a PhD in a discipline outside applied mathematics. A student who completes this program successfully will obtain a master's degree in applied mathematics, in the Computational Science and Engineering Track. The program is designed to provide interested students with a foundation in computational mathematics and, at the same time, to allow sufficient latitude for the student to become proficient in an outside discipline. Approximately half of the credits for the master's degree will be taken from a department other than applied mathematics.

A student in the Computational Science and Engineering Track will be enrolled simultaneously in two graduate programs, one in applied mathematics and one in the department from which the student wishes to receive a PhD. An interested student may apply for admission to this track either when applying for graduate study at CU, or at any time in the student's first two years of graduate study. First-year and second-year graduate students in any of the participating departments may apply for admission to this program.

## Doctoral Degree

The Department of Applied Mathematics offers course work and research leading to the PhD degree in applied mathematics.

A minimum of 60 credit hours is required for the degree, including 30 hours in courses numbered 5000 or above (4350/5350, 4360/5360, and 4720/5720 generally do not count toward this requirement) and 30 hours of applied math dissertation credit. A grade of *B-* or higher must be attained in each course. No specific courses are mandatory (apart from two semesters of seminars—APPM 8000, 8100, 8300, and 8600), but the selection ought to include some of the department's core sequences, such as applied analysis (APPM 5440/5450) and numerical analysis (APPM 5600/5610). Other recommended sequences are methods (APPM 5470/[5430, 5460, or 5480]) and statistics (APPM 5520/[5540 or 5560]). Finally, each student must take a yearlong graduate sequence outside of applied mathematics in an area where mathematics has significant application. Faculty advisor approval of the sequence is required. Preliminary exams are offered in four areas: analysis, numerics, partial differential equations, and probability/statistics. Students must take the numerics and analysis exams, and either one of the other two.

Further information on the department and degree requirements is available from the supplement to the catalog in the applied mathematics office or in the Graduate School.

## *Certificate Program*

### PhD with Certificate in Interdisciplinary Quantitative Biology

Applied mathematicians interested in collaborations with bioscientists will need a breadth of knowledge in quantitative bioscience to be successful. The Interdisciplinary Quantitative Biology (IQ Biology) program emphasizes training at the intersection of biochemistry, biology, computer science, engineering, applied mathematics, and physics. The PhD in applied mathematics with a certificate in IQ Biology will strengthen this training with additional foundations in numerical and mathematical analysis, probability and statistics, mathematical biology, and network analysis.

Candidates interested in this program should apply directly to IQ Biology ([cimb.colorado.edu/iq-biology/application](http://cimb.colorado.edu/iq-biology/application)), and select applied mathematics as one of their graduate programs of interest. In

addition to satisfying the requirements for the PhD in applied mathematics, students in this program must take 12 credit hours in three IQ Biology core courses: Quantitative Biology Foundations, Statistics and Computations for Genomes and Meta-Genomes, and Forces in Biology, which can serve as the out-of-department sequence for the PhD; as well as three 10-week rotations in labs associated with the IQ Biology program. For additional information, see [IQBiology.colorado.edu](http://IQBiology.colorado.edu).

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# Applied Mathematics

The Department of Applied Mathematics in the College of Arts and Sciences offers a BS degree in applied mathematics through the College of Engineering and Applied Science. The BS degree is designed to prepare graduates for exciting and diverse professional careers, and for graduate study in a wide variety of disciplines. The department also offers both an MS degree and a PhD degree through the Graduate School.

The objectives of the Department of Applied Mathematics at CU-Boulder are summarized below:

- provide undergraduate and graduate students with high-quality education and training in applied mathematics, and prepare them for careers in industry, laboratories, and the academic professions;
- offer and monitor degree programs leading to BS, MS, and PhD degrees in applied mathematics;
- nourish and maintain a professional environment in which excellence in teaching, learning, scholarship, and creativity are of central importance;
- assure teaching and research expertise in a number of key areas of applied mathematics including the methodology of applied mathematics, computational mathematics and algorithms, industrial applications, mathematical biology, applied probability, and statistics.

Courses at the undergraduate level provide training in a broad range of mathematical techniques and problem-solving strategies. These courses teach the concepts and methods central to applications of linear algebra, ordinary and partial differential equations, numerical analysis, probability and statistics, complex variables, and nonlinear dynamics. Since applied mathematicians often are involved in interdisciplinary work, the BS degree requires an in-depth knowledge of some area of science or engineering where mathematics is used. This knowledge prepares graduates to successfully communicate and cooperate with engineers and scientists. The BS degree also requires knowledge of a programming language and skill in using the computer.

## Desired Outcomes

The undergraduate degree in applied mathematics emphasizes knowledge and awareness of:

- differential and integral calculus in one and several variables;
- vector spaces and matrix algebra;
- ordinary and partial differential equations;
- at least one programming language;
- at least one application software package in either mathematics or statistics;
- methods of complex variables as used in applications; and
- numerical solutions of linear and nonlinear problems.

In addition, students completing a degree in applied mathematics acquire:

- an in-depth knowledge of an area of application (an engineering discipline or a natural science

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field or one of the quantitative areas of business and economics);

- knowledge of problem-formulation, problem-solving, and modeling techniques and strategies central to applications; and
- the ability to communicate analytic arguments clearly and concisely in oral and written forms.

## Minor Program

The department also offers a minor in applied mathematics that is available to all undergraduate students. A minor in applied mathematics indicates that a student has received in-depth training in mathematical techniques and computational methods well beyond the training usually received by science and engineering majors.

Course code for this program is APPM.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Applied Mathematics

The BS degree in applied mathematics requires the satisfactory completion of a minimum of 128 credit hours as follows:

- Three semesters of calculus (APPM 1350, 1360, and 2350) with a minimum grade of C- in each course.
- Computing experience (CSCI 1300 or GEEN 1300 or APPM 2750).
- Science requirement: completion of PHYS 1110, 1120, and 1140. Completion of at least 5 additional credits of chemistry or biology (including 2 credits of laboratory science), chosen from one of the following: CHEM 1221 and CHEN 1211; CHEM 1351; EBIO 1210, 1220, 1230, and 1240; or MCDB 1150, 1151, 2150, and 2151.
- Completion of the following required applied mathematics courses: APPM 2360; APPM 3310; APPM 4350 and 4360; APPM 4650; and APPM 4440 or MATH 3001 or 3140.
- A two-semester course sequence of applied mathematics or mathematics courses numbered 4000 or above in addition to APPM 4350 and 4360 (for example, APPM 4380 and 4390, APPM 4440 and 4450, APPM 4570 and 4580, APPM 4560 and 4520, APPM 4650 and 4660, or APPM 3570 and either APPM 4520 or 4560). Note: APPM 3570 is the only 3000-level course that can be used to satisfy this requirement.
- A minimum of 24 credit hours in applied mathematics or mathematics courses numbered 3000 or above (including the required courses). No more than 3 credits of APPM 4840 may count toward these 24. No more than 6 credits of independent study are allowed for credit toward the BS degree in applied mathematics.
- A minimum of 24 credit hours in engineering courses (or approved courses with a significant mathematical content in arts and sciences or business) with at least 15 credit hours in courses numbered 2000 or above and at least 6 credit hours in courses numbered 3000 or above. These 24 credit hours are in addition to those required credit hours listed in numbers 2 and 3 (mentioned above). HUEN 3100, 3200, 4100, and 4200 may not be used to fulfill this requirement, although they may be used as social and humanistic electives. Several possible options are listed separately.
- The general bachelor's degree requirements of the College of Engineering and Applied Science require 18 credit hours of social science/humanities/writing electives. See details at [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss).

### Some Recommended Options for Applied Math Majors

### Aerospace Engineering Sciences Option

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**(total of 20 credit hours):**

***Recommended Courses and Semester Credit Hours***

- ASEN 2001 Aero 1: Introduction to Statics, Structures, and Materials—5
- ASEN 2002 Aero 2: Introduction to Thermodynamics and Aerodynamics—5
- ASEN 2003 Aero 3: Introduction to Dynamics and Systems—5
- ASEN 2004 Aero 4: Introduction to Vehicle Design and Performance—5
- At least two more ASEN courses at the 3000 level or above

*Advising Note: Students seeking to enroll in ASEN courses must register through an aerospace advisor.*

## **Chemical Engineering Option**

Recommended courses (total of 21 credit hours):

- CHEN 2120 Material and Energy Balance—3
- CHEN 3200 Fluids—3
- CHEN 3210 Heat Transfer—3
- CHEN 3220 Mass Transfer—3
- CHEN 3320 Thermodynamics—3
- CHEN 4330 Reaction Kinetics—3
- CHEM 4511 Physical Chemistry—3

Also recommended:

- APPM 4570 Statistical Methods—3

*Note: One additional course is required to bring the total number of credits to at least 24.*

## **Computer Science Option**

Recommended course (total of 4 credit hours):

- CSCI 2270 Data Structures (prereq. CSCI 1300)—4

Additional courses to bring the total number of credits to at least 24; at least two of these must be at the 3000 level. Possible choices include:

- CSCI 3104 Algorithms—4
- CSCI 3155 Principles of Programming Languages—4
- CSCI 3287 Database Systems—3
- CSCI 3753 Systems—4
- ECEN 2120 Computers as Components—5
- ECEN 3100 Digital Logic—5

*Advising Note: Students completing the computer science option should have a minor in computer science. Check with the computer science department.*

## **Electrical and Computer Engineering Option**

Students interested in this option should consult with an advisor as several areas are available (computer engineering, electrical engineering, signals and systems, and electrical renewable energy systems). A minimum of 24 credit hours is required.

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## Engineering Physics Option

Recommended courses after first-year physics (22 or 23 credit hours):

- PHYS 2150 Experimental Physics—1
- PHYS 2170 Foundations of Modern Physics—3
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3220 Quantum Mechanics and Atomic Physics—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3320 Principles of Electricity and Magnetism 2—3

Plus either of the following:

- PHYS 3330 Junior Laboratory—2
- PHYS 4230 Thermodynamics and Statistical Mechanics—3

*Note: Additional courses are required to bring the total number of physics credits to 24.*

Also recommended:

- APPM 3570 Applied Probability—3
- MATH 3140 Abstract Algebra 1—3

*Advising Note: Students completing the physics option should have a minor in physics. Check with the physics department.*

## Mechanical Engineering Option

Recommended courses (total of 24 credit hours):

- MCEN 2023 Statics and Structures—3
- MCEN 2063 Mechanics of Solids—3
- MCEN 3012 Thermodynamics—3
- MCEN 3021 Fluid Mechanics—3
- MCEN 3022 Heat Transfer—3
- MCEN 3025 Component Design—3
- MCEN 3043 Dynamics—3
- MCEN 4043 System Dynamics—3

Also recommended:

- APPM 4570 Statistical Methods—3

## Civil, Environmental, and Architectural Engineering Option

Recommended basic courses (total of 12 credit hours):

- AREN 2110 Thermodynamics—3
- CVEN 2121 Analytical Mechanics 1—3
- CVEN 3161 Mechanics of Materials 1—3
- CVEN 3313 Theoretical Fluid Mechanics—3

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Students also take two courses from any one of the following groups:

- a) AREN 2406 Introduction to Building Construction—3  
AREN 3010 Mechanical Systems for Building—3  
AREN 3540 Illumination 1—3
- b) CVEN 3414 Introduction to Environmental Engineering—3  
CVEN 4333 Engineering Hydrology—3
- c) CVEN 3525 Structural Engineering 1—3  
CVEN 3708 Geotechnical Engineering 1—3  
CVEN 4555/4545 Reinforced Concrete Design/Steel Design—3

## **Actuarial Option**

Recommended basic courses (19 credit hours):

- BCOR 2000 Accounting and Financial Analysis 1—4
- BCOR 2200 Accounting and Financial Analysis 2 (formerly 2100) (Note 1)—3
- FNCE 3010 Corporate Finance—3
- ECON 3070 Intermediate Microeconomics Theory (Note 2)—3
- ECON 3080 Intermediate Macroeconomics Theory (Note 2)—3
- ECON 4070 Topics in Microeconomics—3

Some of the following courses should also be taken:

- ACCT 3220 Intermediate Financial Accounting 1—3
- ACCT 3230 Intermediate Financial Accounting 2—3
- BCOR 3000 Business Law, Ethics, and Public Policy—3
- ECON 4818 Introduction to Econometrics—3
- FNCE 4040 Derivative Securities—3
- FNCE 4070 Financial Markets and Institutions—3

## **Curriculum Notes**

1. BCOR 1020 Business Statistics is a prerequisite for BCOR 2200 (formerly 2100). Students are advised to substitute an applied math probability/statistics course for this prerequisite.
2. ECON 2010 and 2020 (prerequisites for ECON 3070 and 3080) should be taken in either the first or second year. They do not count toward the 24 credits of the option requirement, but they can count toward the 18-credit humanities/social science requirement of the College of Engineering and Applied Science.
3. Students are advised, but not required, to take as many of the following courses as possible as part of their applied math requirement: APPM 3570, 4520, 4540, and 4560.
4. To assure admittance into Leeds School of Business courses, students should apply to the Actuarial Studies and Quantitative Finance Certificate Program.

## **Finance Option**

Recommended basic courses (14–16 credit hours):

- BCOR 2000 Accounting and Financial Analysis 1—4
- BCOR 2200 Accounting and Financial Analysis 2 (formerly 2100) (Note 1)—3
- ECON 2010 Principles of Microeconomics and ECON 2020 Principles of Macroeconomics (Note 2), ECON 3070 Intermediate Microeconomics Theory and ECON 3080 Intermediate Macroeconomics Theory—14
- FNCE 3010 Corporate Finance—3

Plus at least two of the following courses to meet the 24 credit-hour requirement of the option:

- FNCE 4000 Financial Institutions Management—3
- FNCE 4030 Investment and Portfolio Management—3

- 
- FNCE 4040 Derivative Securities—3
  - FNCE 4050 Capital Investment Analysis—3
  - FNCE 4060 Special Topics in Finance—variable credit
  - FNCE 4070 Financial Markets and Institutions—3

### **Curriculum Notes**

1. BCOR 1020 Business Statistics is a prerequisite for BCOR 2200 (formerly 2100). Students are advised to substitute an applied math probability/statistics course for this prerequisite.
2. ECON 2010 and 2020 should be taken in either the first or the second year. They do not count toward the 24 credits of the option requirement, but they can be used to meet the 18-credit social science/humanities requirement of the College of Engineering.
3. To assure admittance into Leeds School of Business courses, students should apply to the Actuarial Studies and Quantitative Finance Certificate Program.

### **Computational Biology and Bioinformatics Option**

The following concentration of selected courses from computer science, biology, and chemistry provide the foundation for work in mathematical biology, computational biology, and/or bioinformatics.

#### **Required Courses and Semester Credit Hours**

- CSCI 2270 Data Structures (Note: CSCI 1300 is a prerequisite for CSCI 2270.)—4
- CHEM 331 and 3321 Organic Chemistry 1 and Lab—5
- CSCI 4314 Algorithms for Molecular Biology—3
- MCDB 1150 and 1151 Introduction to Cellular and Molecular Biology and Lab—4
- MCDB 2150 and 2151 Principles of Genetics and Lab—4
- MCDB 3120 and 3140 Cell Biology and Lab—5
- MCDB 3500 Molecular Biology—3

*Advising Note: Students selecting this option are advised to take APPM 3570, 4520, 4540, and 4390 as part of their applied math course work. Other recommended courses include CSCI 3104 Algorithms and CSCI 3287 Database and Information Systems.*

Other areas of academic focus are also possible. Check with the applied mathematics office or more information.

### **Concurrent Bachelor's/Master's Program**

#### **Concurrent BS/MS Degree in Applied Mathematics**

The concurrent BS/MS program in applied mathematics enables well-qualified and motivated students to experience graduate-level course work earlier in their education and to obtain an MS degree in a reduced time period. Applied math majors may apply for this program during their junior year.

Minimum requirements for admission include completion of at least two APPM courses numbered 3000 or higher, an overall GPA of 3.400 or higher, a minimum GPA of 3.400 in APPM and MATH courses, and two letters of recommendation from APPM faculty. Students interested in this program are encouraged to consult with an applied mathematics faculty advisor early in their undergraduate career.

### **Graduate Degree Program(s)**

#### **Graduate Study in Applied Mathematics**

See the [Graduate School](#)

### **Dual Degree Programs**

#### **Double Major with Civil Engineering**

As an exceptional opportunity for talented students who are interested in analytical and computational methods related to civil engineering and general engineering science, the applied mathematics and

civil engineering departments offer a streamlined track by which a student can earn a baccalaureate degree from both programs with a minimum of 15 extra credit hours. Consult faculty advisors in applied mathematics and civil engineering for information and admission.

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# Architectural Engineering

Architectural engineering has many elements in common with civil, mechanical, and electrical engineering, but is specifically directed toward the building industry. It focuses on building systems, which include design of systems such as heating, ventilating, and air conditioning (HVAC) systems; illumination and electrical systems; structural building systems; and construction methods applied to buildings. The program is administered by the Department of Civil, Environmental, and Architectural Engineering. Students also take courses in architectural history and architectural design from the College of Architecture and Planning.

## Program Educational Objectives

The educational objective of the architectural engineering program is to develop graduates who acquire the broad knowledge and skills necessary to successfully begin and sustain a career, and to become leaders who advance the state-of-the art, in one of four core disciplines of the building industry:

- electrical and lighting systems
- heating, ventilating, and air conditioning (HVAC) systems
- structural systems
- construction engineering and management

## Educational Outcomes

The outcomes that students are expected to have attained upon graduation with the bachelor of science degree in architectural engineering are:

- the ability to apply knowledge of mathematics, science, and engineering
- the ability to design and conduct experiments
- the ability to analyze and interpret data
- the ability to design a system or component to meet desired needs
- the ability to function on multidisciplinary teams
- the ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibilities
- the ability to communicate effectively through writing and/or drawing
- the ability to communicate effectively through oral presentations
- an understanding of the impact of engineering on society
- an understanding of the necessity to engage in life-long learning
- a knowledge of contemporary issues in civil, environmental, and architectural engineering
- the ability to use modern engineering techniques, skills, and tools

## Areas of Knowledge

The areas of knowledge that define these objectives include both technical and non-technical areas.

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Technical areas are:

- **elementary**—the fundamentals for architectural engineering, including basic science and mathematics, building design and construction processes; overview of building systems; elementary principles and processes of architecture; and laboratory measurement and data analysis;
- **intermediate**—introduction to building systems and their components, with corresponding analysis of electrical, HVAC, and lighting systems as well as structural elements and components;
- **proficiency**—design, integration, and advanced analysis of electrical, HVAC, lighting, and structural systems; as well as the codes and recommended practices that govern these building systems; and
- **specialization**—advanced design, coupled with industry experience via internships, for building lighting and electrical system design, building HVAC systems design, building structural system design, and construction engineering and management.

Non-technical areas include:

- professional life, including methods of time and resource management, and professional ethics;
- processes and requirements of written and oral communication; and
- broad areas in the humanities and social sciences, including architectural history and language.

Course code for this program is AREN.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Architectural Engineering

There is a broad core of requirements for all students. Students are also expected to choose, in consultation with faculty advisors, elective courses to add depth in one or more specialty areas. Such specialty areas include structural analysis and design, construction engineering, building energy analysis, mechanical systems, and illumination. A list of recommended electives is available to help students select a coherent academic program that enhances one of these areas.

## *Curriculum for BS (Arch E)*

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- AREN 1027 Engineering Drawing—3
- AREN 1316 Introduction to Architectural Engineering—2
- CHEM 1221 Engineering Chemistry Lab—2
- CHEN 1211 General Chemistry for Engineers—3
- Humanities or social science elective—3

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- CVEN 2012 Introduction to Geomatics—3

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GEEN 1300 Introduction to Engineering Computing—3

- PHYS 1110 General Physics 1—4
- Humanities or social science elective—3

## **Sophomore Year**

### **Fall Semester**

- AREN 2406 Introduction to Building Construction—3
- AREN 2110 Thermodynamics—3
- APPM 2350 Calculus 3 for Engineers—4
- CVEN 2121 Analytical Mechanics 1—3
- PHYS 1120 General Physics 2—4

### **Spring Semester**

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- AREN 2120 Fluid Mechanics and Heat Transfer—3
- AREN 2050 Engineering Systems for Buildings—3
- AREN 3540 Illumination 1—3
- CVEN 3161 Mechanics of Materials 1—3

## **Junior Year**

### **Fall Semester**

- AREN 3010 Mechanical Systems for Buildings—3
- AREN 4550 Illumination 2—3
- CVEN 3246 Introduction to Construction—3
- CVEN 3525 Structural Analysis—3
- ECEN 3030 Electrical Circuits—3

### **Spring Semester**

- AREN 4110 HVAC Design—3
- AREN 4420 Cost Engineering—3
- AREN 4570 Electrical Systems—3
- CVEN 4545 Steel Design or 4555 Reinforced Concrete Design—3
- Technical elective—3

## **Senior Year**

### **Fall Semester**

- ARCH 3114 History and Theories of Architecture 1—3
- ARCH 4010 Architectural Appreciation and Design—3
- WRTG 3030 Writing on Science and Society—3
- Technical elective—6

### **Spring Semester**

- ARCH 3214 History and Theories of Architecture 2—3
- AREN 4317 Architectural Engineering Design—5

- Technical elective/Lab—5
- Humanities or social science elective—3
- **Minimum hours for degree—128**

### *Courses Available for Specialization*

Upon consultation with their advisors, students are expected to select technical elective courses applicable to their areas of interest and specialization. The areas of specialization are construction engineering and management, mechanical systems, illumination, and structural engineering.

In addition to the courses listed below, other courses not listed may be proposed by a student and approved by the advisor if they are found to be applicable.

- AREN 3130 Building Energy Laboratory
- AREN 3140 Illumination Laboratory
- AREN 4315 Design of Masonry Structures
- AREN 4466 Construction Planning and Scheduling
- AREN 4540 Exterior Lighting Systems
- AREN 4560 Luminous Radiative Transfer
- AREN 4580 Daylighting
- AREN 4590 Computer Graphics in Lighting Engineering
- CVEN 3313 Theoretical Fluid Mechanics
- CVEN 3323 Hydraulic Engineering
- CVEN 3708 Geotechnical Engineering 1
- CVEN 3718 Geotechnical Engineering 2
- CVEN 4161 Advanced Mechanics of Materials 1
- CVEN 4525 Analysis of Framed Structures
- CVEN 4545 Steel Design
- CVEN 4555 Reinforced Concrete Design
- CVEN 4565 Timber Design
- CVEN 4087 Engineering Contracts
- CVEN 5010 HVAC System Controls 1
- CVEN 5020 Building Energy Audits
- CVEN 5030 Architectural Lighting Equipment Design
- CVEN 5040 Lighting Systems Engineering
- CVEN 5050 Advanced Solar Design
- CVEN 5060 Advanced Passive Solar Design
- CVEN 5070 Thermal Analysis of Buildings
- CVEN 5090 Building Systems Seminar
- CVEN 5110 HVAC System Design
- CVEN 5111 Introduction to Structural Dynamics\*
- CVEN 5161 Advanced Mechanics of Materials 1\*
- CVEN 4511 or 5511 Introduction to Finite Element Analysis\*
- ECEN 5767 Power Distribution Systems
- MCEN 3022 Heat Transfer

\* *For well-qualified undergraduates.*

## *Graduate Degree Program(s)*

# Graduate Study in Architectural Engineering

The master's and doctoral programs have just been approved, with details forthcoming. Please contact the department with any questions at [cvengrad@colorado.edu](mailto:cvengrad@colorado.edu) or see their website at [tcivil.colorado.edu](http://tcivil.colorado.edu).

Graduate credit is offered in the following courses:

- CVEN 5010 HVAC System Controls
- CVEN 5020 Building Energy Measurements and Audits
- CVEN 5030 Architectural Lighting Equipment Design
- CVEN 5040 Lighting Systems Engineering
- CVEN 5050 Advanced Solar Design
- CVEN 5060 Advanced Passive Solar Design
- CVEN 5070 Thermal Analysis of Buildings
- CVEN 5080 Computer Simulation of Building Energy Systems
- CVEN 5090 Building Systems Seminar
- CVEN 5110 HVAC Systems Design 1
- CVEN 5111 Introduction to Structural Dynamics
- CVEN 5161 Advanced Mechanics of Materials
- CVEN 5206 Design Development
- CVEN 5217 Building Reuse and Retrofit
- CVEN 5218 Construction Accounting and Financial Management
- CVEN 5226 Quality and Safety
- CVEN 5236 Construction Planning and Scheduling
- CVEN 5246 Legal Aspect Construction
- CVEN 5256 Strategic Issues/Construction
- CVEN 5266 Project Administration
- CVEN 5276 Engineering Risk and Decision Analysis
- CVEN 5286 Design Construction Operations
- CVEN 5296 Construction Engineering 2
- CVEN 5326 Construction Project Controls
- CVEN 5511 Introduction to Finite Element Analysis
- CVEN 5525 Analysis of Framed Structures
- CVEN 5575 Advanced Topics in Steel Design
- CVEN 5585 Advanced Topics in Reinforced Concrete Design
- CVEN 5830 Special Topics in Energy
- CVEN 6161 Advanced Mechanics of Materials 2
- CVEN 6525 Finite Element Analysis of Structures
- CVEN 6595 Earthquake Engineering
- CVEN 7111 Dynamics of Structures
- CVEN 7131 Theory of Elasticity
- CVEN 7141 Plates and Shells
- CVEN 7161 Buckling in Structures
- CVEN 7511 Computational Mechanics of Solids and Structures
- CVEN 7545 Structural Optimization

- [CVEN 7555 Structural Reliability](#)

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# Art and Art History

The Department of Art and Art History offers the bachelor of arts in art history and in studio, and the bachelor of fine arts in studio arts.

The undergraduate degree in art history emphasizes knowledge and awareness of:

- the major artistic monuments of the world in a historical context;
- varied methodologies used to study art historically; and
- artistic media and techniques.

In addition, students completing the degree in art history are expected to acquire the ability and skills to:

- relate individual monuments to their historical and cultural context by identifying technique, style, and subject matter;
- interpret historical and critical information about works of art, artists, and related issues; and
- organize and communicate concepts and data pertaining to the history of art effectively in written and oral form.

The undergraduate degree in studio art emphasizes knowledge and awareness of:

- the significance of the major monuments in art history, with an emphasis on contemporary art;
- at least one discipline of studio art;
- related critical issues in studio practice; and
- a wide range of stylistic approaches.

In addition, students completing a degree in studio art are expected to acquire the ability and skills to:

- analyze their own works of art in terms of form and content;
- interpret the work of others;
- execute ideas in one or more artistic media;
- demonstrate artistic ability and technical proficiency in one chosen medium; and
- communicate in verbal and written form the particular conceptual and perceptual attitudes and stances of their own artistic production.

Course codes for these programs are ARTS, ARTF, and ARTH.

## *Bachelor's Degree Program(s)*

## Undergraduate Study in Art and Art History

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The degree requirements for the BA in art history are currently under review. For the most current information go to [www.colorado.edu/finearts/resources/baah.html](http://www.colorado.edu/finearts/resources/baah.html). BA degrees in art history and in studio arts require 39 credits in the major and a minimum of 75 nonmajor credits. The BFA degree in studio arts requires 63 credits in the major. Regular contact with fine arts advisors is recommended.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

## Bachelor of Arts (Art History)

(39 credit hours in the major)

### *Required Courses and Semester Credit Hours*

- ARTS 1010 and 1020 Introduction to Studio Art—6
- ARTH 1300 and 1400 World Art 1 and 2—6
- ARTH 4919 BA Art History Seminar—3
- 3000-level art history courses—9
- 4000-level art history courses—9
- ARTS or ARTH electives—6

**Distribution Requirements:** Complete at least six hours at the 3000 or 4000 level in each of three areas: Ancient and/or African/American/Asian/Australian, Medieval and/or Early Modern (a.k.a. Renaissance and Baroque), and Modern and/or Contemporary. Students must take at least one course in African, American, Asian, or Australian art at the 3000 or 4000 level.

### *Graduating in Four Years with a BA in Art History*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BA in art history, students should meet the following requirements:

- Declare the major by the beginning of the second semester.
- By the end of the third semester, complete lower-division studio courses, lower-division art history courses, and two classes in upper-division art history.
- By the end of the sixth semester complete up to 32 credit hours in the major.
- Final semesters not to exceed 45 credits toward the major.

## Bachelor of Arts (Studio Arts)

(39 credit hours in the major)

A major in the Department of Art and Art History with a minimum of 30 hours of ARTS/ARTH and/or transfer credit hours and successful portfolio review are required for the admission into the BFA program.

### *Required Courses and Semester Credit Hours*

- ARTS 1010 and 1020 Introduction to Studio Art—6
- ARTH 1300 and 1400 World Art 1 and 2—6
- Two 2000-level courses in area of emphasis—6
- Any two upper-division art history courses—6
- Upper-division studio emphasis (minimum)—12

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- ARTS or ARTH electives—3

### *Graduating in Four Years with a BA in Studio Arts*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BA in studio arts, students should meet the following requirements:

- Declare major by the beginning of the second semester.
- Complete ARTS 1010 and 1020 Introduction to Art, two level-1 studio classes, and lower-division art history courses by the end of the third semester.
- Complete 30–36 credit hours in the major by the end of the sixth semester.
- Final semesters not to exceed 45 credits in the major.

## Bachelor of Fine Arts (Studio Arts)

(63 credits toward the major)

Students must present and pass a portfolio review to be eligible for the BFA degree (a minimum of 30 credit hours is required).

### *Required Courses and Semester Credit Hours*

- ARTS 1010 and 1020 Introduction to Studio Art—6
- ARTH 1300 and 1400 World Art 1 and 2—6 SH
- Two 2000-level studio courses in area of emphasis—6
- Any two upper-division art history courses—6
- Upper-division studio emphasis (min.)—18
- ARTS or ARTH electives—18
- ARTS 4117 BFA Seminar—3

*NOTE: BA/BFA candidates must complete 12 upper-division hours in the major on the Boulder campus.*

### **Required Studio Courses for Studio Arts Majors**

- Painting and drawing majors must take any sequence of courses culminating in ARTS 4002 Drawing 4 or ARTS 4202 Painting 4.
- Ceramics majors must take ARTS 4085 Ceramics 4 and ARTS 4095 Special Topics in Ceramics.
- Printmaking majors are not required to take ARTS 1003 and may register for ARTS 3403, ARTS 3413, and ARTS 3423 as sophomores.

### *Graduating in Four Years with a BFA in Studio Arts*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BFA in studio arts or divisional studio arts, students should meet the following requirements:

- Declare the major by the beginning of the first semester, freshman year.
- Complete ARTS 1010 and 1020, ARTH 1300 and 1400, 9 credit hours of lower-division studio, two 2000-level courses, and one lower-division or upper-division studio or art history course by

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the end of the third semester (27 credit hours).

- Apply for the BFA in the fourth or fifth semester, with a minimum of 30 hours in the major.
- Complete up to 48 credit hours in the major by the end of the sixth semester.
- Final semesters not to exceed 66 credits toward the major.

## Honors

Students may graduate with departmental honors. Those interested in pursuing this program should contact the Honors Department and/or the Department of Art and Art History honors representative as early as possible. The minimum GPA requirement is 3.300 overall and 3.500 in the major. Students may take Studio or Art History Honors Thesis to complete individual work.

## Program Fees

Each course in the department has a program fee calculated at \$75 per lecture or seminar course and \$225 per studio course.

## Special Programs

**The CU Art Museum.** The CU Art Museum is a cultural gateway to the University of Colorado Boulder, facilitating engagement with larger societal issues through a greater understanding of the arts in a global context. The CU Art Museum is committed to enhancing understanding and appreciation of the visual arts within the academic community and among regional, national, and international audiences. It provides access to art of the highest quality through exhibitions, publications, and related educational events that reflect diversity, critical thinking, and creative research. The museum also facilitates student training in museum practices. As a collecting institution, the CU Art Museum promotes the excellence, preservation, scholarly interpretation, exhibition, and growth of its comprehensive permanent collection, which includes artworks from numerous time periods, artistic traditions, and cultures. The new 25,000-square-foot CU Art Museum contains five galleries including permanent collection galleries, changing exhibition galleries, and a video gallery. The CU Art Museum also includes a collections study center, allowing students, faculty, and researchers the opportunity to schedule appointments to view, research, and study works in its permanent collection.

**The CU Art Museum's Permanent Collection.** The Permanent Collection of the CU Art Museum contains over 6,000 works of art. The collection includes works from numerous time periods and cultures including ancient Greek pottery, Roman Glass, ancient Iranian pottery, Southwestern and South American santos, Southeast Asian pottery, African sculpture, Old Master works on paper, British 18th century prints, 19th and 20th century American prints and paintings, Japanese *ukiyo-e* prints, 19th century photography, Pop art, Minimalist works on paper, and modern and contemporary ceramics, sculpture, works on paper, paintings, photography, video, and new media art.

**Visiting Scholar Program.** This program is organized to explore the discipline of art history—its cultural connections, methodological pursuits, and its changing nature—by focusing extensively on the research and insights of individual academic experts. Three to five highly regarded art historians and/or art critics speak at a public lecture, presenting current research and published papers. During their week-long visit they work closely with students enrolled in the Visiting Scholar Seminar.

**Visiting Artist Program.** Artists of national and international reputation interact with graduate and advanced undergraduate students and discuss their studio work at seminar meetings. Artists present a public lecture during their visit, providing continuous input of significant developments and a comprehensive view of contemporary issues in the arts.

**Visual Resources Center (VRC).** The mission of the VRC is to provide and facilitate access to images, imaging, and related information resources for teaching and research in the Department of Art and Art History. This includes: 1) a departmental image collection and support for other important image resources; 2) resources, training, and support in digital imaging and image presentation

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software; and 3) equipment for use in creative work, documentation, and classrooms within the department. The digital image collection contains works by faculty, MFA thesis recipients, visiting artists, and other contemporary and historical works. Digital imaging resources include slide and flatbed scanning stations, with training available in digitization standards and best practices. VRC equipment includes laptops, data projectors, digital SLR cameras, video cameras, tripods, and other equipment for use in the department. The VRC also circulates its collection of DVDs containing lectures and interviews from the department's Visiting Artist Program. More information is available at [cuart.colorado.edu/resources/vrc](http://cuart.colorado.edu/resources/vrc).

### *Concurrent Bachelor's/Master's Program*

## Concurrent BA/MA Degree in Art History

This program is open only to students enrolled in the BA art history degree program at the University of Colorado Boulder.

It is expected that the BA/MA program be completed within five years. Both degrees, BA and MA, are awarded simultaneously upon meeting all the requirements for each degree. Six credits (two courses) may be shared between the two programs: 1) one course outside the Department of Art and Art History, at the 3000 level or above; 2) ARTH 6929 Theories of Art History.

There is a formal application process with letters of recommendation, statement of intent, transcripts, GRE scores, and a writing sample, as required for the two-year MA program. Students must have a minimum overall GPA of 3.000 and a GPA of 3.600 or above in the major of art history at the time of application. They take the GRE and formally apply to the graduate program during the second semester of their third (junior) year and begin taking graduate courses in the first semester of their fourth (senior) year. By the end of the fourth year, students must complete the language requirement of at least three progressive semesters at the college level or above, in a language appropriate to their studies.

During the second semester of their senior year, students should select a thesis advisor from among the art history faculty. This faculty member will direct the student's thesis and chair the student's mid-program review committee. Students will be evaluated through a mid-program review during the last two weeks of April of their senior year. This is the equivalent of the first year review in the two-year MA program. It focuses on a review of student course work and performance, on selecting the major and minor areas of study in preparation for the comprehensive exam (see below), and on selection of a thesis topic.

Students will register for thesis hours during the second semester of their fifth year, pending successful completion of the comprehensive exam and approval of their thesis abstract. They will take the comprehensive exam during the first week of the second semester of the fifth year. Upon the successful completion of their comprehensive exam, they will obtain approval of their thesis abstract from their thesis committee ("pre-thesis review") by the end of the second week of the second semester of their fifth year.

In all other details, the graduate portion of the BA/MA program is identical to the two-year MA program, as stipulated above.

## Concurrent BA/MA Degree in Film Studies

Only currently enrolled University of Colorado Boulder students may be considered for admission to the program. Transfer students must complete at least 24 credit hours as a degree-seeking student before applying to the program. Students enrolled in this BA/MA program cannot pursue a double major or double degree of any kind. Students must have a minimum overall undergraduate GPA of 3.300 and have completed all MAPS deficiencies.

The application deadline is the second Monday in October, in the fall semester of the applicant's

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junior year. Admission to the program occurs during the second semester of the junior year. Admitted students will secure the sponsorship and advisory commitment of a film studies faculty member at the rank of assistant professor or higher. They will also submit a one-page prospectus detailing a possible research topic for an MA thesis. In addition, they must successfully complete a writing assignment in the form of a 10–12 page analytical/theoretical or historical argument paper on a film determined by the faculty.

Students start taking graduate-level courses during their senior year and in the second semester of their senior year they go through a mid-program review. In the first semester of the fifth year, they fulfill their theory and critical methodology requirement and will also take two ARTF courses with a critical focus. They will also present and get approval of their thesis prospectus, constitute their thesis committee and fulfill 3 of the required thesis hours. During the second semester of the fifth year, they will take three ARTF critical focus courses, and fulfill the remaining 3 hours of thesis credit. Students will complete and submit their theses (in fulfillment of all graduate college requirements) by the end of the fifth year. Once the principal advisor has accepted the thesis, the final requirement will be an oral examination focusing on its subject matter.

It is expected that the BA/MA program be completed within five years. Both degrees, BA and MA, are awarded simultaneously upon meeting all degree requirements. Six credits (two courses) may be shared between the two programs.

## *Graduate Degree Program(s)*

### Graduate Study in Art and Art History

The master of arts degree is offered in art history, and the master of fine arts degree is offered in creative arts. In addition, two concurrent BA/MA degree programs are offered: one in art history and the other in film studies, in collaboration with the Film Studies Program. The department, in conjunction with the Leeds School of Business, offers a dual degree program in which both MBA and MFA (or MA) degrees are awarded.

Master of Arts Degree (Art History)

**Prerequisites.** The following are required for admission to the graduate program:

1. A baccalaureate degree from an approved college with a cumulative grade point average of at least 3.000.
2. A score of 500 or higher on the verbal section and an average score (approximately 50 percent below) on all other sections of the old version of the Graduate Record Examination or the equivalents thereof in the new version of the GRE.
3. A broad general background in history, literature, and philosophy.
4. An extensive background in art history.
5. Applicants to the master's program in art history are asked to write a 750 to 1,000 word essay in Part II, number 6 on the application form. Applicants are also required to provide a writing sample of approximately 10–20 pages. Typically, this is a paper submitted for an undergraduate class.

**Duration.** It is expected that the MA program be completed within two years.

**Examinations.** The comprehensive exams are given during the second year of study to measure graduate student knowledge of art history at the master's degree level. The exams consist of essay questions.

## *Degree Requirements: Plan I (Thesis Option)*

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A minimum of 30 semester hours must be completed, of which 21 must be completed in residence on the Boulder campus. Requirements and regulations include:

**Courses:**

- ARTH 6929 Theories of Art History must be taken during the first semester. This course may be taken twice for up to 6 credit hours.
- ARTH 5949 Visiting Scholars Seminar must be taken during the second semester when offered. Students are encouraged to repeat this course.
- At least one 3-credit, 5000- or 6000-level course in four of the following areas of art history: medieval, early modern and Renaissance, art of the Americas, Asian art, modern art, contemporary art, and critical theory/museology. When available, ancient art may constitute an area.
- At least one 3-credit, 3000-level or above course in a department outside the Department of Art and Art History, which supplements the major or minor areas of specialization.
- Comprehensive exam (see below).
- ARTH 6959 Master's Thesis: 4–6 credit hours (see below).
- No more than 9 hours of independent study credit may be applied toward the MA degree.
- *Pass/fail* courses do not count toward the MA degree.
- ARTH 5087 Selected Topics courses do not count toward the MA degree.
- A limit of 9 hours of transfer credits may be applied toward the MA degree.
- Students are encouraged and expected to attend undergraduate lecture courses as needed to prepare themselves for graduate seminars and for the comprehensive exam.
- Language requirement (see below).

***Degree Requirements: Plan II (Project Option)***

Same requirements as above with the following exceptions:

- A minimum of 36 semester hours is required.
- The project replaces the thesis.

**Advisor.** Upon admission, students are assigned a faculty advisor. Students should remain in close contact with the advisor as regards course registration and program requirements. At the end of the second semester of full time study, students should select a thesis advisor (or project advisor) from among the art history faculty.

**First Year Review.** During the last two weeks of April, students are evaluated during the first year review. It focuses on a review of student course work and performance, on selecting the major and minor areas of study in preparation for the comprehensive exam (see below), and on selection of a thesis topic.

**Comprehensive Exam.** This exam is given to measure the graduate student's knowledge of art history at the MA level. It consists of essay questions pertinent to the student's major and minor areas of study. It is given once per year during the second week of October. The comprehensive exam consists of two essays: a two-hour essay in the major area, and a 90-minute essay in the minor area. Students must pass the comprehensive exam in order to be eligible to register for thesis hours.

**Thesis Abstract** ("pre-thesis review"). By the end of the semester preceding the student's thesis semester, the student will prepare an abstract of approximately 1–2 typewritten pages, and attached bibliography, outlining the thesis topic and method of inquiry. The thesis abstract must be approved by the student's pre-thesis review committee in order for the student to register for thesis hours.

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**Thesis.** This should demonstrate scholarly research and writing in art history, should be based on independent study and analysis, and should represent the equivalent of 4–6 credit hours. In most cases, the master's thesis is the equivalent of a 40–50 page paper, exclusive of endnotes, bibliography, and illustrations.

**Thesis Defense.** In consultation with the thesis advisor, the student will select a thesis committee that consists of not less than three members of the art history graduate faculty, including the thesis advisor. The student will then schedule the thesis defense and prepare all necessary paperwork. The thesis must be submitted to all members of the thesis committee at least one week before the thesis defense. Graduate School guidelines ("specifications") must be used to prepare the MA thesis. Upon successful defense, the thesis is submitted to the Graduate School in the electronic form specified by the Graduate School, in accordance with the Graduate School's deadlines. A hard copy of the signature page, complete with the thesis committee members' signatures, is submitted to, and remains in, the Graduate School.

**Language Requirement.** The candidate for the MA degree in art history is required to demonstrate an adequate reading knowledge of French, German, or another appropriate language before receiving the degree by satisfactory course work equal to 3 progressive semesters at the college level or above or by passing an approved language examination. Language examinations may be arranged with one of the art history faculty on an individual basis.

## Master of Fine Arts Degree (Creative Arts)

The creative arts areas include ceramics, painting and drawing, IMAP (Interdisciplinary Media Arts Practice: photography, video, digital arts, and integrated arts), film (in collaboration with the Film Studies Program), printmaking, and sculpture.

**Duration.** It is expected that the MFA program be completed within two-and-a-half years.

**Prerequisites.** The following are required for admission to the graduate program:

- Bachelor's degree from an approved college or school of art with a minimum grade point average of 2.750.
- Minimum of 34 credit hours of acceptable work in art; 12 credits in fine arts history is preferred.
- Submission of a portfolio, including 20 images, representing creative work, a written statement of goals and objectives, and an artist statement.
- Applicants interested in IMAP-Video or film track should submit their portfolios on DVDs, for screening by the IMAP and film committees.

**Degree Requirements.** A minimum of 54 credit hours (of which 36 credit hours must be taken in residence on the Boulder campus) of acceptable graduate work must be completed beyond the bachelor's degree, with the following requirements:

### *Required Courses and Semester Credit Hours*

- Home studio (major area)—min. 12
- Electives (student and non-studio; up to 6 credits may be taken in an allied field, at the 3000 level and above)—21
- Art history, theory, or film critical studies—9
- Visiting Artist Seminar—3
- Graduate Art Seminar—3
- Thesis—6

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## *Film Track MFA*

ARTF 5030 Visiting Filmmakers Seminar is allowed as a substitute for ARTS 5118 Visiting Artist Seminar.

**Advisor.** Upon admission, students are assigned a tenured or tenure-track faculty member to serve as an academic advisor in the student's area of purpose.

**First Semester and First Year Reviews.** In consultation with the advisor, the student will establish the membership of his or her committee, consisting of a minimum of three faculty members and one second-year graduate student, and schedule the first semester review; its purpose is to give feedback to the student with regard to progress toward the degree. At the end of the first year, the committee is convened for a first year review; its purpose is to evaluate the student's progress in the program and to determine if she or he will continue in the program.

**Pre-thesis Review.** At the end of the semester preceding the graduating semester, the pre-thesis review takes place. Its purpose is for the graduate student to present the focus of his or her written thesis and exhibition, to review and evaluate the student's progress in the program, and to determine if the student is ready to register for thesis hours.

**Thesis/Exhibition/Defense.** The MFA thesis defense must be conducted while the student's work is on view during the MFA Exhibition. The MFA thesis must be submitted in its final draft form to all the thesis committee members two weeks prior to the scheduled thesis defense. After the defense, two copies of the thesis, with the required signatures on the signature sheet, must be turned into the Graduate Program Coordinator. One of these is catalogued in the Norlin Library.

### **Transfer of Credit**

Procedures for transferring credit from other graduate programs are governed by the regulations of the Graduate School. Transfer credit, not to exceed 18 semester hours for studio arts or 9 semester hours for art history, must first be approved by faculty in the student major area.

### **Change in Area of Concentration**

Students who wish to change their area of concentration after admission must petition the studio art curriculum committee.

### **Graduation**

Before registering for ARTS 6957 MFA Thesis, students must have a pre-thesis review with their faculty advisor and thesis committee. Studio arts thesis work must take the form of original creative work of acceptable professional standards. The oral defense exam must be done in conjunction with the thesis exhibition, and the candidate must provide a critical written statement (creative thesis) concerning the work. The candidate's written creative statement is housed with the Art and Architecture Collection in Norlin Library, and 10–15 digital images (representing work in the exhibition) become part of and are housed with the departmental Visual Resources Center. The committee may request a contribution of original work.

## *Dual Degree Programs*

### **Dual MFA (MA)/MBA Degree**

To support the university's mission of advancing knowledge across disciplines, and in recognition that business education and training has relevance to many academic fields, the Leeds School of Business and Department of Art and Art History endorse a dual degree program in which both a Master of Business Administration and a Master of Fine Arts (or Master of Arts in art history) is awarded to those students who satisfy the requirements outlined below. This three-year program offers students the opportunity to earn both degrees together in less time than if the degrees were earned sequentially.

**Admissions Process and Degree Requirements.** Students must apply to and meet the application requirements for each program separately. Admitted students spend their first year in one of the two programs, the second year in the other program, and the third year is a combination of the two. MFA students are required to complete 43 hours of MBA course work and 45 hours of AAH course work. MA (art history) students are required to complete 43 hours of MBA course work and 30 hours of art history course work. Both degrees must be awarded simultaneously.

Note: residents of Western states, including Alaska and Hawaii, may be eligible for in-state tuition for this dual degree program. Please see the Western Regional Graduate Program information sheet (download the WRGP handout) at [wiche.edu.wrgp](http://wiche.edu.wrgp) or contact a tuition classification officer in the Office of the Registrar (**303-492-0907** or [tuit.class@registrar.colorado.edu](mailto:tuit.class@registrar.colorado.edu)).

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# Asian Languages and Civilizations

Undergraduate students may choose to major in either Chinese or Japanese. In either case they receive a thorough grounding in the modern language, an introduction to the classical language and literature, and a broad familiarity with the literary and cultural history of the selected area.

Before registering for specific courses, students should consult with a departmental advisor concerning appropriate placement in language classes. Also, students interested in Chinese or Japanese are encouraged to broaden their career options through a double major, combining either language with another field of interest. Recent graduates have found positions in such fields as government service, international business, and secondary-school teaching; others have gone on to graduate study in Chinese or Japanese.

Course codes for these programs are EALC, ARAB, CHIN, FRSI, HIND, INDO, JPNS, KREN, and TBTN.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Asian Languages and Civilizations Chinese

The undergraduate degree in Chinese emphasizes knowledge and awareness of:

- Chinese literary history, focusing on selected canonical or widely recognized works;
- the historical and cultural contexts in which particular works were written;
- critical approaches to the study of Chinese language and civilization; and
- the challenges, deficiencies, and possible gains inherent in the process of translating from one language to another.

In addition, students completing the degree in Chinese are expected to acquire the ability and skills to:

- read modern Chinese at a level at which critical literary analysis can be performed;
- read classical Chinese, with the aid of appropriate reference works, at the level at which the text may begin to be appreciated for its literary value;
- speak and comprehend Mandarin sufficient for all situations in daily life and for a basic level of academic conversation;
- analyze and interpret literary texts in terms of style, structure, character, themes, and use of allusion; and
- communicate such interpretations competently in standard written English.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. CHIN 1010, 1020, and 2110 do not count toward the maximum of 45

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credits in the major department.

## *Chinese Language and Literature Track*

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below, including 30 credit hours of courses in Chinese language and literature above CHIN 2110. CHIN 2120 or its equivalent is the prerequisite to upper-division courses required for the major. At least 25 credit hours must be in upper-division courses.

### **Required Courses and Semester Credit Hours**

- CHIN 2120 Intermediate Chinese 2—5
- CHIN 3110 and 3120 Advanced Chinese 1 and 2—10
- CHIN 4210 Introduction to Classical Chinese—4
- CHIN 4220 Readings in Classical Chinese—4
- Additional credit hours selected from the following courses:
  - CHIN 3311 The Dao and the World in Medieval China—3
  - CHIN 3321 Culture and Literature of Ancient China—3
  - CHIN 3331 Culture and Literature of Late Imperial China—3
  - CHIN 3341 Literature and Popular Culture in Modern China—3
  - CHIN 3342 Literary Culture in Contemporary China—3
  - CHIN 3351 Reality and Dream in Traditional Chinese Fiction—3
  - CHIN 3361 Women and the Supernatural in Chinese Literature—3
  - CHIN 3371 Topics in Chinese Film—3
  - CHIN 4110 Readings in Modern Chinese 1—3
  - CHIN 4120 Readings in Modern Chinese 2—3
  - CHIN 4300 Open Topics—3
  - CHIN 4750 Daoism—3
  - CHIN 4900 Independent Study—1-3
  - CHIN 4950 Honors Thesis—3

## *Chinese Language and Civilization Track*

### **Required Courses and Semester Credit Hours**

- Requires successful completion of 30 credit hours, apportioned as follows:
  - CHIN 2120 Intermediate Chinese 2—5
  - CHIN 3110 and 3120 Advanced Chinese 1 and 2 or CHIN 4210 and 4220 Introduction to Classical Chinese and Readings in Classical Chinese—8-10
- The remaining 15 or 17 credits may be chosen from other CHIN courses, excluding only language courses numbered below 2120. Six of these remaining hours may be satisfied by courses focusing wholly or substantially on China offered in other departments, subject to approval by the undergraduate advisor in Chinese.
- Of the 30 credit hours presented for the degree, at least 18 must be at the upper division.

## *Graduating in Four Years with a BA in Chinese*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in Chinese, students should meet the following requirements:

- Declare the major in the first semester.
- Students wishing to major in Chinese and who have no prior knowledge of the language should begin the required major courses no later than the sophomore year.
- Students must consult with a major advisor to determine adequate progress toward completion

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of the major.

## Minor Program

The minor program in Chinese requires successful completion of 18 credit hours, including CHIN 3110/3120 and at least one additional 3-credit upper-division course in the program. All language course work applied to the minor must be completed with a grade of C or better; all other course work must be completed with a grade of C- or better. *Pass/fail* work will not apply to the minor. Of the 18 hours to be counted toward the minor, no more than 9 hours (including a maximum of 6 upper-division hours) may be transfer credits from other universities in this country or abroad. For more information, see the Asian languages and civilizations undergraduate advisor.

## Japanese

The undergraduate degree in Japanese emphasizes knowledge and awareness of:

- the outlines of the history of Japanese literature from the Nara period to the present;
- the outlines of Japanese historical and cultural development; and
- appropriate research strategies for Japanese language, literature, and culture.

In addition, students completing the degree in Japanese are expected to acquire the ability and skills to:

- speak and comprehend Japanese sufficiently for daily life;
- read, interpret, and analyze modern written texts;
- compose letters and simple compositions;
- use cultural awareness and understanding to function appropriately in a range of social situations; and
- communicate the results of research in English.

In addition, students target one or more of the following goals:

- read and comprehend classical Japanese, with the aid of appropriate reference works;
- translate a range of Japanese texts into English; and
- understand and analyze the structure of the Japanese language and communication patterns in Japanese.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. JPNS 1010, 1020, and 2110 do not count towards the maximum of 45 credits in the major department.

## Japanese Language and Literature Track

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below, including 30 credit hours of courses in Japanese language and literature above JPNS 2110. JPNS 2120 or its equivalent is the prerequisite to upper-division language courses required for the major. At least 25 credit hours must be at the upper-division level.

### Required Courses and Semester Credit Hours

- JPNS 2120 Intermediate Japanese—5
- JPNS 3110 and 3120 Advanced Japanese 1 and 2—10
- JPNS 4110 and 4120 Readings in Modern Japanese 1 and 2 or JPNS 4210 and 4220 Contemporary Japanese 1 and 2—6

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Additional credit hours selected from the following courses:

- JPNS 3441 Language and Japanese Society—3
- JPNS 3811 Love, Death, and Desire: Classical Japanese Literature in Translation—3
- JPNS 3821 Monsters, Monks, and Mayhem: Medieval Japanese Literature in Translation—3
- JPNS 3831 The Floating World of Play and Pssion: Early Modern Japanese Literature in Translation—3
- JPNS 3841 Tradition and Transgression: Modern Japanese Literature in Translation—3
- JPNS 4030 Japanese Syntax—3
- JPNS 4070 Second Language Acquisition in Japanese—3
- JPNS 4080 Kanji in Japanese—3
- JPNS 4210 and 4220 Contemporary Japanese 1 and 2—6
- JPNS 4310 and 4320 Classical Japanese 1 and 2—6
- JPNS 4300 Open Topics—3
- JPNS 4900 Independent Study—1-3
- JPNS 4950 Honors Thesis—3

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## *Japanese Language and Civilization Track*

### *Required Courses and Semester Credit Hours*

- Requires successful completion of 30 credit hours, apportioned as follows:
  - JPNS 2120 Intermediate Japanese—5
  - JPNS 3110 and 3120 Advanced Japanese 1 and 2—10
- The remaining 15 credits may be chosen from other JPNS courses, excluding only language courses numbered below 2120. Six of these remaining credit hours may be satisfied by courses focusing wholly or substantially on Japan offered in other departments, subject to approval by the undergraduate advisor in Japanese.
- Of the 30 credit hours presented for the degree, at least 18 must be at the upper-division level.

## *Graduating in Four Years with a BA in Japanese*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in Japanese, students should meet the following requirements:

- Declare the major in the first semester.
- Students wishing to major in Japanese and who have no prior knowledge of the language should begin the required major courses no later than the sophomore year.
- Students must consult with a major advisor to determine adequate progress toward completion of the major.

## *Minor Program*

The minor program in Japanese requires successful completion of 18 credit hours, including JPNS 3110/3120 and at least one additional 3-credit upper-division course in the program. All language course work applied to the minor must be completed with a grade of C or better; all other course work must be completed with a grade of C- or better. *Pass/fail* work will not apply to the minor. Of the 18 hours to be counted toward the minor, no more than 9 hours (including a maximum of 6 upper-division hours) may be transfer credits from other universities in this country or abroad. For more information, see the Asian languages and civilizations undergraduate advisor.

## *Courses Taught in English*

The department offers several courses in translation. These courses require no previous study of the language, history, or culture of the area involved and are open to all interested students, whether majors in this department or not. They provide excellent introductions to Chinese or Japanese literary

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and cultural history.

CHIN 1051 is a core curriculum course in the area of literature and the arts that focuses on the great books of China, both ancient and modern. CHIN 2441 and CHIN 3371 concentrate on film and culture. CHIN 3311, 3321, 3331, and 3341 concentrate, respectively, on medieval, ancient, late imperial, and modern Chinese culture. CHIN 3351 and 3361 are devoted to issues in fiction and on women and the supernatural. CHIN 4750 (cross-listed with RLST) focuses on the historical development of Daoism.

CHIN 1012 provides an interdisciplinary introduction to the history, literature, religion, and art of China. JPNS 1012 provides an interdisciplinary introduction to the history, literature, religion, and art of Japan. Both of these are core curriculum courses in the area of human and gender diversity.

JPNS 1051 is a core curriculum course in the area of literature and the arts focusing on both ancient and modern great books of Japan. JPNS 2441 focuses on film and culture, JPNS 3441 explores language and society. JPNS 3811, 3821, 3831, and 3841 focus, respectively, on classical, medieval, early modern, and modern Japanese literature.

### *Study Abroad*

The department strongly recommends that all majors participate in study abroad. The University of Colorado is affiliated with study abroad programs based at Beijing, Nanjing, and East China Normal Universities in China; National Chengchi University in Taiwan; and the department has exchange programs with Kansai Gaidai, Sophia University, and Akita International University in Japan. Consult a departmental advisor. For further information, contact the Office of International Education. Note, however, that not more than 20 transfer credit hours from universities in the United States or abroad may count toward the major in Chinese or Japanese.

### *Concurrent Bachelor's/Master's Program*

#### **BA/MA in East Asian Languages and Civilizations, Language and Literature Track**

The concurrent BA/MA degree program in East Asian Languages and Civilizations language and literature tracks offers a challenging and focused academic experience for exceptional students who demonstrate the ability to express their ideas clearly, both orally and in written form, using standard English. Highly motivated students who are accepted into the program begin graduate work no later than the senior year and earn both the BA and MA in five years. Students must have a minimum 3.25 GPA for all courses taken at CU-Boulder and must have completed most MAPS and core requirements by the end of the sophomore year. Three letters of recommendation indicating strong potential for advanced intensive study also are required. Applications will be reviewed by the graduate faculty in Chinese or Japanese. For specific requirements, please contact the undergraduate advisor.

#### **BA/MSIB Program (Bachelor of Arts in Chinese or Japanese/Master of International Business)**

The Department of Asian Languages and Civilizations, in conjunction with the Business School at the University of Colorado Denver, offers a degree track in either Japanese or Chinese leading to accelerated admission to the UC Denver MSIB program. Students complete the standard requirements for the Japanese or Chinese major and a block of basic courses in Boulder Leeds School of Business. These courses, along with Japanese or Chinese language and culture requirements, are counted by the UC Denver Business School, allowing ALC graduates to complete the MSIB on an accelerated schedule. ALC students are also given special consideration for fellowship funding at UC Denver.

### *Graduate Degree Program(s)*

# Graduate Study in Asian Languages and Civilizations

Applicants to the graduate program in Asian Languages and Civilizations (Chinese or Japanese emphasis) should have successfully completed the equivalent of the undergraduate major in Chinese or Japanese language and literature with advanced competence in modern Chinese or Japanese, an introduction to classical Chinese or Japanese, an understanding of the interrelationship of Chinese or Japanese language and society, and a familiarity with the history, major writers, and works of Chinese or Japanese literature. Foreign applicants must submit results from a TOEFL exam, with 560 being the minimum acceptable score.

## Master's Program

The MA may be pursued in one of four different tracks: **Chinese language and literature, Japanese language and literature, Chinese language and civilization, and Japanese language and civilization.** All entering students must take either CHIN 5010 or JPNS 5010 at the earliest opportunity. Students employed as teaching assistants also must take CHIN/JPNS 5020 Methods of Teaching Asian Languages. Selection of courses beyond these is made in consultation with the graduate advisor. Minimum requirements for graduation include a total of 24 hours of course work numbered 5000 or above, plus a thesis of 6 credit hours, or 30 hours of course work without a thesis. If deemed appropriate by the student's graduate committee, up to three courses (9 credit hours) taken outside the department may be included in the graduate curriculum.

## PhD Program

**Prerequisites.** The PhD in Asian Languages and Civilizations offers specializations in Chinese or Japanese with concentrations in literary and/or cultural studies of either the premodern or modern periods. Academic preparation is expected in both classical and modern language. The department will evaluate all applications for admission based on previous academic achievements and on the quality of the writing sample.

All international students whose native language is not English must score at least 620 (paper-based test) or 260 (computer-based test) or 105 (internet-based test) on the Test of English as a Foreign Language (TOEFL) to be considered for admission. Graduate Record Examination (GRE) General Test scores are not mandatory for admission. However, applicants wishing to be considered for competitive university fellowships will be strongly encouraged to take the GRE general test and submit the scores.

**Language Requirement.** In addition to the requirements of the University of Colorado Graduate School for regular degree students, the department requires all entering students to have superior proficiency in the target language and broad general knowledge of the literary and cultural traditions of their region of concentration.

**General Requirements.** The PhD in Asian Languages and Civilizations will require a minimum of 45 credit hours in graduate courses numbered 5000 or above in Chinese or Japanese; some graduate or advanced undergraduate course work from related fields may also be included, in accordance with Graduate School rules. Some course work completed for the MA degree at CU or other similarly rigorous institutions may count toward the 45 credit hours required. PhD students may transfer to the department up to 21 hours of acceptable graduate-level credit. All PhD students must take at least 24 credit hours of graduate course work at the University of Colorado Boulder in addition to 30 credit hours of dissertation work beyond the course work required.

### *Dual Degree Programs*

## MA in Asian Languages and Civilizations with MA in either History or Religious Studies

The Department of Asian Languages and Civilizations also participates in a dual master's program with the Departments of History and Religious Studies. Students interested in exploring this option

should contact the department for specific requirements.

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# Asian Studies

The Center for Asian Studies offers a broad interdisciplinary undergraduate major in Asian studies. In addition, a number of departments offer graduate training with an emphasis on Asia.

Students planning to major in Asian studies may participate in study abroad programs with prior approval from the Asian Studies Program and the Office of International Education.

For additional information on the major program, contact Tim Weston at **303-735-5122**.

Course code for this program is ASIA.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Asian Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below: 42 credits minimum, 18 of which must be upper division (A&S minimum).

#### *Required Courses and Semester Credit Hours*

#### *Asian Language*

4 semesters of a single Asian language (12 to 20 credits)

- Arabic (sequence of three years offered)
- Chinese (sequence of four years offered)
- Hindi (sequence of three years offered)
- Farsi (sequence of three years offered)
- Japanese (sequence of four years offered)
- Korean (sequence of three years offered)
- Sanskrit and Tibetan are also available through Continuing Education

#### *Traditional Asian Civilizations*

Students take any two of the following introductory courses, focusing on two different civilizations (6 credits minimum, lower division).

#### **East Asian Civilization**

- CHIN 1012 Introduction to Chinese Civilization (3-4 credits)
- HIST 1608 Introduction to Chinese History
- HIST 1708 Introduction to Japanese History
- JPNS 1012 Introduction to Japanese Civilization (3-4 credits)
- KREN 1011 Introduction to Korean Civilization

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[Chemical Physics](#)

[Chemistry and Biochemistry](#)

- RLST 2620 Religions of East Asia

### South Asian Civilization

- HIND 1011 Introduction to South Asian Civilization
- HIST 1408 Introduction to South Asian History
- RLST 2610 Religions of South Asia

### West Asia Civilization

- ARAB 1011 Introduction to Arab and Islamic Civilizations
- FRSI 1011 Introduction to Persian Civilization
- HIST 1308 Introduction to Middle Eastern History

## *Modern Asian Civilizations*

Students take one course (3 credits, lower division or upper division).

### ANTH (all modern Asian anthropology courses)

- ANTH 1100 Exploring a Non-Western Culture: The Tamils
- ANTH 1105 Exploring a Non-Western Culture: Tibet
- ANTH 1110 Exploring a Non-Western Culture: Japan
- ANTH 4180 Theory in Cultural Anthropology: Nepal and the Himalayas
- ANTH 4690 Anthropology of Tibet
- ANTH 4750 Culture and Society in South Asia
- ANTH 4760 Ethnography of Southeast Asia and Indonesia

### HIST (all modern Asian history courses)

- HIST 3628 Seminar in Recent Chinese History
- HIST 4328 The Modern Middle East
- HIST 4368 History and Society of Modern Arabia
- HIST 4538 History of Modern India
- HIST 4548 Women in Modern India
- HIST 4558 Modern Indian Intellectual History
- HIST 4628 Modern China
- HIST 4638 Contemporary China
- HIST 4648 History of Modern Chinese Intellectual Thought
- HIST 4728 Modern Japanese History
- HIST 4738 History of Early Modern Japan
- HIST 4109 WWII in Asia and the Pacific
- HIST 4329 Islam in the Modern World

### PSCI (all modern Asian politics courses)

- PSCI 3072 Government and Politics of Southeast Asia
- PSCI 3102 South Asian Politics
- PSCI 4052 Chinese Politics
- PSCI 4242 Middle Eastern Politics

> [Classics](#)

> [Cognitive Science Studies](#)

> [Communication](#)

> [Comparative Literature Graduate Program](#)

> [Distributed Studies Program](#)

> [Ecology and Evolutionary Biology](#)

> [Economics](#)

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> [Environmental Studies](#)

> [Ethnic Studies](#)

> [Film Studies](#)

> [French and Italian](#)

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> [Geological Sciences](#)

> [Germanic and Slavic Languages and Literatures](#)

> [History](#)

> [Humanities](#)

> [Integrative Physiology](#)

> [International Affairs](#)

> [INVST Community Studies](#)

> [Jewish Studies](#)

> [Lesbian, Gay, Bisexual, Transgender, and Queer Studies](#)

> [Linguistics](#)

> [Mathematics](#)

> [Medieval and Early Modern Studies](#)

- PSCI 4312 Politics and Language

**GEOG** (all modern Asian geography courses)

- GEOG 3822 Geography of China
- GEOG 4822 Environment and Development in China

**RLST** (all modern Asian religion courses)

- RLST 3820 Religion in Modern China
- RLST 4250 Special Topics: Transnational Buddhism

**Plus all modern Asian literature and art courses**

- ARAB 3230 Islamic Culture and the Iberian Peninsula
- ARAB 3330 The Arabic Novel
- CHIN 1061 Boudoirs, Books, Battlefields: Voices and Images of Chinese Women
- CHIN 2441 Film and the Dynamics of Chinese Culture
- CHIN 3331 Culture and Literature of Late Imperial China
- CHIN 3341 Literature and Popular Culture in Modern China
- CHIN 3342 Literary Culture in Contemporary China
- CHIN 3371 Topics in Chinese Film
- FILM 2513 Major Asian Filmmakers
- FILM 4023 Contemporary Asian Cinema
- HIND 2441 Screening India: A History of Bollywood Cinema
- HIND 3651 Living Indian Epics: The *Ramayana* and the *Mahabharata* in the Modern Political Imagination
- HIND 3661 South Asian Diasporas: Imagining Home Abroad
- HIND 3811 Subversive Indo-Pakistani Literature
- JPNS 2441 Japanese Culture through Film and Animation
- JPNS 3331 Business Japanese
- JPNS 3831 The Floating World of Play and Passion: Early Modern Japanese Literature in Translation
- JPNS 3841 Tradition and Transgression: Modern Japanese Literature in Translation
- JPNS 5810 Modern Japanese Literature
- JPNS 5820 Contemporary Japanese Literature
- JPNS 5830 Readings in Modern and Contemporary Japanese Thought and Culture
- KREN 2441 Film and Korean Culture
- KREN 3841 Modern Korean Literature in Translation

*Social Science*

Students take one course (3 credits, lower division or upper division).

**ANTH** (all Asian anthropology courses)

- ANTH 1100 Exploring a Non-Western Culture: The Tamils
- ANTH 1105 Exploring a Non-Western Culture: Tibet
- ANTH 1110 Exploring a Non-Western Culture: Japan

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

> [Philosophy](#)

> [Physics](#)

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> [Psychology and Neuroscience](#)

> [Religious Studies](#)

> [Scandinavian \(now Nordic Studies\)](#)

> [Sociology](#)

> [Spanish and Portuguese](#)

> [Speech, Language, and Hearing Sciences](#)

> [Theatre and Dance](#)

> [Western American Studies](#)

> [Western Civilization Studies](#)

> [Women and Gender Studies](#)

> [Writing and Rhetoric, Program for](#)

> [Faculty: Arts & Sciences](#)

> [Business](#)

> [Education](#)

> [Engineering & Applied Science](#)

> [Graduate School](#)

- ANTH 4690 Anthropology of Tibet
- ANTH 4750 Culture and Society in South Asia
- ANTH 4760 Ethnography of Southeast Asia and Indonesia

**PSCI** (all Asian politics courses)

- PSCI 3072 Government and Politics of Southeast Asia
- PSCI 3102 South Asian Politics
- PSCI 4052 Chinese Politics
- PSCI 4242 Middle Eastern Politics
- PSCI 4312 Politics and Language

**GEOG** (all Asian geography courses)

- GEOG 3822 Geography of China
- GEOG 4822 Environment and Development in China

**WMST** (all Asian women's studies courses)

- WMST 3220 Women in Islam

**Plus all other Asian social science courses**

*Electives*

Students take at least three courses (9 credits, lower division or upper division).

- ANTH 1100 Exploring a Non-Western Culture: The Tamils
- ANTH 1105 Exploring a Non-Western Culture: Tibet
- ANTH 1110 Exploring a Non-Western Culture: Japan
- ANTH 4690 Anthropology of Tibet
- ANTH 4750 Culture and Society in South Asia
- ANTH 4760 Ethnography of Southeast Asia and Indonesia
- ARAB 3230 Islamic Culture and the Iberian Peninsula
- ARAB 3330 The Arabic Novel
- ARAB 3340 Representing Islam
- ARAB 4250 Arabic Media
- ARTH 2409 Introduction to Asian Art
- ARTH 3609 East Asian Ceramics
- ARTH 3619 The Arts of China
- ARTH 3629 The Arts of Japan
- ARTH 4029 The Arts of Islam
- ARTH 4449 Art of India and Southeast Asia
- ARTH 4469 Chinese Painting
- ARTH 4499 Arts of Vietnam in Context
- ASIA 1000 South and Southeast Asian Civilizations
- ASIA 4300 Open Topics: Readings in Asian Literature
- ASIA 4840 Independent Study
- ASIA 4930 Engage Asia: Internship in Asian Studies

> [Journalism & Mass Communication Program](#)

> [Law](#)

> [Music](#)

> [Other Academic Programs](#)

- CHIN 1051 Masterpieces of Chinese Literature in Translation
- CHIN 1061 Boudoirs, Books, Battlefields: Voices and Images of Chinese Women
  - CHIN 2441 Film and the Dynamics of Chinese Culture
  - CHIN 3200 Advanced Writing Topics on Chinese and Japanese Literature and Civilization
  - CHIN 3311 The Dao and the World in Medieval China
  - CHIN 3321 Culture and Literature of Ancient China
  - CHIN 3331 Culture and Literature of Late Imperial China
  - CHIN 3341 Literature and Popular Culture in Modern China
  - CHIN 3342 Literary Culture in Contemporary China
  - CHIN 3351 Reality and Dream in Traditional Chinese Fiction
  - CHIN 3361 Women and the Supernatural in Chinese Literature
  - CHIN 3371 Topics in Chinese Film
  - CHIN 3451 Language and Gender in China
  - CHIN 4210 Introduction to Classical Chinese
  - CHIN 4220 Readings in Classical Chinese
  - CHIN 4300 Open Topics: Readings in Chinese Literature
  - CHIN 4750 Daoism
  - CHIN 4900 Independent Study
  - EDUC 4800 Global Education Methods: Asia
  - EMUS 1467 Japanese or Gamelan Ensemble
  - EMUS 3467 Japanese or Gamelan Ensemble
  - FILM 2513 Major Asian Filmmakers
  - FILM 4023 Contemporary Asian Cinema
  - GEOG 3822 Geography of China
  - GEOG 4822 Environment and Development in China
  - HIND1011 Introduction to South Asian Civilizations
  - HIND 2441 Screening India: A History of Bollywood Cinema
  - HIND 3651 Living Indian Epics: The *Ramayana* and the *Mahabharata* in the Modern Political Imagination
  - HIND 3661 South Asian Diasporas: Imagining Home Abroad
  - HIND 3811 The Power of the Word: Subversive and Censored 20th Century Indo-Pakistani Literature
  - HIND 3821 The *Mahabharata* as Literature, Performance, Ideology
  - HIND 3831 The Many Faces of Krishna in South Asia Literature and Culture
  - HIST 1308 Introduction to Middle Eastern History
  - HIST 1408 Introduction to South Asian History
  - HIST 1608 Introduction to Chinese History
  - HIST 1708 Introduction to Japanese History
  - HIST 2166 The Vietnam Wars
  - HIST 2629 China in World History
  - HIST 332 Seminar in Middle Eastern History
  - HIST 3628 Seminar in Recent Chinese History
  - HIST 3718 Seminar in Japanese History
  - HIST 4109 WWII in Asia and the Pacific
  - HIST 4166 The War in Vietnam and Its Legacy
  - HIST 4328 The Modern Middle East, 1600 to the Present

- HIST 4349 Decolonization of the British Empire
- HIST 4528 Islam in South and Southeast Asia (1000 to the Present)
- HIST 4538 History of Modern India
- HIST 4548 Women in Modern India
- HIST 4558 Modern Indian Intellectual History
- HIST 4618 Traditional China
- HIST 4619 Women in Asian History
- HIST 4628 Modern China
- HIST 4638 Contemporary China
- HIST 4648 History of Modern Chinese Intellectual Thought
- HIST 4658 China and Islam from the 7th Century to the 20th Century
- HIST 4718 Ancient, Classical, and Medieval Japanese History
- HIST 4728 Modern Japanese History
- HIST 4738 History of Early Modern Japan (1590-1868)
- JOUR 4871 Asian Media
- JPNS 1051 Masterpieces of Japanese Literature in Translation
- JPNS 2441 Film and Japanese Culture
- JPNS 3200 Advanced Writing Topics on Chinese and Japanese Literature and Civilization
- JPNS 3331 Business Japanese
- JPNS 3441 Language and Japanese Society
- JPNS 3811 Classical Japanese Literature in Translation
- JPNS 3821 Medieval Japanese Literature in Translation
- JPNS 3831 Early Modern Japanese Literature in Translation
- JPNS 3841 Modern Japanese Literature in Translation
- JPNS 4030 Japanese Syntax
- JPNS 4070 Second Language Acquisition of Japanese
- JPNS 4080 Kanji in Japanese Orthography
- JPNS 4300 Readings in Japanese Literature
- JPNS 4310 Classical Japanese
- JPNS 4320 Classical Japanese
- JPNS 4900 Independent Study
- KREN 2441 Film and Korean Culture
- KREN 3441 Religion and Culture in Korea
- KREN 3841 Modern Korean Literature in English Translation
- KREN 4900 Independent Study MUEL 2772 World Musics: Asia
- MUSC 4152 East Asian Music
- PSCI 3072 Government and Politics in Southeast Asia
- PSCI 3102 South Asian Politics
- PSCI 4028 Special Topics: Politics of Southeast Asia
- PSCI 4052 Chinese Politics
- PSCI 4312 Politics and Language
- RLST 2600 Judaism, Christianity, and Islam
- RLST 2610 Religions of South Asia
- RLST 2620 Religions of East Asia
- RLST 3200 Hinduism

RLST 3300 Foundations of Buddhism

- RLST 3400 Japanese Religions
- RLST 3600 Islam
- RLST 3800 Chinese Religions
- RLST 3820 Special Topics: Religion in Modern China
- RLST 4200 Topics in Hinduism
- RLST 4250 Topics in Buddhism
- RLST 4650 Islam and the Modern World
- RLST 4750 Daoism
- WMST 3220 Women in Islam

and courses (including some study abroad courses) approved by the Asian studies faculty advisor.

Senior thesis or creative project: ASIA 4830 (3 credits, upper division)

Studies an approved Asian topic, following guidelines established by the Asian Studies faculty advisor. To complete this requirement students are to undertake an independent study, working one-on-one under the guidance of a faculty member of their own choosing, and to present their work after it has been completed. It is up to each student to figure out which faculty member he or she would like to work with (in cooperation with the Asian Studies faculty advisor) and to get that faculty member's formal approval. More information is available on the "Academics" tab of the Center for Asian Studies website: <http://cas.colorado.edu>.

**University Catalog 2012-2013**

Put your contact information here

**University Catalog 2012-13**

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# Astrodynamics and Satellite Navigation Systems

## *Certificate Program*

### Astrodynamics and Satellite Navigation Systems Certificate

The certificate recognizes student accomplishments at the graduate level in successfully completing a specialized program of study in Astrodynamics and Satellite Navigation (ASN). It is essentially a specialization of the aerospace engineering sciences master of science (MS) degree in the ASN focus area with additional requirements for breadth and depth in the ASN area.

The certificate will make students more desirable to future employers looking for astrodynamics and satellite navigation specialists.

#### Certificate Requirements

Complete all four core area subjects in ASN, plus two advanced ASN courses of the student's choosing.

#### Core Requirements

- ASEN 5010 Spacecraft Attitude Dynamics and Control
- ASEN 5050 Astrodynamics (can be satisfied by taking an additional 6000-level course that has ASEN 5050 as a prerequisite.)
- ASEN 5070 Statistical Orbit Determination
- ASEN 5090 Introduction to Global Navigation Satellite Systems

#### Advanced Requirements

Select ANY two 6000-level courses in ASN including:

- ASEN 6080 Advanced Statistical Orbit Determination
- ASEN 6090 GNSS Software and Applications (course number assignment pending)
- ASEN 6091 Satellite Navigation Receiver and Architectures (course number assignment pending)
- ASEN 6519 Advanced Spacecraft Attitude and Control
- ASEN 6519 Spacecraft Formation Flying
- ASEN 6519 Optimal Trajectories
- ASEN 6519 Advanced Astrodynamics and Celestial Mechanics

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**Astrodynamics and Satellite Navigation Systems**

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# Astrophysical and Planetary Sciences

The undergraduate major has two tracks—one in general astronomy and one in astrophysics/physics (see the website at [aps.colorado.edu](http://aps.colorado.edu)).

The track in general astronomy is designed to meet student needs for basic, undergraduate training in space sciences (astronomy, astrophysics, planetary sciences, and space physics). Undergraduates are prepared for both academic research assistant careers and the industrial market (aerospace, computer software, instrumentation, and other technical areas) as well as for science education, science journalism, and space policy. This track provides a liberal arts degree in the science of astronomy, observations, and technology as well as core training in astronomical sciences and mathematics, applied physics, and computational and instrumental technology for professions in the space sciences. The track can focus on observations (ground-based telescopes, rocket probes, space-borne observatories) or on K–12 science education, for which astronomy provides excellent science content for motivating young students. It also offers broad training for careers in science policy and science writing.

The bachelor's degree track in astrophysics/physics is directed toward students interested in pursuing graduate studies in astrophysics by focusing on multidisciplinary work in physics and mathematics together with astronomy. Graduates are provided with scientific and technological training in the space sciences, including mathematical, physical, computational, and instrumental expertise. An honors thesis or other research work is encouraged.

Specific goals for both programs are to provide:

- both theoretical and practical knowledge of astronomy and astrophysics at a level comparable to the best programs at other major U.S. public institutions. The Department of Astrophysical and Planetary Sciences is one of the few programs that combines both astrophysics and planetary science, providing a unified view of space sciences, the solar system and comparative planetology, stellar and galactic astronomy, and cosmology.
- courses and significant hands-on experience with telescopes, optics, instrumentation, and computer image processing and modeling. These skills are useful for students wishing to pursue graduate degrees or careers in aerospace, technical, or computer industries.
- opportunities for faculty-advised research and senior (honors) theses.

Course code for this program is ASTR.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Astrophysical and Planetary Sciences

A major with two tracks (general astronomy and astrophysics/physics) was approved by the Regents and CCHE on June 1, 2000.

#### *General Astronomy Track*

## Colleges & Schools

- > [Architecture & Planning](#)
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  - [Actuarial Studies and Quantitative Finance Certificate Program](#)
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- > [British and Irish Studies](#)
- > [Central and East European Studies](#)
- > [Chemical Physics](#)
- > [Chemistry and Biochemistry](#)

This is appropriate for someone aiming for a career in K–12 education, science journalism, science policy, information technology, science management, or technical work that does not require a graduate degree.

### **Required Courses and Semester Credit Hours**

- ASTR 2500/ ASEN 1400 Accelerated Introductory Astronomy or ASTR 1010 and 1020 Introductory Astronomy—8
- PHYS 1110, 1120, and 1140 General Physics 1 and 2—9
- APPM 1350 and 1360 or MATH 1300 and 2300 Calculus 1 and 2—8-10
- One of the following four courses:  
ASTR 2500/ASEN 1400 Gateway to Space—3  
ASTR 2600 Computational Techniques—3  
PHYS 2130 General Physics 3—3  
PHYS 2170 Foundations of Modern Physics—3
- Minimum of two additional courses selected from:  
ASTR 2000 Ancient Astronomies—3  
ASTR 2010 Modern Cosmology—3  
ASTR 2020 Introduction to Space Astronomy—3  
ASTR 2030 Black Holes—3  
ASTR 2500 Gateway to Space—3  
ASTR 2600 Computational Techniques—3  
ASTR 3300 Extraterrestrial Life—3
- One other science sequence with lab. Can be satisfied by any sequence that satisfies arts and sciences core curriculum in natural sciences with lab, for example:  
CHEM 1113, 1114, and 1131, 1134; EBIO 1210–1230, GEOL 1010, 1020, and 1030, ATOC 1050, 1060, and 1070, or equivalent—7-10
- One upper-division course sequence:  
ASTR 3720 Planets and their Atmospheres and ASTR 3750 Planets, Moons, and Rings **or**  
ASTR 3730 Astrophysics 1: Stellar and Interstellar and ASTR 3830 Astrophysics 2: Galactic and Extragalactic—6
- Four additional courses from the following or from those sequence courses not used for the upper-division sequence requirement, above :  
ASEN 4010 Introduction to Space Dynamics—3  
ASTR 3510 Observations and Instrumentation 1—4  
ASTR 3520 Observations and Instrumentation 2—4  
ASTR 3710 Formation and Dynamics of Planetary Systems—3  
ASTR 3740 Cosmology and Relativity—3  
ASTR 3760 Solar and Space Physics—3  
ASTR 3800 Scientific Data Analysis and Computing—3  
ASTR 4330 Cosmochemistry—3  
ASTR 4800 Space Practice and Policy—3  
ASTR 5760 Astrophysical Instrumentation (with instructor's permission)—3  
ATOC 4720 Atmospheric Physics and Dynamics—3

A minor is available that may be satisfied by taking various combinations of courses among the diverse possibilities offered by the department (see below).

### ***Astrophysics/Physics Track (Jointly Supervised by the APS and Physics Departments)***

For students aiming for a graduate program in astronomy or planetary sciences. Similar to Physics Plan 2 (Astrophysics), with additional astrophysics instrumentation labs and different electives.

- > [Classics](#)
- > [Cognitive Science Studies](#)
- > [Communication](#)
- > [Comparative Literature Graduate Program](#)
- > [Distributed Studies Program](#)
- > [Ecology and Evolutionary Biology](#)
- > [Economics](#)
- > [English](#)
- > [Environmental Studies](#)
- > [Ethnic Studies](#)
- > [Film Studies](#)
- > [French and Italian](#)
- > [Geography](#)
- > [Geological Sciences](#)
- > [Germanic and Slavic Languages and Literatures](#)
- > [History](#)
- > [Humanities](#)
- > [Integrative Physiology](#)
- > [International Affairs](#)
- > [INVST Community Studies](#)
- > [Jewish Studies](#)
- > [Lesbian, Gay, Bisexual, Transgender, and Queer Studies](#)
- > [Linguistics](#)
- > [Mathematics](#)
- > [Medieval and Early Modern Studies](#)

## Required Courses and Semester Credit Hours

- APPM 1350, 1360, 2350; or MATH 1300, 2300, and 2400 (Calculus 1, 2, and 3); and APPM 2360 or MATH 3130 and 4430 (Linear Algebra and Differential Equations)—16-20
- ASTR 1030 and 1040 Accelerated Introductory Astronomy—8
- ASTR 3720 and 3750 planetary sequence or ASTR 3730 and 3830 stellar/galactic sequence—6
- PHYS 1110, 1120, and 1140 General Physics 1 and 2 and PHYS 2150, 2170, and 2210 Sophomore Physics—16
- PHYS 3310 and 3320 Electromagnetism and PHYS 3210 and 3220 Classical and Quantum Mechanics—12
- Suggested electives: PHYS 4230 Thermodynamics and Statistical Mechanics or PHYS 4410 Quantum Mechanics II or PHYS 4420 Nuclear and Particle Physics or PHYS 4510 Optics or PHYS 4150 Plasma Physics
- Three additional courses from the following or any of 3720, 3750, 3730, 3830 not used for the requirement above:
  - ASEN 4010 Introduction to Space Dynamics—3
  - ASTR 3510 Observations and Instrumentation 1—4
  - ASTR 3520 Observations and Instrumentation 2—4
  - ASTR 3710 Formation and Dynamics of Planetary Systems—3
  - ASTR 3740 Cosmology and Relativity—3
  - ASTR 3760 Solar and Space Physics—3
  - ASTR 3800 Scientific Data Analysis and Computing—3
  - ASTR 4330 Cosmochemistry—3
  - ATOC 4720 Atmospheric Physics and Dynamics—3
- Any 5000- or 6000-level physical and planetary sciences course with instructor's permission—3
- Total credit hours for the major 23 hours minimum in astrophysics and 28 hours minimum in physics (this must include at least 15 upper-division hours in astrophysics and 12 in physics).

Declaration of a minor in astrophysical and planetary sciences is open to any student enrolled at CU-Boulder, regardless of college or school. For more information see [aps.colorado.edu/undergrad/APSMInor\\_courserequirements.html](https://aps.colorado.edu/undergrad/APSMInor_courserequirements.html).

## Minor Program in Astrophysical and Planetary Sciences

Declaration of a minor in astrophysical and planetary sciences is open to any student enrolled at CU-Boulder. Course work applied to the minor may be applied to another major or toward core curriculum requirements. Minimum requirements for a minor include:

- A minimum of six APS courses, including at least three advanced courses (numbered above 3500).
- All course work applied to a minor must be completed with a grade of C- or better (no *pass/fail* work may be applied). The GPA for all minor degree course work must be equal to 2.000 (C) or higher.
- Students pursuing an individually structured major or a major in distributed studies are not eligible to earn a minor.
- Students are allowed to apply no more than three courses, including two advanced courses, of transfer work toward a minor.

**Course Requirements** (six courses required)

**Elementary** (maximum of three courses)

> Molecular, Cellular, and Developmental Biology

> Museum and Field Studies

> Neuroscience

> Nordic Studies (Scandinavian)

> Peace and Conflict Studies

> Philosophy

> Physics

> Political Science

> Psychology and Neuroscience

> Religious Studies

> Scandinavian (now Nordic Studies)

> Sociology

> Spanish and Portuguese

> Speech, Language, and Hearing Sciences

> Theatre and Dance

> Western American Studies

> Western Civilization Studies

> Women and Gender Studies

> Writing and Rhetoric, Program for

> Faculty: Arts & Sciences

> Business

> Education

> Engineering & Applied Science

> Graduate School

- \*ASTR 1030/1040 Accelerated Introductory Astronomy 1 and 2 (Solar System/Stars and Galaxies) or ASTR 1010/1020 Introductory Astronomy 1 and 2—4
- ASTR 2000 Ancient Astronomies of the World—3
- ASTR 2010 Modern Cosmology: Origin and Structure of the Universe—3
- ASTR 2030 Black Holes—3
- ASTR 2500/ASEN 1400 Gateway to Space—3
- ASTR 2600 Computational Techniques—3
- ASTR 3300 Extraterrestrial Life—3
- \* ASTR 1030/1040 Introductory sequence is recommended.

- > Journalism & Mass Communication Program
- > Law
- > Music
- > Other Academic Programs

### Advanced (minimum of three courses)

Two courses from an upper-level course sequence:

- **Planetary Sequence:** ASTR 3720 Planets and Their Atmospheres and ASTR 3750 Planets, Moons, and Rings—3  
*or*
- **Astrophysics Sequence:** ASTR 3730 Stellar and Interstellar and ASTR 3830 Galactic and Extragalactic—3

Plus one course from the following:

- ASTR 3510 Observations and Instrumentation 1—4
- ASTR 3520 Observations and Instrumentation 2—4
- ASTR 3710 Formation and Dynamics of Planetary Systems—3
- ASTR 3720 Planets and Their Atmospheres—3
- ASTR 3730 Astrophysics 1—3
- ASTR 3740 Cosmology and Relativity—3
- ASTR 3750 Planets, Moons and Rings—3
- ASTR 3760 Solar and Space Physics—3
- ASTR 3830 Astrophysics 2—3
- ASTR 4330 Cosmochemistry—3
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics—3
- ASTR 4840 Independent Research—1-8

Additional information is available from any faculty mentor. See [http://aps.colorado.edu/undergrad\\_main.html](http://aps.colorado.edu/undergrad_main.html)

## Graduate Degree Program(s)

### Graduate Study in Astrophysical and Planetary Sciences

The curriculum and research in the department emphasizes three major areas: astrophysics, planetary sciences, and space physics.

The department offers the PhD degree. During the first year of graduate study, students generally obtain a broad background in courses regarded as basic to all three areas in addition to more specialized studies. Many students take graduate-level courses in other departments (e.g., Departments of Physics, Atmospheric and Oceanic Sciences, Geological Sciences, Applied Mathematics, or Aerospace Engineering), depending upon their particular interests or participation in interdisciplinary programs (see below). The departmental core courses in the three areas are:

- ASTR 5110 Atomic and Molecular Processes
- ASTR 5120 Radiative and Dynamical Processes
- ASTR 5400 Introduction to Fluid Dynamics
- ASTR 5540 Mathematical Methods
- ASTR 5550 Observations, Data Analysis, and Statistics

Descriptions of more specialized courses follow. Students interested in applying to this department are invited to write to Graduate Program Assistant, Department of Astrophysical and Planetary Sciences, University of Colorado Boulder, 391 UCB, Boulder, CO 80309-0391.

### *Astrophysics (Including Solar Physics)*

The department offers a broad range of courses and research in this area, leading to the PhD degree. Graduate-level courses are offered in the following subjects:

- ASTR 5140 Astrophysical and Space Plasmas
- ASTR 5700 Stellar Structure and Evolution
- ASTR 5710 High-Energy Astrophysics
- ASTR 5720 Galaxies
- ASTR 5730 Stellar Atmospheres and Radiative Transfer
- ASTR 5740 Interstellar Astrophysics
- ASTR 5760 Astrophysical Instrumentation
- ASTR 5770 Cosmology
- ASTR 6000 Seminar in Astrophysics

Research in observational and theoretical astrophysics is conducted in the following areas:

- Stellar atmospheres, radiative transfer, stellar winds of hot/cool stars
- Formation of stars and planetary systems
- Solar physics
- Interstellar and intergalactic medium
- Cosmology and large-scale structure of the universe; galaxy formation
- Stellar interiors, black holes, and neutron stars
- Gravitational physics
- Cosmic X-ray sources, supernovae and their remnants, and accretion phenomena, jets and clusters of galaxies
- Galactic evolution, quasars, and active galaxies
- Radio and sub-millimeter astronomy, microwave background
- Plasma astrophysics and MHD
- Astrophysical fluid dynamics
- UV, optical, IR, submillimeter, radio, and X-ray instrumentation
- Instrument and detector development
- Sounding rocket and balloon astronomy

### **Departmental Equipment and Research**

Research is carried out with the ARC 3.5m Apache Point telescope and with national telescopes and laboratories and international collaborators: High Altitude Observatory (HAO) in Boulder (solar physics), National Optical Astronomical Observatories in Tucson and Chile (optical astronomy), Caltech Sub-Millimeter Observatory, National Radio Astronomy Observatory (NRAO), the Very Large

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Array (VLA), the Green Bank Telescope (GBT), the Hubble Space Telescope (HST), the Chandra, SWIFT, and XMM X-ray telescopes, and the Fermi Gamma-Ray Space Telescope. CU-Boulder also is involved with the Messenger (Mercury), MAVEN (Mars), JUNO (Jupiter), Cassini (Saturn), and New Horizons (Pluto) missions, and the HST Cosmic Origins Spectrograph.

Locally, APS operates a 24-inch Casse-grain-Coude and 16- and 18-inch Cassegrain telescopes, available for photographic, photometric, and spectrographic observations, as well as for instrument and detector development. Opportunities for graduate research also are found with the university's Laboratory for Atmospheric and Space Physics (LASP), the Center for Astrophysics and Space Astronomy (CASA), and JILA. See Graduate School for more information.

## *Planetary Sciences*

As planetary sciences is an interdisciplinary field, students can obtain degrees from the Departments of Astrophysical and Planetary Sciences, Atmospheric and Oceanic Sciences, Geological Sciences, Physics, or Aerospace Engineering. CU-Boulder is also home to a division of the Southwest Research Institute, with over 25 planetary scientists, many of whom work with CU students. Research and courses related to the physics and dynamics of the atmospheres of other planets, planetary surfaces and interiors, and other solar system studies are available in programs leading to the MS and PhD degrees. Courses related to the physics and dynamics of the Earth's atmosphere are offered through PAOS under the ATOC acronym. Graduate-level courses in these areas are:

- ASTR 5140 Astrophysical and Space Plasma
- ASTR 5300 Introduction to Magnetospheres
- ASTR 5330 Cosmochemistry
- ASTR 5410 Fluid Instabilities, Waves, and Turbulence
- ASTR 5800 Planetary Surfaces and Interiors
- ASTR 5810 Planetary Atmospheres
- ASTR 5820 Origin and Evolution of Planetary Systems
- ASTR 5830 Topics in Planetary Science
- ASTR 5835 Seminar in Planetary Science
- ATOC 5050 Physical Processes of the Atmosphere and Ocean
- ATOC 5560 Radiative Processes in Planetary Atmospheres
- ATOC 5960 Theories of Climate and Climate Variability

Research in theoretical, observational, and laboratory atmospheric and planetary science is conducted in the following areas:

- Planetary disks, Kuiper Belt objects, extra-solar planets;
- Dynamics and chemistry of planetary atmospheres, planetary clouds, and planetary climates; evolution of planetary atmospheres; and comparison of planetary and terrestrial atmospheres;
- Planetary aeronomy, airglow and aurora, UV and IR spectroscopy, noctilucent clouds, structure and composition of planetary atmospheres (Venus, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto), planetary magneto-spheres, and cometary physics;
- Satellite monitoring of the Earth's atmosphere and environment, including remote sensing of mesospheric ozone, stratospheric trace species, convection, outgoing radiation, and magnetospheric dynamics; and
- Planetary geology, planetary interiors and surfaces, and planetary geophysics.

Graduate research opportunities exist with individual faculty members, as well as jointly with academic and research units such as the Departments of Geological Sciences, Physics, and Aerospace Engineering, as well as the Department of Atmospheric and Oceanic Sciences (ATOC), the National Center for Atmospheric Research (NCAR), the National Oceanic and Atmospheric

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Administration (NOAA), and the Laboratory for Atmospheric and Space Physics (LASP). The latter is involved in space investigations of the Earth, Sun, and planets. Financial support is available in connection with all of the above research activities.

## *Atmospheric and Oceanic Sciences*

This interdisciplinary program provides an educational and research environment to examine the dynamical, physical, and chemical structures of the atmosphere, ocean, and land surface, and the manner in which they interact. For further information, see the ATOC listing. APS participates in the master's degree program in computational science (under applied math).

## *Geophysics*

The department participates in the interdepartmental PhD program in geophysics. For further information, refer to the discussion of the geophysics program in the Graduate School section.

## *Departmental Requirements*

Those wishing to pursue graduate work in APS leading to candidacy for an advanced degree should carefully read requirements for advanced degrees in the Graduate School section. The following are special departmental requirements.

## Master's Degree

The Department of Astrophysical and Planetary Sciences does not normally admit students for a terminal master's degree program.

**Prerequisites.** A thorough undergraduate preparation in physics and mathematics is necessary for graduate study. Courses should include thermodynamics, mechanics, electricity and magnetism, quantum mechanics, atomic physics, and mathematics at least through complex variables and differential equations.

**Qualifying Examination.** The Graduate Record Examination aptitude tests and advanced test in physics are used in place of a qualifying examination, and this examination should be taken before the time of application to the department.

**Preliminary Interview.** Students in the Department of Astrophysical and Planetary Sciences are given an oral interview prior to the beginning of the fall semester of their first year. This oral interview examines fundamental knowledge in undergraduate physics and mathematics. Students are required to overcome any academic deficiencies within a year in order to remain in the program.

**Course Requirements.** Under Plan I, a student must present a thesis for 6 credit hours plus 24 credit hours of course work, at least 12 of which must be APS courses numbered 5000 or above. Under Plan II, additional hours of approved graduate courses must be presented for a total of 30 credit hours, of which at least 16 must be APS courses numbered 5000 or above. The master's examination under Plan I covers the thesis and related topics. The examination under Plan II is more comprehensive and may be either written or oral or both. Master's examinations are given after other degree requirements have been completed, but may be given during the last semester of residence if the student is making satisfactory progress on required courses.

## Doctoral Degree

In addition to the master's degree requirements above, PhD students must complete the following:

**Course Requirements.** A minimum of 39 semester hours of work (including 4 hours of graduate seminars) in courses numbered 5000 or above is required; however, the overall emphasis is on independent study and research. A minimum of 30 semester hours of PhD dissertation credits are required.

**Language Requirement.** None.

**Examinations.** Students in the PhD program are required to remove any deficiencies identified at the preliminary interview, to pass a two-part comprehensive examination composed of a written test on graduate course material and an oral exam on a research paper based on a semi-independent research project, and satisfactorily defend the thesis before a faculty committee.

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# Atmospheric and Oceanic Sciences

The Department of Atmospheric and Oceanic Sciences (ATOC) is an interdisciplinary program that provides an educational and research environment to examine the dynamical, physical, and chemical processes in the atmosphere, ocean, and land surface, and the manner in which they interact. A major theme is the establishment of a physical basis for understanding, observing, and modeling climate and global change.

Although an undergraduate degree program is not yet offered in ATOC, an undergraduate minor program is available. A total of 18 credit hours is required for the minor, including 9 elementary ATOC credit hours and 9 advanced ATOC credit hours. A full list of approved courses for the minor is available online and in the ATOC administrative offices.

Graduate students admitted to ATOC are eligible to receive an advanced degree in atmospheric and oceanic sciences. Graduate students outside of ATOC can pursue the Graduate Certificate in Atmospheric and Oceanic Sciences while earning a graduate degree from another department at CU-Boulder, or while taking course work as a non-degree-seeking student through Continuing Education's ACCESS Program provided they have already earned a bachelor's degree and meet the course prerequisites. In addition, students inside and outside the department may pursue a Graduate Certificate in Oceanography. For more information on graduate certificate programs, see the Graduate School/Interdisciplinary Programs section.

## ATOC Undergraduate Minor Program

The Department of Atmospheric and Oceanic Sciences (ATOC) does not offer an undergraduate bachelor's degree program. However, the department does offer an undergraduate minor for students pursuing a bachelor's degree in another academic department. The ATOC minor is offered through the College of Arts and Sciences and is noted on the official CU transcript.

Although the ATOC minor is primarily designed for students who are interested in developing a knowledge base in atmospheric science with an emphasis on the Earth's climate, there is considerable latitude within the program for students to design a course of study that is tailored to their individual interests.

**Course Requirements.** A total of 18 credit hours with at least 9 credit hours at the advanced course work level. NOTE: Not all courses at the 3000 level and above are considered to be at the advanced course work level. Please see list below.

### *Required Courses and Semester Credit Hours*

#### Elementary

- ATOC 1050 Weather and the Atmosphere—3
- ATOC 1060 Our Changing Environment—3
- ATOC/GEOL 3070 Intro to Oceanography—3

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- ATOC 3300 Analysis of Climate and Weather Observations—3

### Advanced

- ATOC 3500/CHEM 3151 Air Chemistry and Pollution—3
- ATOC 3600/ENVS 3600/GEOG 3601 Principles of Climate—3
- ATOC/ASTR 3720 Planets and Their Atmospheres—3
- ATOC/ASEN 4215 Descriptive Physical Oceanography—3
- ATOC 4500 Special Topics—3
- ATOC 4700 Weather Analysis and Forecasting—3
- ATOC 4720 Intro to Atmospheric Dynamics—3
- ATOC 4750 Desert Meteorology—3
- ATOC 4800 Policy Implications of Climate Controversies—3
- ATOC 4900 Independent Study—3

All course work applied to the minor must be completed with a grade of *C-* or better (no *pass/fail* work may be applied). The GPA for all minor degree work must be equal to 2.000 (*C*) or higher. Course work applied toward a minor may also be applied toward general education (core curriculum or college list) and major requirements. Students are allowed to apply no more than 9 credit hours, including 6 advanced level credit hours, of transfer work to a minor.

For more information about ATOC programs and application procedures, call the ATOC office at **303-492-6633** or visit [atoc.colorado.edu](http://atoc.colorado.edu).

Course code for this program is ATOC.

## Graduate Degree Program(s)

# Graduate Degrees in Atmospheric and Oceanic Sciences

ATOC offers a comprehensive graduate program with a core course structure that emphasizes the fluid dynamical, chemical, and physical processes in the atmosphere and ocean.

All ATOC graduate students are required to take one of the two following ATOC core course tracks, or their equivalent:

## Atmosphere Track (A-Track)

- ATOC 5050: Intro to Atmospheric Dynamics
- ATOC 5600: Physics and Chemistry of Clouds and Aerosols
- ATOC 5235: Intro to Atmospheric Radiative Transfer and Remote Sensing
- ATOC 5060: Dynamics of the Atmosphere
- ATOC 5051: Intro to Physical Oceanography
- ATOC 5151: Atmospheric Chemistry

## Oceanography Track (O-Track)

- ATOC 5050: Intro to Atmospheric Dynamics
- ATOC/ASTR 5400: Intro to Fluid Dynamics
- ATOC/ASEN 5215: Descriptive Physical Oceanography

> Classics

> Cognitive Science Studies

> Communication

> Comparative Literature Graduate Program

> Distributed Studies Program

> Ecology and Evolutionary Biology

> Economics

> English

> Environmental Studies

> Ethnic Studies

> Film Studies

> French and Italian

> Geography

> Geological Sciences

> Germanic and Slavic Languages and Literatures

> History

> Humanities

> Integrative Physiology

> International Affairs

> INVST Community Studies

> Jewish Studies

> Lesbian, Gay, Bisexual, Transgender, and Queer Studies

> Linguistics

> Mathematics

> Medieval and Early Modern Studies

- ATOC 5051: Intro to Physical Oceanography
- ATOC 5061: Dynamics of Oceans
- ATOC 7500 Applied Biogeochemical Oceanography or ATOC/GEOL 5270: Marine Chemistry and Geochemistry

All ATOC graduate students must select one of these tracks upon entering the program with a track selection form. The degree will be in atmospheric and oceanic sciences, regardless of track chosen. The master's thesis or doctoral dissertation topic is not constrained by choice of track.

ATOC offers many graduate elective courses, and students are encouraged to take related electives offered by other departments.

**Prerequisites.** An undergraduate degree in mathematics, physics, engineering, chemistry, or another natural science is recommended. The general prerequisites expected of incoming graduate students include undergraduate courses in calculus, linear algebra, differential equations, and computer programming; as well as one-year sequences of undergraduate calculus-based physics and chemistry. Upper-division undergraduate courses in physics, chemistry, engineering, and mathematics are strongly recommended. Undergraduate courses in atmospheric and oceanic sciences are useful, but not expected, as part of the undergraduate background.

## Master's Degree

**Course Requirements.** For both thesis and nonthesis options, a total of 30 credit hours is required with at least 15 credit hours of ATOC courses numbered 5000 and above. Other specific course requirements are in the *ATOC Graduate Handbook*.

**Examinations.** For the thesis option, the final examination consists of an oral exam on the thesis. There is a written final exam for the nonthesis option.

## Doctoral Degree

**Course Requirements.** A total of 36 credit hours is required including the 18 credit hours in ATOC core courses listed above, as well as a graduate-level course in applied or computational mathematics. In addition, 30 dissertation hours are required. Other specific course requirements are covered in the *ATOC Graduate Handbook*.

**Examinations.** Students must pass a two-part comprehensive examination before admission into candidacy. Part I of the comprehensive examination is a written exam based on course material and is normally taken in the second year. Part II of the comprehensive examination is normally taken in the third year and is an oral examination based on an original research paper prepared by the student. After the PhD dissertation has been submitted, a final examination of the dissertation will be conducted.

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# Atmospheric and Oceanic Sciences

## *Graduate Degree Program(s)*

### Graduate Degrees in Atmospheric and Oceanic Sciences

The interdisciplinary Department of Atmospheric and Oceanic Sciences (ATOC) provides an educational and research environment to examine the dynamical, physical, and chemical processes that occur in the atmosphere and the ocean. A major theme is the establishment of a physical basis for understanding, observing, and modeling climate and global change.

Graduate students, research staff, and faculty work together on a wide range of research topics, such as large-scale dynamics of ocean and atmosphere, air-sea interaction, radiative transfer and remote sensing of ocean and atmosphere, sea ice and its role in climate, cloud-climate interactions, atmospheric chemistry and aerosols, atmospheric technology, extended weather and climate prediction, hydrological processes, and boundary-layer measurement and modeling.

## *Certificate Program*

### Atmospheric and Oceanic Sciences Certificates

In addition to doctoral and master's degrees, ATOC offers graduate certificates in **Atmospheric and Oceanic Sciences (ATOC)** and **Oceanography**. Students majoring in atmospheric and oceanic sciences or other associated departments may wish to consider obtaining one of these certificates to emphasize on their vita that they have specialized in that additional area. Students who are not enrolled in a graduate degree program, but have received a BA or BS degree and meet the course prerequisites may also enroll in courses to obtain the ATOC Certificate or the Oceanography Certificate through the ACCESS program of Continuing Education.

### Graduate Certificate in Atmospheric and Oceanic Sciences (ATOC)

Students who wish to obtain the Graduate Certificate in Atmospheric and Oceanic Sciences (ATOC) must complete a four ATOC graduate level courses\* or their cross-listed equivalents (i.e., ATOC 5151 or CHEM 5151) provided the cross-listed equivalents are not offered through the student's home department(s). To satisfactorily complete a course, students must earn a grade of *B* or better.

\*ATOC graduate level courses are considered those above the 5000 level. ATOC 5000 Critical Issues in Climate and the Environment cannot be applied towards the ATOC certificate requirements.

Students must meet course prerequisites prior to enrollment. Most of the ATOC Graduate Certificate courses require at least one year of calculus and one year of calculus-based physics.

Upon Completion of the ATOC Graduate Certificate requirements, students must complete a Graduate Certificate Request Form and submit it, together with a copy of their unofficial CU transcript, to the ATOC graduate program assistant ([atocasst@colorado.edu](mailto:atocasst@colorado.edu)).

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- > [Critical Theory](#)

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- > [Distance Learning & Professional Development](#)

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- > [Embedded Systems Certificate](#)

# Graduate Certificate in Oceanography

Students who wish to obtain the Graduate Certificate in Oceanography must complete at least three oceanography core courses (see below) passed with a letter grade of *B* or better. In addition, students may take an independent study course to replace one of the core courses.

## Courses for the Oceanography Certificate

- ATOC 5051 Introduction to Physical Oceanography
- ATOC 5061 Dynamics of Oceans
- ASEN/ATOC 5215/4215 Descriptive Physical Oceanography
- ASEN 5307/4307 Engineering Data Analysis Methods
- ASTR/ATOC 5400 Introduction to Fluid Dynamics
- ASTR/ATOC 5410 Fluid Instabilities, Waves, and Turbulence
- GEOL 5060 Oceanography
- GEOL 5270 Marine Chemistry and Geochemistry
- GEOL 5430 Paleoceanography and Paleoclimatology

For additional information about the ATOC Certificate or the Oceanography Certificate, contact the Department of Atmospheric and Oceanic Sciences, University of Colorado Boulder, 311 UCB, Boulder, CO 80309-0311, **303-492-7167** or [atocasst@colorado.edu](mailto:atocasst@colorado.edu).

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# Behavioral Genetics

The Institute for Behavioral Genetics (IBG) offers a training program in behavioral genetics. The goal of the program is to train scientists in the study of genetic contributions to individual differences in behavior. This is accomplished by requiring students to obtain strong training in a primary academic discipline, by providing training in the interdisciplinary field of behavioral genetics, and by providing an atmosphere in which close interactions among scholars with different perspectives may be established.

The program features a core set of courses and continuous research training with one or more IBG faculty members, and furnishes valuable opportunities for interaction among scholars with widely varying academic backgrounds. A student wishing to specialize in behavioral genetics must be regularly enrolled as a graduate student in an academic department of the university.

The training program requires completion of four core courses (Genetics, Molecular and Behavioral Genetics, Statistics, and Scientific Integrity), one course from core quantitative electives (Quantitative Genetics, Biometrical Methods in Behavioral Genetics, and Statistical Genetics), one course from core basic science electives (Bioinformatics and Genomics, Neuropharmacology), and one "Concepts" or "Seminar" course in behavioral genetics. Students also must participate in a weekly journal club and monthly colloquia series.

Each trainee works as a teaching assistant for one semester in a course relevant to his or her professional specialty. An IBG trainee's doctoral dissertation research must be conducted on a topic directly relevant to animal or human behavioral genetics.

A student in the interdisciplinary certificate program must have an IBG faculty member as an advisor and an advisory committee composed of faculty from both IBG and the academic department. The advisory committee evaluates the student's progress and may impose additional requirements.

Information about the IBG interdisciplinary certificate program may be obtained at [www.colorado.edu/ibg/education\\_and\\_training/affiliated.html](http://www.colorado.edu/ibg/education_and_training/affiliated.html) or by contacting the Institute for Behavioral Genetics, University of Colorado Boulder, 447 UCB, Boulder, CO 80309-0447; **303-492-7362**; fax **303-492-8063**.

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# Bibliography

Several courses in information access and library research methods are offered to students who wish to explore the structure, organization, retrieval, and evaluation of information for their study and career needs. See the course descriptions under Library Research (LIBR) for more information.

Course code for this program is LIBR.

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## British and Irish Studies

The Center for British and Irish Studies encourages students to develop programs that include a focus on British and Irish culture, history, and contemporary life from a variety of disciplinary perspectives. At the undergraduate level, the center offers a certificate in British and Irish studies for students who have taken 24 credit hours in British and Irish literature, history, and/or other fields.

For graduate students, it offers occasional interdisciplinary seminars. These offer exposure to methods and sources outside the students' own departments and provide preprofessional training in presenting research. The center has funds for acquiring microfilm collections for dissertation research, and offers travel fellowships for graduate students.

For more information, contact the Center for British and Irish Studies at [jeremy.smith@colorado.edu](mailto:jeremy.smith@colorado.edu).  
For more information go to [www.colorado.edu/artssciences/british](http://www.colorado.edu/artssciences/british).

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# Business Administration

The Leeds School of Business holds accreditation by the Association to Advance Collegiate Schools of Business (AACSB-International). Leeds awards four types of degrees: the bachelor of science (BS), the master of science (MS), the master of business administration (MBA), and the doctor of philosophy (PhD).

Course codes for these programs are ACCT, BADM, BCOR, BPOL, BSLW, CESR, ESBM, FNCE, INBU, MGMT, MKTG, MBAC, MBAX, OPMG, OPIM, ORMG, PHPM, and REAL.

## *Bachelor's Degree Program(s)*

### Bachelor of Science in Business Administration (BS)

#### *Knowledge and Abilities of Business Students*

The following areas of knowledge are central to the undergraduate degree in business administration:

- knowledge of core business concepts that provides students with a comprehensive understanding of the basic functional areas of the discipline;
- knowledge in one or more of the four areas of emphasis, in which students are exposed to in-depth study that provides them with the tools necessary to solve complex business problems;
- awareness of the interrelations between academic theory and practice in order for students to be fully equipped to make effective decisions;
- strong verbal and written communication skills, proficiency in business computer applications, and knowledge of international business environments;
- knowledge of mathematics sufficient to facilitate the application of quantitative principles; and
- awareness of the importance of academic fields in the area of arts and sciences, with special emphasis placed on the study of economics, political science, and other related fields.

In addition, students completing a degree in business administration are expected to acquire:

- the ability to apply basic business principles to solve problems in new and recurring situations;
- the ability to conceptualize and analyze decision-making situations to facilitate solutions in an effective and timely manner; and
- the ability to effectively communicate the results of problem-solving situations, both verbally and in writing.

Having acquired these skills and knowledge, students are able to conceptualize and analyze the concept of business and problem solving as a system. They have the ability to present solutions to business problems in an understandable and useful form. Their education provides them with excellent working knowledge, not only in the field of business, but also in related academic disciplines.

## Advising and Records

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Business students receive academic counseling from a staff of advisors in the Office of Undergraduate Student Services. During the semester, advisors are available Monday through Friday from 8:00 a.m. to 5:00 p.m., and by appointment.

Faculty advisors are available to discuss the various areas of emphasis as well as career opportunities. Faculty advising hours will vary each semester.

Students are expected to assume responsibility for planning their program in accordance with college rules and policies.

Students are encouraged to discuss the various emphases available as well as career opportunities with the faculty of the college.

## Undergraduate Degree Requirements

All business students pursuing a bachelor's degree in business administration must complete the prescribed courses in at least one area of emphasis. The school offers programs in four areas of emphasis: accounting, finance, management, and marketing. An area of emphasis consists of a minimum of 18 semester hours taken at the University of Colorado Boulder. A cumulative grade point average of 2.000 is mandatory for the required area of emphasis courses and all courses must have a grade of C- or higher.

In addition to the area of emphasis, students also may complete an area of application. The school offers the following areas of application: entrepreneurship and small business management, international business, and real estate. An area of application consists of a minimum of 9 semester hours taken at the University of Colorado Boulder. A 2.000 cumulative GPA is required for the required area of application courses. Successful completion of additional requirements in some of these areas of application entitles students to a certificate issued by the dean of the college.

### Minors

The school also offers a minor program in business for nonbusiness students.

## *Areas of Emphasis*

### Accounting

The accounting area of emphasis prepares students for careers in which they will develop, analyze, and interpret complex financial data. Accounting majors become experts in "the language of business." This expertise prepares them for careers in CPA firms, business consulting, industry (from Fortune 500 companies to small entrepreneurial enterprises), not-for-profit enterprises, or government. Accountants who develop careers in public accounting may become partners in public accounting and consulting firms. Those who make their careers in industry may have positions as a chief executive officer (CEO), chief financial officer (CFO), chief accounting officer (CAO) or controller, tax specialist, internal auditor, accounting systems analyst, financial analyst, or managerial accountant. Many students begin their careers in CPA firms and move to industry or government after several years of experience. Employers seek students with skills in communication, interpersonal interactions, analytical thinking, problem solving, and integrity.

The major areas of study in the accounting area of emphasis are 1) Financial Accounting Analysis and Audit and 2) Tax Planning and Compliance. Basic course work in accounting focuses on developing a comprehensive understanding of the theory and concepts underlying the presentation of financial and operating information about an enterprise to external and internal users. Additional course work exposes the student to income taxation of business enterprises and individuals, the practice and principles of auditing and assurance services, and cost management. Specialization is available through graduate work.

Most accounting students from the University of Colorado earn professional credentials within a year

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of completing their degrees. The two major types of professional certification are certified public accountant [CPA] and certified management accountant [CMA]. The CPA's expertise focuses on presentation and analysis of financial information for an external user. The CMA's primary focus is improving information for the internal user. Professional accountants' expertise in financial matters and their understanding of company operations through financial information prepare them to become key players and critical decision makers for all aspects of business creation, operation, and transformation.

Requirements for the CPA license vary significantly by state. Every state requires that the candidate pass the Uniform CPA Examination (a standard national exam), but the requirements regarding educational background and work experience are state-specific. All states, including Colorado, have passed rules requiring 150 hours of university education. All states write their own rules about the number of hours, specific courses, and experience required for becoming a CPA in that state. **It is very important that the accounting student obtain the guidelines for the relevant state to ensure proper development of his or her degree plan** (see [NASBA.org](https://www.nasba.org)).

The degree options are:

### **BS in Business Administration with an Emphasis in Accounting**

This degree may be earned by a student who takes 18 hours of accounting beyond the core. The 18-hour requirement for the degree does not qualify the student to sit for the CPA exam in any state. This option may be chosen by a student who does not want to become professionally certified but who seeks a career involving accounting and financial analysis in industry, government, or not-for-profit enterprises.

The undergraduate area of emphasis in accounting consists of at least 18 semester hours of course work beyond the undergraduate core requirements.

#### ***Required Courses and Semester Credit Hours***

- ACCT 3220 Corporate Financial Reporting 1—3
- ACCT 3230 Corporate Financial Reporting 2—3
- ACCT 3320 Cost Management—3
- ACCT 4850 Senior Seminar in Accounting—3

Plus 6 credit hours from the following courses:

- ACCT 4250 Financial Statement Analysis—3
- ACCT 4440/Income Taxation—3
- ACCT 4540 Accounting Information Systems—3
- ACCT 4820 Special Topics—3

### **BS in Business Administration with an emphasis in accounting, enhanced by additional course work required to sit for the CPA exam in various states**

The student who aspires to earn the CPA credential must always go beyond the basic college requirements for earning an area of emphasis. These requirements vary by state, but always include significantly more hours in accounting. Each student is responsible for determining the relevant requirements for the desired state of residence following graduation (see [NASBA.org](https://www.nasba.org)). These undergraduate courses may not be available at the University of Colorado Boulder.

## **Finance**

The finance area of emphasis is designed to provide students with in-depth exposure to the

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theoretical concepts and applied tools and techniques necessary for entry-level positions in various areas of financial management. The principal areas of study include business financial management, investments and derivative securities, and financial markets and institutions.

Finance is an applied discipline with an analytical orientation. Effort is made to develop students' ability to think logically about financial problems and to formulate sound financial decisions and policies. Although the emphasis is on financial management of profit-oriented organizations, the principles and concepts developed are also applicable to not-for-profit and governmental organizations.

It is strongly recommended that finance students take additional accounting courses.

### ***Required Courses and Semester Credit Hours***

- FNCE 3010 Corporate Finance—3
- ACCT 3220 Corporate Financial Reporting I—3
- FNCE 4030 Investment and Portfolio Management—3
- FNCE 4850 Senior Seminar in Finance—3

Plus any three of the following courses:

- FNCE 4000 Financial Institutions Management—3
- FNCE 4040 Derivative Securities—3
- FNCE 4050 Capital Investment Analysis—3
- FNCE 4070 Financial Markets and Institutions—3
- FNCE 4820 Experimental Course (only one FNCE 4820 course can be applied to meet the finance area of emphasis requirements)—3
- FNCE 4830 Seminar in Investment Banking—3
- FNCE 4831 Seminar in Investment Management—3
- FNCE 4060 London Seminar in International Finance and Business (3 credit hours can be applied toward the finance area of emphasis)—variable credit

In addition, one of the following elective courses can be substituted for one of the above FNCE elective courses to meet finance area of emphasis requirements.

- FNCE 4832 Micro Finance—3
- APPM 4720 Mathematical Finance—3
- ESBM 4570 Entrepreneurial Finance—3
- INBU 4200 International Financial Management—3
- REAL 4100 Real Estate Finance and Investment Analysis—3

## **Management**

The Management Area of Emphasis addresses the effective management of people, organizations, operations, information, and technology to improve the performance of diverse private and public organizations. A management emphasis provides students with the managerial skills necessary for success in entry-level positions, and builds foundations for success in management positions of greater responsibility, authority, and leadership. Students completing the management area of emphasis are viewed by potential employers as having the broad-gauged education required in the team-oriented, horizontally organized, and globally competitive environments of the 21st century. The management area of emphasis prepares students for careers managing people, operations, information, and technology, and can serve as a strong complement to a second area of emphasis.

Management students must choose one of three tracks: the first emphasizes human resource management; the second focuses on the management of operations; and the third emphasizes the management of information.

## **Human Resource Management Track**

The human resource management track provides students with the knowledge and skills necessary to earn certification in human resources from the Society of Human Resources, the principal professional society in the field. Graduates are qualified to act as human resource generalists in small, medium, and large companies; specialists in organizations with focused human resource units; or well-rounded general managers in any organization. There are three required courses in the HR Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- ESBM 3700 Entrepreneurship—3
- MGMT 4850 Strategy—3

In addition, students in the HR Management track must complete three of the following elective courses:

- MGMT 4010 Redefining the Employee-Employer Relationship—3
- MGMT 4020 Hiring and Retaining Critical Human Resources—3
- MGMT 4030 Managing Employee Reward Systems—3
- MGMT 4040 Individual, Team, and Organizational Development—3

Students focusing on HR are also encouraged to take INBU 4300 International Management.

## **Information Management Track**

Advances in business knowledge and technology have radically changed business systems and processes. As a result, critical to today's businesses is the ability to get the right information to the right people at the right time, so that both strategic and operational decisions are made properly and quickly. Students majoring in information management will learn to recognize the pivotal roles that information systems play in the business world and to use their knowledge to increase business competitiveness. They are exposed to a range of tools, methods, and techniques for addressing issues such as the selection and implementation of new technologies, and the creation of processes that effectively connect with customers, suppliers, and distributor channels. Students are prepared to be leaders in the effective utilization of information in business. There are three required courses in the Information Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- MGMT 3200 Business Intelligence—3
- MGMT 4850 Strategy—3

In addition, students in the Information Management track must complete three of the following elective courses:

- MGMT 4210 Systems Thinking—3
- MGMT 4220 Business Technologies—3
- MGMT 4230 Design of Usable Business—3
- MGMT 4140 Project Management—3

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IM students inclined toward careers in technical information systems are encouraged to take programming courses as business electives (MGMT 3210 Visual-language Programming) or as non-business electives (such as CSCI 1300 Programming or ATLS 3519 Applied Java Programming).

## **Operations Management Track**

The principal function of any organization is the efficient creation and delivery of products and services to its customers (operations). The operations management track focuses on this creative process and identifies how organizations use productivity, quality, flexibility, timeliness, and technology to compete and prevail in their markets. Students graduating from the operations management track will have a broad understanding of the importance of operations in the success of any organization, and will be qualified to serve in entry-level line management positions and as general managers later in their careers. There are three required courses in the Operations Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- MGMT 3100 Managing Service Operations—3
- MGMT 4850 Strategy—3

In addition, students in the Operations Management track must complete three of the following elective courses:

- MGMT 4110 Supply Chain Management—3
- MGMT 4120 Managing Business Processes—3
- MGMT 4130 Sustainable Operations—3
- MGMT 4140 Project Management—3

Students focusing on Operations are also encouraged to take MGMT 4150 International Operations.

## **Marketing**

The marketing area of emphasis hones skills in analysis and decision-making for a wide spectrum of marketing careers in fields such as advertising, market research, brand management, e-business, selling and sales management, distribution, industrial and business-to-business marketing, international marketing, the marketing of services, and marketing for not-for-profit organizations.

Marketing strategies are essential to the communication and sale of both products and services. They are applied across consumer and business markets, across domestic and global boundaries, and across traditional and electronic business environments. Key concepts focus on identifying customer needs and wants, developing products and/or services to satisfy these needs and wants, establishing channels and communications to move products and services through intermediaries to end users, and monitoring transactions and customer responses to guide future activities.

Students should choose from one of the following two plans for taking required marketing courses. Students with a marketing emphasis must take 18 hours of marketing courses beyond BCOR 2400. These students should select Plan A. Plan B is intended for those students wishing to take marketing courses as part of their business electives.

*Students pursuing a marketing emphasis (Plan A) will need three semesters to complete the required course work (beyond BCOR 2400).*

### **Plan A**

For students with marketing as their area of emphasis

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### **Required Courses and Semester Credit Hours**

- MKTG 3250 Buyer Behavior—3
- MKTG 3350 Marketing Research—3
- MKTG 4850 Senior Seminar in Marketing—3

At least two of the following three courses must be taken as prerequisite to MKTG 4850. The remaining course (if not taken as a prerequisite) must be taken as a corerequisite to MKTG 4850.

- MKTG 4250 Product Strategy—3
- MKTG 4300 Pricing and Channels of Distribution—3
- MKTG 4550 Advertising and Promotion Management—3

### Plan B

The following marketing courses are offered as business elective only:

### **Required Courses and Semester Credit Hours**

- INBU 3450 International Marketing—3  
(Prerequisite course for marketing 3000 level courses BCOR 2400 Fundamentals of Marketing)
- MKTG 3150 Sales Management—3
- MKTG 3250 Buyer Behavior—3

Prerequisite courses for marketing 4000 level courses:

- MKTG 3250 Buyer Behavior—3
- MKTG 3350 Marketing Research—3

## *Areas of Application*

### **Entrepreneurship and Small Business Management**

The entrepreneurship and small business management area of application reflects that practically all new job creation in the United States is produced by new ventures and small- to medium-sized emerging growth businesses. In addition, Boulder and the Leeds School of Business are highly recognized for a unique entrepreneurship climate. This application area provides the knowledge, understanding, and skills to create, organize, and manage new ventures or small- to medium-sized and emerging growth businesses as independent entities, or within corporate structures.

Students examine theory and research, but the fundamental thrust of this application area is to experience entrepreneurial cultures through professional experiences such as field projects, meeting entrepreneurs in the classroom, internships, writing feasibility and business plans, and developing other practical skills.

After completing the required lower-division core courses, students may begin the study of entrepreneurial environments in their junior year. Entrepreneurial finance, business plan preparation, and an internship may be taken in the junior and/or senior year.

Students who complete the three required entrepreneurship courses with a 3.000 GPA or better, and who complete an approved 60-hour internship, will qualify to sit for the entrepreneurship honors oral exam. Those who pass the exam will be awarded the Certificate of Excellence in Entrepreneurial Studies.

### **Required Courses and Semester Credit Hours**

- ESBM 3700 Entrepreneurial Environments—3
- ESBM 4570 Entrepreneurial Finance—3
- ESBM 4830 Business Plan Preparation—3

*NOTE: Students seeking internships should have completed ESBM 3700 by the end of their junior year.*

## **International Business**

The globalization of the marketplace has created a need for managers who can function effectively in the international business environment. Despite this movement toward globalization, there remains significant environmental differences (cultural, economic, and political) between countries and/or regions. Managers in an international business must be sensitive to these differences and also must adopt the appropriate policies and strategies for dealing with them.

To address these issues, the Leeds School of Business offers an area of application in international business. In addition to this area of application, students can complete additional requirements that result in an international business certificate. The area of application and certificate program build on the student's understanding of the functional areas of business and provide her or him with an appreciation of the international environment and a framework for developing policies and strategies appropriate for this environment.

### **Required Courses and Semester Credit Hours**

- INBU 3450 International Marketing—3
- INBU 4200 International Financial Management—3
- INBU 4300 International Business Management—3

In addition, the certificate program requires completion of the following:

- Six hours of economics, geography, or political science beyond arts and sciences course requirements. Courses must be selected from an approved list (students should see the advising office for details).
- Three hours of foreign language beyond MAPS requirements.
- Six hours of an international experience. This requirement can be satisfied through either study abroad programs or academic internships of an international business nature.

Finally, it is recommended that students in the international business area of application or the certificate program consider additional electives from the following courses:

- MGMT 4070 International Operations Management
- ACCT 4700 International Accounting

## **Real Estate**

The real estate area of application is designed to provide students with exposure to the concepts, tools, and techniques necessary for entry-level positions. A career in real estate provides an opportunity for individuals to operate as entrepreneurs whether they are brokers, appraisers, developers, property managers, consultants, or investors. An integrated process is followed in the three application area courses to prepare students for real estate careers.

### **Area of Application**

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### **Required Courses and Semester Credit Hours**

- REAL 3000 Principles of Real Estate Practice—3
- REAL 4000 Real Estate Law and Financing Instruments—3
- REAL 4100 Real Estate Finance and Investment Analysis—3

The real estate certificate program allows students to broaden their knowledge and understanding of real estate through a multidisciplinary focus, whereby courses are taken outside of the Leeds School of Business. For this program, students must complete the courses listed above (REAL 3000, 4000, and 4100), 9 credits of nonbusiness electives listed below, and an academic internship. See the Real Estate center for a list of the approved electives and internships.

### **Certificate**

#### **Required Courses Semester Hours**

- Area of application courses listed above—9
- College of Architecture and Planning courses—6
- Construction management course in the Department of Civil, Environmental, and Architectural Engineering—3
- Academic internship in real estate practice or related area—3

### ***Concurrent Bachelor's/Master's Program***

#### **BS/MS Degree in Business**

The Leeds School of Business also offers a unique program that allows undergraduates the opportunity to earn a bachelor's and master's degree simultaneously. The joint program graduates students with a bachelor's degree from the Leeds School of Business and a master's degree from the College of Engineering in telecommunications. For more information, see [itp.colorado.edu](http://itp.colorado.edu).

### ***Graduate Degree Program(s)***

#### **Graduate Study in Business**

The Leeds School of Business offers programs leading to the master of business administration (MBA), master of science (MS) emphasis in accounting, and doctor of philosophy in business administration (PhD) degrees. The Leeds School also offers a part-time MBA program called the Evening MBA that leads to the same degree as the full-time MBA program. Dual degree options available in the MBA program include juris doctor/master of business administration (JD/MBA), master of business administration/master of arts (MBA/MA) in fine arts, master of business administration/master of arts (MBA/MA) in anthropology, master of business administration/master of arts (MBA/MA) in Germanic and Slavic Languages, master of business administration/master of arts (MBA/MA) in theatre and dance, master of business administration/master of science (MBA/MS) in environmental studies, master of business administration/master of science (MBA/MS) in computer science, master of business administration/master of science (MBA/MS TLEN) in telecommunications. The Leeds School of Business, in conjunction with the Peace Corps, also offers a Master's International (MBA-MI). Dual degree options are not available in the Evening MBA program.

These programs are open to qualified individuals who hold a bachelor's degree from a regionally accredited college or university, or a recognized international university, without regard to their undergraduate major. The Leeds School of Business also offers a concurrent BS/MS program in accounting that awards the bachelor's and master's degrees simultaneously.

#### **Master of Science in Business Administration (MS)**

There are two paths to the master of science in business administration (MS) degree with an emphasis in accounting or taxation. The first is the concurrent bachelor's and master's degree program. In this program, both the bachelor's and master's degrees are awarded following the completion of 150 specified hours of course credit. An academic internship is a highly recommended option within this requirement. The program is designed for students pursuing the 150-hour educational background requirement for CPAs (required by most states) and is a carefully integrated and challenging program of study. Upon completion of 90 credit hours, undergraduate students in the Leeds School of Business may apply to the program and begin taking graduate courses and an internship during their senior year. This program provides an excellent foundation for careers in professional accounting.

The second path is an independent "stand alone" master's degree program. Students with undergraduate degrees other than accounting or business may also be admitted to the program, but may have to fulfill deficiency requirements in addition to the regular program requirements.

Students in both programs choose an area of study that focuses on financial accounting or taxation.

Note that stand alone MS students are required to complete all degree requirements within four years. Graduate students are not given preferential enrollment in undergraduate courses needed for the deficiency requirements.

**Minimum Requirements.** Accounting and taxation students must complete a minimum of 30 semester hours of graduate-level work. The newly accepted student should consult with the faculty advisor for the program to develop an individualized degree plan. No thesis is required.

Students in the Master of Science in Business Administration programs are governed by the rules of the [Graduate School](#).

### *Emphasis in Financial Accounting/Audit*

The expanding role and increased breadth of knowledge expected of accountants make graduate study in accounting highly desirable. Courses offered for the accounting area of emphasis prepare students for high-level, professional careers in the field. The graduate programs in accounting are designed to provide a broad understanding of accounting issues as well as to enhance an undergraduate degree in accounting. They also provide the opportunity to develop knowledge in a related minor area, such as economics, finance, information systems, management, marketing, taxation, or telecommunications. Note that these supporting fields may require some undergraduate level course work beyond core requirements.

### *Emphasis in Taxation*

The master of science in business administration that emphasizes taxation integrates accounting and law school courses. Some of the tax and law courses are strictly tax-related while others include related legal aspects of a particular subject area. The combination of courses is designed to give exposure to taxation from the accounting and law faculty perspectives.

The purpose of this program is to prepare students for professional careers as Certified Public Accountants (CPAs) specialized in taxation. Therefore, the student will:

- develop a refined ability to recognize tax problems and understand tax issues in a broad economic framework;
- research and present well-developed strategies or solutions to tax problems; and
- develop creative tax planning opportunities in a variety of contexts.

## Master of Business Administration (MBA)

The breadth of training that master of business administration graduates receive prepares them to

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become high-level managers or lead in a challenging and evolving business environment.

The MBA program is rigorous and comprehensive, and demands student commitment. The curriculum develops a set of broad-based, integrative skills. Core courses provide a solid foundation in both business management and analytical disciplines, a foundation that fosters continued career growth. In addition to core courses stressing key functional areas of business, students can choose electives specific to a chosen area of concentration.

The case study method and student field projects are used broadly throughout all courses, and common areas of study such as ethics, technology, communications, and international issues are integrated throughout much of the curriculum. Students learn about management theory and its practical applications in “real-world” situations. Lectures, seminars, team teaching, team projects, and guest lectures are various approaches taken by the faculty to generate new ideas and encourage student input.

### *Requirements for Admission to MBA Programs*

For all MBA programs, the admissions committee reviews the applicant’s complete application, with consideration given to the following:

- An applicant’s academic record.
- An applicant’s score on the Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE). The GMAT or GRE must be retaken if the test date was more than five years ago.
- International students must provide a test showing proof of English language proficiency.
- An applicant’s work experience.
- Written essays.
- Personal interviews.
- Letters of recommendation.

In addition, a nonrefundable application fee is required of all applicants. See the specific MBA application for more information. The online application is on the MBA program website at [leeds.colorado.edu](https://leeds.colorado.edu).

The mailing address for additional materials is Leeds School of Business, University of Colorado Boulder, 419 UCB, Boulder, CO 80309-0419, or call 303-492-8397.

### *Diversity*

The Leeds School of Business encourages qualified individuals to apply regardless of gender, race, religion, national origin, age, physical limitation, or sexual orientation.

### *MBA Policies and Requirements*

For current, detailed information regarding the MBA program, contact the Leeds School of Business.

**Advising.** During the first semester of study, to ascertain degree requirements, MBA students should check in with the student services manager for the MBA program.

**Minimum Hours Required.** Students entering the MBA program take a prescribed sequence of classes before beginning elective courses. A minimum of 55 credit hours is needed to graduate. Students entering the MBA program are expected to complete the degree in two years. Transferred course work is not accepted into the MBA program.

**Core Course Waiver.** Students may not waive core courses.

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**Courses Taken Outside the Leeds School of Business (limits).** MBA students may enroll in up to 12 hours of elective course work outside the Leeds School of Business with approval from the MBA Programs office, provided the remaining 18 hours of electives are taken within the MBA program. Course work taken outside the Leeds School of Business must be at the graduate program level. Students may not take courses outside the University of Colorado Boulder and count them toward the degree. Students should contact individual departments for course listings and registration requirements for nonbusiness courses.

**Grades and Quality of Work.** All courses applied toward the 55 credit hours must be taken for a grade. Courses in which a C- or below is received are not accepted for credit toward the 55 credit hours and may have to be retaken. In this case, both grades are factored into the GPA. To withdraw from an elective course and receive a grade of W, a student must be earning a passing grade in that course. Students normally are not permitted to withdraw from courses after the sixth week of the semester. Students in the MBA program may not withdraw from specified, lock-step course work. An I is an incomplete grade. Use of the I is at the discretion of the course instructor and/or the dean. Students must ask for an incomplete grade. An I is given only when students, for reasons beyond their control, have been unable to complete course requirements. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

**Calculating GPAs.** For the purpose of calculating GPAs for MBA student rankings and probation, only course work taken within the business school is counted.

**Withdrawal.** Students who choose to leave the program must formally withdraw. Failure to do so will result in assessment of full tuition and fees. Students who withdraw must reapply to the program if they wish to continue their studies. Applicants who reapply are evaluated with current applicants to the program. Students who are granted re-admission must complete the requirements of the current program. Course work taken more than five years earlier must be validated by examination in order to count toward the degree and may be considered elective credit.

**Probation.** A student whose cumulative GPA falls between a 2.500 and 3.000 is placed on academic probation. The student is allowed to remain on probation for one semester as long as reasonable progress is made to improve the GPA. The MBA director for academic programs determines whether reasonable progress is being made and whether the student can graduate with a 3.000 in the stated time limit.

**Suspension.** A student whose cumulative GPA falls below 2.500 at any time is automatically suspended from the program. A suspended student is eligible to petition for readmission after one year.

## Master's International Master of Business Administration

The Leeds School of Business, in conjunction with the Peace Corps, offers a program resulting in a master of business administration (MBA) combined with Peace Corps service. Students spend the first year at Leeds developing a base level of core business skills, followed by two years of volunteer service with the Peace Corps. MI-MBA students will then return to Leeds to complete the remaining MBA degree requirements.

## Doctor of Philosophy in Business Administration (PhD)

A PhD degree recognizes scholarly achievement and is the highest academic honor that CU-Boulder bestows. The PhD in business administration prepares scholars to be preeminent in their field of expertise. The program focuses on developing the necessary skills for the design and execution of original, innovative research and for the dissemination of knowledge through teaching and writing.

**Requirements for Admission.** To preserve the individualized character of the PhD program and its quality, the number of students is limited and the application process is very competitive. Students are admitted for study in a specific area for doctoral work. The Leeds School of Business currently offers

the following areas of study: accounting; finance; marketing; information management; operations management; and strategic, organizational, and entrepreneurial studies.

For more information on the application requirements and process, write Leeds School of Business, PhD Program, University of Colorado Boulder, 419 UCB, Boulder, CO 80309-0419; call **303-492-4984**; or visit [leeds.colorado.edu/phd](http://leeds.colorado.edu/phd).

**Background, Prerequisites, and Deficiencies.** Each student must have a background in mathematics at or beyond calculus. Based on experience, background, and at the discretion of the academic advisor and/or division chair and/or the doctoral program director, additional prerequisites may be required of the PhD student.

**Requirements for the Degree.** Most curriculum and program requirements are decided by the division. Consult the PhD program advisor of the appropriate division for information regarding course selection, graduate teaching program certification, research internships, and other division requirements. Students must complete all Graduate School, Leeds School of Business, and division requirements to be conferred the PhD in business administration.

The newly accepted PhD student should consult with the division chair and/or academic advisor to develop an individualized degree plan. Students are required to become proficient in their primary area of study. In addition, all students are required to complete course work in a field outside their division. These “second fields” are governed by the departments offering the course work but typically require 6 to 12 credit hours. The second field may also require an additional preliminary or comprehensive exam.

**Course Work.** All doctoral students are required to complete at least 30 hours of course work and 30 hours of dissertation credit at CU-Boulder. Additional course work may be required as determined by the academic advisor. To comply with this 30-hour requirement, a course must have been taught by a member of the university’s graduate faculty, must be at the 5000 level or above, and the student must achieve a grade of B- or better.

Courses must be approved by the student’s academic advisor before registration. Most students are required to complete 7000- and 8000-level doctoral seminars.

For full-time status, the Leeds School of Business requires successful completion of 5 credit hours of course work each semester. During and after comprehensive exams, full-time status requires completion of a minimum of 5 dissertation hours each semester.

**Transfer of Credit.** A maximum of 9 semester hours of courses taken at other schools (this includes other University of Colorado campuses) or taken as a special student at the university may be transferred into the doctoral program. Course work must be recent and of doctoral-level quality. A doctoral student must establish a satisfactory record of residence in the doctoral program before the course work is eligible for transfer. The transfer of credit must be approved by the division, the doctoral program director, and the Graduate School. There is no guarantee any course work will be accepted for transfer.

**Residency.** The Leeds School of Business adheres to the Graduate School rules regarding residency. All students in the doctoral program are expected to be full-time students on the Boulder campus (at least during residency and prior to completing the comprehensive examinations). Doctoral students are expected to be available to participate in colloquia and other informal academic discussions. Full-time employment outside the university is prohibited during the residency period. Any off-campus status must be approved by the division and the doctoral program director.

**Time Limit.** Doctoral students have six years from the commencement of course work to complete all requirements of the degree, but most students complete their program within five years.

**Comprehensive Examination.** Before admission to candidacy, a doctoral student must pass a comprehensive examination in the field of concentration. The examination may be oral, written, or both, and will test the student's mastery of a broad field of knowledge, not merely the formal course work completed. Each division will determine the required content, length, and standards of evaluation for the exam. Check with the division as to the specific requirements for the comprehensive exam.

**Admission to Candidacy.** Students are admitted to candidacy according to Graduate School procedures and requirements. Students shall complete all course work and any other requirements listed on their degree plans, earn at least four semesters of residence, and successfully pass the comprehensive exams before admission to candidacy is approved by the Graduate School. In addition, requirements related to academic quality of work, graduate-level course work, the minimum number of course hours, and graduate faculty membership must be met before admission to candidacy is approved.

**Dissertation.** A dissertation based upon original investigation showing mature scholarship and critical judgment, as well as competence with research tools and methods, must be written on a subject approved by the candidate's dissertation committee. To be acceptable, the dissertation must be a significant contribution to knowledge in the candidate's primary field.

**Final Examination (Defense).** Upon recommendation of the candidate's doctoral dissertation committee, a final oral examination shall be given. This examination covers both the dissertation and the primary field of study. The oral examination is open to the public.

**Filing the Dissertation.** The dissertation must comply in mechanical features with the University of Colorado Graduate School Thesis and Dissertation Specifications. The dissertation must be filed with the Graduate School by the posted deadline for the semester in which the degree is to be conferred.

## *Dual Degree Programs*

### **Juris Doctor/Master of Business Administration Degree**

The purpose of this dual-degree program is to allow students admitted to both the School of Law and the Leeds School of Business to obtain the juris doctor (JD) and the master of business administration (MBA) degrees in four (or fewer) years of full-time study. The program is designed to train students for careers in which business administration and law overlap.

**Admission.** To be eligible for the JD/MBA dual-degree program of the School of Law and the Leeds School of Business, a student must apply separately to and be admitted by each of the two schools under their respective admission procedures and standards.

Students may elect the dual-degree program at the time of initial application to both schools, or they may apply for the dual-degree program during their first year of study in the degree program of either school.

**Course of Study.** A student enrolled in the JD/MBA program may commence studies under the program in either the School of Law or the Leeds School of Business. Dual-degree students are strongly encouraged to begin their course of study at the School of Law. However, a student must take the first year of the JD curriculum as a unit exclusively in the School of Law. Likewise, a student must take the first year of the MBA curriculum as a unit exclusively in the Leeds School of Business. Students can then take additional courses necessary to meet the requirements of the degree programs of the two schools.

No student in the dual-degree program shall be allowed to take fewer than 9 semester hours or more than 16 semester hours during any term (excluding summer terms) without receiving the consent of the program advisor in each school in which courses are being taken.

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**Credit for Law Courses in the JD/MBA Program.** The Leeds School of Business grants credit toward the MBA degree for up to 12 semester hours of acceptable performance in law courses taken by a JD/MBA student at the School of Law. Core courses required in the law school program cannot be counted toward the 12 hours. A student must earn at least a 77 grade in a law school course to be accepted for Leeds School of Business credit. For credit to be granted, the law school courses must be approved before enrollment by an MBA advisor. Only courses taken after admission into the MBA program are credited toward the degree.

**Grading in the Dual-Degree Program.** Leeds School of Business credit for courses completed in the School of Law as part of the joint degree program is recorded on a *pass/fail* basis and is not included in the required MBA 3.00 cumulative average.

## Master of Business Administration/Master of Science— Telecommunications

The Leeds School of Business, in conjunction with the College of Engineering and Applied Science, offers a dual-degree program resulting in a master of business administration (MBA) and master of science in telecommunications (MS/TLEN). The dual-degree program combines broad-based business management study with an in-depth understanding of telecommunications technology. This program prepares students to be competent, effective managers in the telecommunications industry.

**Admission.** An individual must apply separately and be admitted to both programs under each school's or college's admission procedures and standards. Applicants are encouraged to apply to the programs concurrently.

**Course of Study.** Students in the MBA/MS in telecommunications spend the first year of the dual-degree program exclusively in either the business school or the telecommunications program. In the second year, courses are taken exclusively in the other department. In the third year students will take both MBA and telecommunications elective courses to complete both master's degrees.

**Credit for Courses.** Dual degree students are required to complete 43 hours of MBA course work and 36 hours of telecommunications course work. A minimum of 79 approved credits must be completed to earn both degrees.

## Master of Business Administration/Master of Fine Arts

The Leeds School of Business, in conjunction with the Department of Art and Art History, offers students the ability to earn an MBA and an MA in fine arts through a three-year dual-degree program. Students in the MBA/MA dual-degree program pursue careers in digital marketing, web design, e-commerce, gallery/museum administration, and private art consulting.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in fine arts spend the first year of their dual-degree program exclusively in either the business school or the fine arts program. In the second year, courses are taken exclusively in the other department. The third year offers students the opportunity to take both MBA and fine arts elective courses.

**Credit for Fine Arts Courses in the MBA/MA Fine Arts Program.** Dual-degree students in studio arts are required to complete 43 hours of MBA course work and 45 hours of fine arts course work. Dual-degree students in art history are required to complete 43 hours of MBA course work and 30 hours of fine arts course work.

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## Master of Business Administration/Master of Arts Theater and Dance

The Leeds School of Business, in conjunction with the Department of Theatre and Dance, offers students the ability to earn an MBA and an MA in theatre or dance through a three-year dual-degree program. Students in the MBA/MA dual-degree program pursue careers in a wide variety of fields and jobs in the world of the performing arts. Types of organizations include theatre companies, dance companies, opera companies, symphonies, arts councils, performing arts complexes, civic auditoriums, and arts presenters.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in theatre and dance spend the first year of their dual-degree program exclusively in either the business school or the theatre/dance program. In the second year, courses are taken exclusively in the other department. The third year offers students the opportunity to take both MBA and theatre/dance elective courses.

**Credit for Courses.** Dual degree students are required to complete 43 hours of MBA course work and 24 hours of theatre/dance course work. A minimum of 67 approved credits must be completed to earn both degrees.

## Master of Business Administration/Master of Environmental Studies

The MBA/MS in environmental studies enables students to earn an MBA and an MS in environmental studies over three or four years. Students in the MBA/MA program have career interests that combine corporate business and environmental protection, the management of renewal energy, water conservation, or environmental programs.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MS in environmental studies spend the first year of the dual-degree program exclusively in either the business school or the environmental studies department. In the second year, courses are taken exclusively in the other department. The remaining year(s) students may take both MBA and environmental studies electives.

## Master of Business Administration/Master of Computer Science

The MBA/MS in computer science enables students to earn an MBA and an MS in computer science over three or four years. Students in this MBA/MS program have career interests that combine corporate business and technology.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MS in computer science spend the first year of the dual-

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degree program exclusively in either the business school or the computer science department. In the second year, courses are taken exclusively in the other department. The remaining year(s) students may take both MBA and computer science electives.

## Master of Business Administration/Master of Anthropology

The MBA/MA in anthropology dual-degree program enables students to earn an MBA and an MA in anthropology simultaneously over three or four years depending on the student's subdiscipline in anthropology. Students in this MBA/MA program pursue careers in managing the business aspects of archaeological projects, working in the growing field of corporate cultural anthropology, and ethnography or museum management.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in anthropology spend the first year of their dual-degree program exclusively in either the business school or the department of anthropology. In the second year, courses are taken exclusively in the other department. The remaining year(s) offers students the opportunity to take both MBA and anthropology elective courses.

## Master of Business Administration/Master of Germanic and Slavic Languages

The MBA/MA in Germanic and Slavic languages dual-degree program enables students to earn an MBA and an MA in Germanic and Slavic languages simultaneously over three or four years. Students in this MBA/MA program pursue careers in international business.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in Germanic and Slavic languages spend the first year of their dual-degree program exclusively in either the business school or the department of Germanic and Slavic languages. In the second year, courses are taken exclusively in the other department. The remaining year(s) offers students the opportunity to take both MBA and Germanic and Slavic languages elective courses.

### *Certificate Program*

## Certificate in Socially Responsible Enterprise (SRE) Offered by the Center for Education on Social Responsibility (CESR)

CU-Boulder's Leeds School of Business is one of the few undergraduate business schools in the nation that emphasizes socially responsible conduct in business throughout its curriculum. CESR helps undergraduate students become outstanding business leaders of tomorrow by preparing them to meet the ethical challenges posed by an increasingly competitive, globally-connected business world.

CESR offers the Certificate in Socially Responsible Enterprise (SRE) to business students to further develop students' ability to meet these future challenges by crossing the boundaries of traditional functional areas of business and those that separate business from other academic disciplines.

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Students who complete the certificate will see and understand the social and environmental impacts of business and their ethical implications from a broader perspective. They will also graduate with practical knowledge and marketable experiences that will guide them in conducting business in an informed, responsible, and ethical manner. Requirements for entrance into the program are:

- Sign up by the end of the student's junior year
- Have maintained a 3.000 grade point average

### ***Required Courses and Semester Credit Hours***

#### **General Courses**

It is recommended that students complete six hours (2 courses) in the areas of philosophy, environmental studies, political science, economics, communication, civil engineering, or sociology from the following list. Check prerequisites before enrolling.

- ECON 3545 Environmental Economics
- ECON 4292 Migration, Immigrant Adaption and Development
- ECON 4626 Economics of Inequality and Discrimination
- ECON 4774 Economic Reform in Developing Countries
- ECON 4784 Economic Development
- ENVD 4361 Special Topics: Social Factors in Design
- ENVS 3001 Sustainable Solutions Consulting: a service learning course
- ENVS 3070 Energy and the Environment
- ENVS 4027 Inequality, Democracy, and the Environment
- ENVS 4100 Topics in Environmental Policy
- FNCE 4825 Micro-Finance
- GEOG 2002 Geographies of Global Change
- GEOG 3682 Geography of International Development
- GEOG 4742 Environments and Peoples
- PHIL 2200 Major Social Theories.
- PHIL 2140 Environmental Justice
- PSCI 4012 Global Development
- PSYC 2456 Social Psychology of Social Problems
- SOCY 2011 Contemporary Social Issues
- WRTG 3040 Writing on Business and Society (Section with CSR Emphasis)

#### **Business-related Courses**

Complete three of the following (all these courses qualify as business electives):

- CESR 4000/4001 Leadership Challenges: Exercises in Moral Courage (This is a year-long course)—3
- CESR 4005 Business Solutions for the Developing World: Learning through Service—3
- CESR 4010/FNCE 4832 Microfinance—3
- CESR 4130/MGMT 4130 Sustainable Operations—3
- CESR 4825/MGMT 4825 Privacy in the Age of Facebook—3

NOTE: These courses are in addition to BCOR 1010, 3010, the capstone course for the Area of Emphasis, as well as any other prerequisites. See course descriptions for prerequisite details.

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## Experiential Learning

Students must sign up for their experiential learning for the SRE Certificate. The SRE Certificate advisor has information on the opportunities listed below and on other ways to fulfill the practical experience requirement. Students may also want to contact Career Connections for information about internships that have been approved for the SRE Certificate. With advisor approval, students can undertake projects that are not included in the following examples of experiential learning:

- **Intern for a company (for-profit or non-profit).** Students may serve as an intern to assist an enterprise in developing or furthering a cultural, social, or environmental initiative. For example, a student might act as an “intrapreneur” (corporate change-maker), helping draft and implement a corporate code of ethics or a training program designed to imbed corporate standards of behavior in an organization’s culture. Other examples: Serve as an intern for 1) Beanstalk, an incubator for smaller philanthropic startups or 2) Social Venture Partners, which helps build the capacity of local non-profit organizations. (This is a great organization that promises to provide multiple opportunities for internships.)
- **Voluntourism.** Voluntourism is the concept of traveling abroad, using one’s own funds, for the purpose of volunteering for a development-related project while also engaging in tourist activities. In order to gain credit for such a trip, students must show that the project or major activity for the trip is related to social responsibility (such as environmental sustainability or social development).
- **Service Learning through Study Abroad Office.** The Office of International Education offers study abroad programs focused on service learning. These programs generally span one academic quarter or semester in the host country, during which the student will participate in, and gain credit for, study in a school of higher education. Outside of the classroom, students will work with local institutions and non-governmental organizations on service projects that promote community development. Service learning programs that are approved through the Office of International Education are automatically approved for “practical experience” credit for this certificate.

Sign up for the experiential learning requirement with the SRE Certificate advisor (associate director of CESR). Complete experiential learning through one of the following:

- CESR 4005 Business Solutions for the Developing World
- ENVS 3001 Sustainable Solutions Consulting
- MGMT 4140 Project Management (with advisor approval)
- Advisor-approved independent study in a related topic or an advisor-approved internship of an appropriate nature

Note: Completion of CESR 4005 Business Solutions for the Developing World will count toward the experiential learning requirement or toward the 9-course credit requirement, but not toward both. For course descriptions and program details, visit [leeds.colorado.edu/CESR](https://leeds.colorado.edu/CESR).

## Personal Reflection and Statement of Purpose

Upon completion, students will reflect on their learning and draft a short reflection paper and a statement of purpose, setting out the values that will guide their conduct and their careers. They will then be interviewed by the director or associate director of CESR. This final requirement is to remind students why they elected to pursue the certificate and how it will continue to have an impact on their lives after college. Students are encouraged to truly “live” the statement of purpose.

## OPIM Certificate

Advances in business knowledge and technology have radically changed business systems and processes—for example, how organizations buy and sell goods and services, integrate their supply chain and logistic systems, and reach or retain customers. As a result, critical to today’s businesses

is the ability to get the right information to the right people at the right time, so that both strategic and operational decisions are made properly and quickly. To help students develop this ability, the Leeds School of Business offers the OPIM Certificate.

Students who are not in the OM or IM track in the Management and Entrepreneurship Division can take any three courses listed in the course description section below. *Students majoring in the OM track can take any three IM track courses, while students majoring in the IM track can take any three OM track courses.* To complete the OPIM certificate requirements, all students must also complete a faculty-supervised OPIM research project (MGMT 4900 Independent Study) or faculty-supervised OPIM internship (MGMT 4910 Academic Internship in Management).

In addition, students are required to maintain an overall GPA of 3.000 or higher for the selected courses and receive a letter grade of *B-* or higher in each of the three courses. Successful completion of the certificate program will appear on the student's transcript.

The following illustrates some of the courses that students not majoring in IM or OM might want to take:

### **Accounting Students**

- MGMT 4140 Project Management
- MGMT 4210 Systems Thinking
- ACCT 4220 Business Technologies

### **Finance Students**

- MGMT 3200 Business Intelligence
- MGMT 3210 Business Application Programming
- MGMT 4210 Systems Thinking

### **Management (HR Track) Students**

- MGMT 3200 Business Intelligence
- MGMT 4120 Managing Business Processes
- MGMT 4210 Systems Thinking

### **Marketing Students**

- MGMT 3200 Business Intelligence
- MGMT 4110 Supply Chain Management
- MGMT 4210 Systems Thinking

## **Quantitative Finance Certificate**

The Quantitative Finance Track is one of two tracks that make up the Actuarial Studies and Quantitative Finance Certificate Program and is co-sponsored by the Leeds School of Business and the College of Arts and Sciences. The program is interdisciplinary and rigorous. The goal of the program is to augment the financial education provided by the Leeds School with a more extensive mathematical base.

The analytical demands of business are increasing rapidly and constantly. This program is designed to prepare students for the increased requirements of the most attractive financial analyst positions. In addition, the program provides a solid base for success in graduate studies.

Program requirements are extensive and challenging. Students must meet two separate GPA requirements. First, the overall GPA for all courses applied to certificate requirements must be at least 3.000. In addition, students must meet a requirement specifically for mathematics and statistics courses applied to certificate requirements. This requirement can be met one of two ways, either by achieving a GPA of 2.870 or greater in calculus courses or a GPA of 3.000 or greater in the six mathematics and statistics courses required for the certificate. Most students will begin study during the freshman year and continue throughout their undergraduate career. A brief summary of course requirements is presented below. For a complete list of requirements and further information regarding the quantitative finance track and the related actuarial studies track, see the Actuarial Studies Program website. The certificate program is also described in the College of Arts and Sciences section. Interested students should contact Jerry Madigan, [Madigan@colorado.edu](mailto:Madigan@colorado.edu), Leeds School of Business.

#### ***Area of Study and Semester Credit Hours\****

- Finance and Accounting—25
- Mathematics and Statistics—23
- Economics—14
- Computer Programming—3

*\* Number of credit hours may vary according to the specific courses completed.*

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# Chemical and Biological Engineering

The Department of Chemical and Biological Engineering offers degrees at the bachelor's, master's, and doctoral levels. The department offers two distinct BS degree programs, one in **chemical engineering** and one in **chemical and biological engineering**. The Regents of the University of Colorado and the Colorado Commission on Higher Education approved the new BS program in the combined fields of chemical and biological engineering during the summer of 2006. The first graduates of the new program graduated in the spring of 2009 and the program is accredited by the Engineering Accreditation Commission of ABET ([www.abet.org](http://www.abet.org)).

## Other Opportunities in the Department of Chemical and Biological Engineering

At the BS, MS, and PhD levels, there are opportunities to specialize via electives, independent study, and research. The BS in chemical engineering also offers optional variations to the core curriculum that allow students to specialize in environmental, computer, microelectronic, and materials aspects of chemical engineering. If a student has an interest that is not included in the following information, special arrangements can usually be made.

Students may carry out part of their studies in another country (see the Office of International Education section), and are encouraged to consider this opportunity, given the international nature of most large chemical and engineering corporations and international cooperation in scientific and engineering research. Many faculty members have significant international experience.

**Cooperative Education and Internships.** The Department of Chemical and Biological Engineering offers a formal Co-Op Program, where students obtain a BS in chemical engineering or chemical and biological engineering and significant industrial experience in five years. A Biotechnology Internships program is also offered for summer internships with local companies.

**Senior Thesis.** The department offers this program for undergraduates with a strong interest in research. The student carries out a year-long project under the direction of a faculty member in lieu of taking CHEN 4130 Chemical Engineering Laboratory 2 (for ChE students) or CHEN 4810 Biological Engineering Lab (for ChBE students). Students must apply at the end of their junior year.

## Research Facilities

Chemical and biological engineering research facilities are extensive and modern. Nearly all research equipment is interfaced to computers for automated data collection, monitoring, and control. A full description of chemical engineering research facilities can be found in the Graduate School section.

Course code for this program is CHEN.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Chemical Engineering

Chemical engineers are responsible for producing products based on chemical processing and chemical transformations. They carry out basic research; they design, build, operate, and manage chemical processes and plants; and they supply petroleum products, renewable resources, plastics,

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detergents, agricultural chemicals, pharmaceuticals, biological compounds, photographic materials, microelectronic devices, and various food and other products. Today's processes must be energy efficient, nonpolluting, and profitable. Thus, students must master inorganic, organic, and physical chemistry, mathematics, statistics, computers, physics, and often biology and biochemistry. Students must learn to apply these fundamentals in the process industries. Paralleling the technical courses are studies in the humanities and the social sciences.

## Program Educational Objectives

The department prepares its graduates to make significant contributions in many diverse areas. Specifically, within three to five years its graduates will:

- be recognized as academic and industrial leaders in a multitude of chemical engineering or related fields
- demonstrate the relevant technical, critical thinking, and problem solving skills and creativity required to solve challenging and open-ended problems
- work and communicate with a diverse group of individuals in interdisciplinary areas
- exhibit high ethical standards and moral responsibility necessary to safely protect public health and the environment and be knowledgeable of contemporary issues that face modern society
- demonstrate an interest in and the pursuit of lifelong learning and possess the versatility necessary to adapt to a rapidly changing professional environment by applying their skills to new and developing technologies.

## Program Outcomes

At the time of graduation, graduates will demonstrate:

- an ability to apply knowledge of mathematics, science, and engineering
- an ability to design and conduct experiments, as well as to analyze and interpret data
- an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- an ability to function on multidisciplinary teams
- an ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibility
- the appropriate written and verbal communication skills required to communicate effectively
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- a recognition of the need for, and an ability to engage in, lifelong learning
- a knowledge of contemporary issues
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

## Options in the Bachelor of Science in Chemical Engineering Curriculum

Curricular options have been established in fields of major importance and particular interest. To follow one of these options requires careful planning and course selection by student and advisor.

**Bioengineering Option.** Since all biological and medical systems involve complex chemical and physical processes, chemical engineering is a natural professional basis for biotechnology research. The department has a strong undergraduate program tailored to meeting the needs of students who are preparing for careers in biomedical engineering, biochemical engineering, or biotechnology. Modern biotechnology has been defined as "applied genetic engineering" and is of considerable importance due to recent advances in molecular biology and genetic engineering. The successful industrial application of these advances will, in large part, depend on new chemical engineering

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initiatives in the development of high-rate bioreactors, efficient separation and purification techniques for bioproducts, and computer-interfaced instrumentation for optimal bioprocess control.

The courses available for this option are Pharmaceutical Biotechnology, Bioprocess Engineering, and Biochemical Separations. In addition, bioengineering option students are required to complete two semesters of general biology and one semester of biochemistry.

The department also offers graduate bioengineering technology research programs at both the MS and PhD levels. These programs are oriented toward specialization in various aspects of biochemical engineering, biomedical engineering, biotechnology, and sensory physiology.

**Environmental Option.** Chemical engineers can make major contributions in the fields of pollution prevention and control, resource utilization, and environmental improvement. The environmental engineering option is designed to emphasize biological and environmental sciences, the effects of chemicals on the environment, and chemical engineering applications in environmental problems.

The courses taken by students following this option include electives in environmental science and engineering. A capstone course in environmental engineering processes or environmental separations is taken in the senior year.

**Computer Option.** Applications of computers in chemical engineering are widespread, and the chemical engineer who has solid preparation in computer science and engineering is in demand. Areas include computer architecture and interfacing; machine, assembly, and high-level language programming; and online real-time computing. Students in this option complete the core of the computer engineering degree program in the Department of Electrical and Computer Engineering.

**Materials Option.** The need to develop new materials for a rapidly broadening spectrum of applications is one of the major technological challenges confronting applied science. Chemical engineers have the required background in chemistry and transport theory to contribute significantly in this area. This option focuses on polymeric and ceramic materials by complementing the chemical engineering curriculum with elective courses stressing the interrelationship between materials fabrication, structure, properties, and performance.

**Microelectronics Option.** The manufacture of semiconductor microelectronic circuits or “chips” involves many chemical steps. In recent years, more and more chemical engineers are finding employment in the expanding microelectronics industry. Completion of this option, which includes courses in solid state and semiconductor physics and microstructure fabrication, provides specialization to help launch a successful career in microelectronics.

**Premedicine Curriculum Track.** This track is offered for students preparing for medical school. Since chemical engineering already requires most of the premed courses, it is a logical choice for students who desire an engineering degree and the opportunity to pursue a medical profession.

## *Curriculum for BS in Chemical Engineering (ChE)*

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

##### **Fall Semester**

- APPM 1350 Calculus 1 for Engineers—4
- CHEN 1211 General Chemistry for Engineers—3
- CHEM 1221 General Chemistry Laboratory for Engineers—2
- GEEN 1300 Introduction to Engineering Computing—3
- Humanities or social science elective (Note 2)—3

## **Spring Semester**

- APPM 1360 Calculus 2 for Engineers—4
- CHEN 1300 Introduction to Chemical Engineering (Note 1)—1
- CHEN 2810 Biology for Engineers—3
- PHYS 1110 General Physics 1—4
- Humanities or social science elective (Note 2)—3

## **Sophomore Year**

### ***Fall Semester***

- APPM 2350 Calculus 3 for Engineers—4
- CHEM 3311 Organic Chemistry 1—4
- CHEM 3321 Laboratory in Organic Chemistry—1
- CHEN 2120 Material and Energy Balances—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1

### ***Spring Semester***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- CHEM 3331 Organic Chemistry 2—4
- CHEM 3341 Laboratory in Organic Chemistry 2—1
- CHEM 4521 Physical Chemistry for Engineers (Notes 1 and 4)—3
- CHEN 3200 Chemical Engineering Fluid Mechanics (Note 1)—3
- Humanities or social science elective (Note 2)—3

## **Junior Year**

### ***Fall Semester***

- CHEN 3320 Chemical Engineering Thermodynamics (Note 1)—3
- CHEN 3010 Applied Data Analysis (Note 1)—3
- CHEN 3210 Chemical Engineering Heat Transfer (Note 1)—3
- WRTG 3030 Writing on Science and Society—3
- Elective (Note 3)—4

### ***Spring Semester***

- CHEN 3130 Chemical Engineering Laboratory 1 (Note 1)—2
- Chemistry Elective (Note 5)—3
- CHEN 4330 Chemical Engineering Reaction Kinetics (Note 1)—3
- CHEN 3220 Chemical Engineering Separations and Mass Transfer (Note 1)—3
- Elective (Note 3)—3
- Humanities or social science elective (Note 2)—3

## **Senior Year**

### ***Fall Semester***

- CHEN 4130 Chemical Engineering Laboratory 2 (Note 1)—2

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CHEN 4090 Undergraduate Seminar (Note 1)—1

- CHEN 4520 Chemical Process Synthesis (Note 1)—3
- Elective (Note 3)—3
- Elective (Note 3)—3
- Humanities or social science elective (Note 2)—3

### **Spring Semester**

- CHEN 4530 Chemical Engineering Design Project (Note 1)—2
- CHEN 4570 Instrumentation and Process Control (Note 1)—4
- CHEN 4440 Chemical Engineering Materials (Notes 1 and 6)—3
- Elective (Note 3)—3
- Elective (Note 3)—3
- **Minimum total hours for degree—128**

### **Curriculum Notes**

1. Course is offered only in the semester indicated.
2. Courses must meet humanities and social science requirements. Students should consult their advisor, the current ChE Help Guide, and [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss).
3. Electives must meet specific requirements. See the current ChE Help Guide.
4. Students may take CHEM 4511 if during the fall semester.
5. Students should consult the current ChE Help Guide about chemistry electives.
6. Alternate is CHEN 4460 Polymer Engineering.

## **BS in Chemical and Biological Engineering**

The chemical engineering field has traditionally had a natural affinity and synergy with the fields of molecular and cellular biology including biotechnology, pharmaceutical sciences, tissue engineering, and medicine. These synergies have led the Department of Chemical and Biological Engineering to establish this new degree track in the combined fields of chemical and biological engineering.

Graduates of this new program will be trained in the traditional field of chemical engineering with foci on chemical transformations and separations; however, they will have further knowledge and ability in applying these skills to the emerging areas in biological engineering such as biotechnology, metabolic engineering, and pharmaceutical sciences. In contrast to the traditional BS in chemical engineering, students must master additional skills in biology, medicine, bioseparations, biological laboratory skills, and biological transformations.

### **Program Educational Objectives**

The department prepares its graduates to make significant contributions in many diverse areas. Specifically, within three to five years, graduates will:

- be recognized as academic and industrial leaders in a multitude of chemical and biological engineering or related fields
- demonstrate the relevant technical, critical thinking, and problem solving skills and creativity required to solve challenging and open-ended problems
- work and communicate with a diverse group of individuals in interdisciplinary areas
- exhibit high ethical standards and moral responsibility necessary to safely protect public health and the environment and be knowledgeable of contemporary issues that face modern society
- demonstrate an interest in and the pursuit of lifelong learning and possess the versatility necessary to adapt to a rapidly changing professional environment by applying their skills to new and developing technologies

### **Program Outcomes**

At the time of graduation, graduates will demonstrate:

- 
- an ability to apply knowledge of mathematics, science, and engineering
  - an ability to design and conduct experiments, as well as to analyze and interpret data
  - an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
  - an ability to function on multidisciplinary teams
  - an ability to identify, formulate, and solve engineering problems
  - an understanding of professional and ethical responsibility
  - the appropriate written and verbal communication skills required to communicate effectively
  - the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
  - a recognition of the need for, and an ability to engage in, lifelong learning
  - a knowledge of contemporary issues
  - an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
  - an ability to apply engineering to biological systems
  - a knowledge of advanced biological concepts

### **Options in the BS in Chemical and Biological Engineering Curriculum**

**Premedicine Curriculum Track.** This track is offered for students preparing for medical school.

Since chemical and biological engineering already requires most of the premed courses, it is a logical choice for students who desire an engineering degree and the opportunity to pursue a medical profession.

## *Curriculum for BS in Chemical and Biological Engineering (ChBE)*

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- CHEN 1211 General Chemistry for Engineers—3
- CHEM 1221 General Chemistry Laboratory for Engineers—2
- GEEN 1300 Introduction to Engineering Computing—3
- Humanities or social science elective (Note 2)—3

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- CHEN 1300 Introduction to Chemical Engineering (Note 1)—1
- CHEN 2810 Biology for Engineers—3
- PHYS 1110 General Physics 1—4
- Humanities or social science elective (Note 2)—3

#### **Sophomore Year**

##### ***Fall Semester***

- APPM 2350 Calculus 3 for Engineers—4
- CHEM 3311 Organic Chemistry 1—4

- CHEM 3321 Laboratory in Organic Chemistry—1
- CHEN 2120 Material and Energy Balances—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1

### ***Spring Semester***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- CHEM 3331 Organic Chemistry 2—4
- CHEM 3341 Laboratory in Organic Chemistry 2—1
- CHEM 4521 Physical Chemistry for Engineers (Notes 1 and 4)—3
- CHEN 3200 Chemical Engineering Fluid Mechanics (Note 1)—3
- Humanities or social science elective (Note 2)—3

### **Junior Year**

#### ***Fall Semester***

- CHEN 3320 Chemical Engineering Thermodynamics (Note 1)—3
- CHEN 3010 Applied Data Analysis (Note 1)—3
- CHEN 3210 Chemical Engineering Heat Transfer (Note 1)—3
- WRTG 3030 Writing on Science and Society—3
- Elective (Note 3)—4

#### ***Spring Semester***

- CHEM 4611 Survey of Biochemistry (Note 5)—3
- CHEN 3130 Chemical Engineering Laboratory 1 (Note 1)—2
- CHEN 3220 Chemical Engineering Separations and Mass Transfer (Note 1)—3
- CHEN 4805 Biomaterials (Note 1)—3
- CHEN 4830 Biokinetics (Note 1)—3
- Humanities or social science elective (Note 2)—3

### **Senior Year**

#### ***Fall Semester***

- CHEN 4090 Undergraduate Seminar (Note 1)—1
- CHEN 4520 Chemical Process Synthesis (Note 1)—3
- CHEN 4810 Chemical and Biological Engineering Laboratory 2 (Note 1)—2
- CHEN 4820 Biochemical Separations (Note 1)—3
- Elective (Note 3)—3
- Elective (Note 3)—3

#### ***Spring Semester***

- CHEN 4530 Chemical Engineering Design Project (Note 1)—2
- CHEN 4570 Instrumentation and Process Control (Note 1)—4
- Elective (Note 3)—3
- Focus Tech elective (Note 6)—3
- Humanities or social science elective (Note 2)—3

- **Minimum total hours for degree—128**

### **Curriculum Notes**

1. Course is offered only in the semester indicated.
2. Courses must meet humanities and social science requirements. Students should consult their advisor, the current ChE Help Guide, and [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss).
3. Electives must meet specific requirements. See the current ChE Help Guide.
4. Students may take CHEM 4511 if during the fall semester.
5. Alternate is CHEM 4711.
6. One of the following courses must be taken as the focus technical elective: CHEN 4801 (Pharmaceutical Biotechnology), CHEN 4802 (Tissue Engineering/Biomedical Devices), or CHEN 4803 (Metabolic Engineering). These courses will be taught in alternating years and should be taken in the junior or senior year as available.

## *Graduate Degree Program(s)*

### **Graduate Study in Chemical and Biological Engineering**

Major areas of current research interest in the chemical and biological engineering department are applied mathematics and computers, biomedical and tissue engineering, biotechnology, ceramics processing, colloid science, environmental engineering, heterogeneous catalysis and kinetics, fluid dynamics, low gravity science, mass transfer, materials engineering, membrane and polymer science, particle technology, process control and optimization, separations, supercritical fluids, surface science and interfacial phenomena, transport in porous media, and thermodynamics.

### **Master of Science Degree Requirements**

**Admission.** General criteria for regular admission to the master's program include a bachelor's degree with a 3.000 or better overall GPA from a college or university of recognized standing, equivalent to the degree given at this university (or college work equivalent to that required for such a degree, at least 96 semester hours of which must be acceptable toward a degree at this university); promise of ability to pursue advanced study and research, as judged by previous scholastic record or otherwise; and adequate preparation to begin graduate study in the chosen field.

A candidate for the master of science degree in chemical engineering must fulfill the following departmental requirements:

- Thirty semester hours of graduate work, including a satisfactory thesis. Maximum credit of 6 semester hours is allowed for the completion of the master's thesis. A nonthesis master's degree is available and requires completion of 30 semester hours of course work.
- A final examination as required by the Graduate School on the thesis.

It is expected that a qualified student can complete the master's degree in less than two calendar years. A graduate student with a bachelor's degree in a field related to chemical engineering can obtain the master's degree in chemical engineering but may be required to make up deficiencies in background. Programs are arranged on an individual basis.

**Course Requirements.** The following courses are required for any MS degree plan:

- CHEN 5090 Seminar in Chemical and Biological Engineering
- CHEN 5210 Transport Phenomena
- CHEN 5740 Analytical Methods
- And one of the following:
  - CHEN 5370 Intermediate Chemical Engineering Thermodynamics
  - CHEN 5390 Chemical Reaction Engineering
- Additionally, 15 of the total required credit hours must be chemical and biological engineering courses, and *pass/fail* courses do not count toward the degree.

A degree plan must be prepared at the beginning of the academic program in consultation with an advisory committee. The student is urged to maintain close contact with this advisory committee during the entire course of study.

The MS thesis committee must consist of three members, including at least two graduate faculty members from the Department of Chemical and Biological Engineering.

## Master of Engineering Degree Requirements

**Admission.** (The standards of admission to the MS program also apply to ME degree applicants.) A 3.000 overall undergraduate GPA is required for regular admission.

**ME Degree Advisor.** All ME candidates should see the chemical engineering master of science degree advisor for counseling.

**Requirements for Graduation.** Students orally defend their written reports as specified in the ME degree description, and a comprehensive examination is administered by the student's advisory committee on the report and course work.

## Doctor of Philosophy Admission Requirements

- The applicant must have achieved academic competence equivalent to a master of science degree from an accredited college or university, with a GPA substantially above the minimum normally required for the degree.
- The applicant must show the ability to perform independent research.
- The applicant must indicate a field of specialization and obtain an advisor in the chemical engineering graduate faculty.
- The applicant must pass the PhD preliminary examination administered by the Department of Chemical and Biological Engineering.

A candidate for the doctor of philosophy degree must meet the requirements as described under requirements for advanced degrees in the Graduate School chapter. A minimum of 30 semester hours of courses numbered 5000 or above is required for the degree, including those applied toward an MS degree. These must include all five core courses listed previously.

All PhD students in chemical engineering must satisfy a communication skills requirement. This includes performing an advanced teaching assistantship and demonstrating satisfactory communication skills on the PhD comprehensive examination. Students whose primary language is English may choose to demonstrate foreign language proficiency instead of being judged on their communications skills on the comprehensive exam.

The PhD dissertation committee must consist of five members, including at least three from the Department of Chemical and Biological Engineering and at least one from within CU-Boulder, but outside the department. A graduate faculty member of the department must serve as chair of the committee.



# Chemistry and Biochemistry

The undergraduate degree in chemistry and biochemistry emphasizes knowledge and awareness of:

- the basic principles of chemistry—atomic and molecular theory, reactivities and properties of chemical substances, and the states of matter;
- the basic subfields of chemistry—organic, physical, analytical, and inorganic chemistry (and biochemistry for biochemistry majors);
- mathematics sufficient to facilitate the understanding and derivation of fundamental relationships and to analyze and manipulate experimental data;
- the basic principles of physics (and for biochemistry majors, knowledge of biology); and
- safe chemical practices, including waste handling and safety equipment.

In addition, students completing the degree in chemistry or biochemistry are expected to acquire the ability and skills to:

- read, evaluate, and interpret information on a numerical, chemical, and general scientific level;
- assemble experimental chemical apparatus, design experiments, and use appropriate apparatus to measure chemical composition and properties (for biochemistry students, this includes properties of proteins, nucleic acids, and other biochemical intermediates); and
- communicate results of scientific inquiries verbally and in writing.

Course code for this program is CHEM.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Chemistry and Biochemistry

A student can earn a bachelor's degree in either chemistry or biochemistry. For either option, students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

### BA in Chemistry Option

#### *Required Courses and Semester Credit Hours*

- CHEM 1251 and 1271, General Chemistry 1 and 2 for Chemistry and Biochemistry Majors, or CHEM 1351 and 1371, Honors General Chemistry 1 and 2 (recommended for the student with advanced high school training in mathematics and physics). CHEM 1113/114 and 1133/1134 General Chemistry 1 and 2 lecture and lab, also accepted—10
- CHEM 3351 and 3371 Organic Chemistry for Chemistry and Biochemistry Majors 1 and 2 or CHEM 3311 and 3331 Organic Chemistry 1 and 2—8
- CHEM 3361 and 3381 Laboratory in Organic Chemistry 1 and 2 for chemistry majors—4
- CHEM 4011 Inorganic Chemistry—3
- CHEM 4171 Principles of Instrumental Analysis—3

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- CHEM 4181 Instrumental Analysis Lab with Environmental Emphasis —3
- CHEM 4511 and 4531 Physical Chemistry 1 and 2 or CHEM 4411 and 4431 Physical Chemistry with Biochemistry Applications 1 and 2—6
- CHEM 4581/4591 Physical Chemistry Labs 1 and 2—3
- PHYS 1110 and 1120 General Physics 1 and 2—8
- PHYS 1140 Experimental Physics 1—1
- MATH 1300, 2300, and 2400, Analytical Geometry, and Calculus 1, 2, and 3 or APPM 1350, 1360, and 2350—12
- All students, and especially those intending to go on to graduate school in chemistry, will benefit from additional advanced courses. Recommended electives include the following: CHEM 3151, 3251, 4021, 4251, 4261, 4271, 4611, 4711, 4731, 4901, graduate courses in various fields of chemistry, or advanced courses in mathematics or physics.

## BA in Biochemistry Option

### *Required Courses and Semester Credit Hours*

- CHEM 1251 and 1271, General Chemistry 1 and 2 for Chemistry and Biochemistry Majors, or CHEM 1351 and 1371, Honors General Chemistry 1 and 2 (recommended for the student with advanced high school training in mathematics and physics). CHEM 1113/114 and 1133/1134 General Chemistry 1 and 2 lecture and lab, also accepted—10 SH
- CHEM 3351 and 3371 Organic Chemistry for Chemistry and Biochemistry Majors 1 or 2 or CHEM 3311 and 3331 Organic Chemistry 1 and 2—8
- CHEM 3321 and 3341 Laboratory in Organic Chemistry 1 and 2 or CHEM 3361 and 3381 Laboratory in Organic Chemistry for Majors 1 and 2—2/4
- CHEM 4411 and 4431 Physical Chemistry with Biochemistry Applications 1 and 2, or CHEM 4511 and 4531 Physical Chemistry 1 and 2—6
- CHEM 4711 and 4731 General Biochemistry 1 and 2—6
- CHEM 4761 Biochemistry Laboratory—4
- PHYS 1110 and 1120 General Physics 1 and 2—8
- PHYS 1140 Experimental Physics 1—1
- MATH 1300, 2300, and 2400 Analytical Geometry and Calculus 1, 2, and 3 or APPM 1350, 1360, and 2350—12
- MCDB 1150 Introduction to Molecular Biology, MCDB 1151 Intro to Molecular Biology Lab, MCDB 2150 Principles of Genetics, and MCDB 2151 Principles of Genetics Lab or EBIO 1210 and 1220 General Biology 1 and 2 and EBIO 1230 and 1240 General Biology Laboratory 1 and 2—8
- One of the following: MCDB 2150/2151 (if not taken above), MCDB 3135, EBIO 2070, 3400, 4530, or IPHY 3430—3-4
- All students, and especially those intending to go on to graduate school in biochemistry, will benefit from additional advanced courses. Recommended electives include the following: CHEM 4011, 4021, 4171, 4181, 4621, 4751, 4791, 4901, graduate courses in various fields of chemistry, or advanced courses in biology or mathematics.

### *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain progress in chemistry and biochemistry, students should meet the following requirements:

- Declare chemistry or biochemistry as the major in the first semester.
- Students must consult with a major advisor to determine adequate progress toward completion

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of the major.

## Minor Program

Minors are offered in chemistry and in biochemistry. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. The College of Arts and Sciences will allow a maximum of 9 hours of transfer credit, including 6 upper-division credit hours to count toward a minor. Students may transfer in through organic chemistry only. All courses required for the minor must be completed with a grade of C- or better, and the overall GPA in all CHEM courses taken must be a 2.000. Students who have taken CHEN 1211 and CHEM 1221 may substitute them for General Chemistry 1. Engineering students who have taken CHEM 4521 may use this to satisfy the Physical Chemistry 1 requirement for both minors. Required courses are listed below.

### Minor in Chemistry

- CHEM 1113/1114 and 1133/1134 General Chemistry 1 and 2, or CHEM 1351 and 1231 Honors General Chemistry 1 and 2 (recommended for the student with advanced high school training in mathematics and physics). CHEM 1251 and CHEM 1271 General Chemistry 1 and 2 for Chemistry and Biochemistry Majors, also accepted—10
- CHEM 3311, 3331, 3321, and 3341 Organic Chemistry 1 and 2 lecture and lab. CHEM 3351, 3371, 3361 and 3381 Organic Chemistry 1 and 2 lecture and lab for Chemistry and Biochemistry Majors, also accepted—10-12
- CHEM 4411 Physical Chemistry 1 with Biological Applications or CHEM 4511 Physical Chemistry 1 (It should be noted that Physical Chemistry 1 has a prerequisites of Calculus 3 and a prerequisite or co-requisite of PHYS 1120.)—3
- CHEM 4431 Physical Chemistry 2 with Biological Applications, CHEM 4531 Physical Chemistry 2, CHEM 4011 Inorganic Chemistry, or CHEM 4171 Principles of Instrumental Analysis—3

### Minor in Biochemistry

- CHEM 1113/1114 and CHEM 1133/1134 General Chemistry 1 and 2, or CHEM 1351 and 1231 Honors General Chemistry 1 and 2 (recommended for the student with advanced high school training in mathematics and physics). CHEM 1251 and 1271 General Chemistry 1 and 2 for Chemistry and Biochemistry Majors, also accepted—10
- CHEM 3311, 3331, 3321 and 3341 Organic Chemistry 1 and 2 lecture and lab. CHEM 3351, 3371, 3361 and 3381, Organic Chemistry 1 and 2 lecture and lab —10-12
- CHEM 4411, Physical Chemistry 1 with Biological Applications, or CHEM 4511, Physical Chemistry 1. (It should be noted that physical chemistry 1 has a prerequisites of calculus 3 and a prerequisite or co-requisite of PHYS 1120.)—3
- CHEM 4611, Survey of Biochemistry, or both CHEM 4177 and 4731 Biochemistry 1 and 2—3-6

## Chemistry Honors Program

Opportunity is provided for qualified chemistry and biochemistry majors to participate in the departmental honors program and graduate with honors (cum laude, magna cum laude, or summa cum laude) in chemistry or biochemistry. Students interested in the honors program should contact the departmental honors advisor during their junior year.

Transfer students who plan to take a chemistry or biochemistry major must complete at the Boulder campus a minimum of 12 credit hours of upper-division work covering at least two subdisciplines: organic, physical, analytical, and inorganic for chemistry majors; organic biochemistry and physical for biochemistry majors.

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A more detailed listing of the bachelor's degree program, together with advising information and alternate course options, is available at the undergraduate office in the Department of Chemistry and Biochemistry.

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## *Graduate Degree Program(s)*

### Graduate Study in Chemistry and Biochemistry

Students wishing to pursue graduate work in chemistry or biochemistry leading to candidacy for an advanced degree should read carefully requirements for advanced degrees in the Graduate School chapter. For information on the doctoral program in chemical physics offered jointly with the Department of Physics, see [Chemical Physics](#) in the Graduate School section. Following are some of the special departmental requirements. Copies of more detailed rules are available on the [department website](#).

**Prerequisites.** An undergraduate major in chemistry, biochemistry, or a related field is desirable since entering graduate students are required to take examinations and complete selected course work covering the major fields of chemistry and biochemistry. The GRE general test is required for admission and for fellowship competition. The GRE subject test in either chemistry, or biochemistry, cell and molecular biology is highly recommended. Some or all of these tests may be waived under special circumstances.

### Master's Degree

Students are not admitted for the master's degree but may be transferred to the MS plan if they are unable to meet the demands of the PhD program.

**Language.** The department does not require foreign language proficiency for the master's degree.

**Examinations.** Administration of preliminary examinations varies, depending on students' entering field. Candidates opting for MS Plan I must pass a master's final oral examination at the time they complete their work. MS Plan II does not require a final oral examination.

**Course Requirements.** There are two methods of obtaining a master's degree from the Department of Chemistry and Biochemistry. Plan I requires 30 credit hours, including 15 credit hours of formal course work, 15 credit hours in research/seminar courses, the completion of a research investigation, and the presentation of a thesis. Plan II requires 30 credit hours including 21 credit hours of formal course work plus 9 credit hours of research/seminar, and presentation of a research report, but no thesis; Plan II is available only with departmental approval.

### Doctoral Degree

**Language.** The department does not require foreign language proficiency for the PhD degree.

**Examinations.** Administration of preliminary examinations varies, depending on students' entering field. These examinations are used in an advisory capacity. The minimum course work is 30 credit hours at the 5000, 6000, or 7000 level, of which 15 credit hours must be in formal course work. In addition, a minimum of 30 credit hours of dissertation work (CHEM 8991) is required. PhD students must pass a comprehensive examination consisting of written exams and an oral examination. Students entering with a master's degree may take the oral examinations in their second semester; others start them in their fourth semester. Candidates must write a research proposal during their studies, complete a research investigation and present a thesis, and pass a PhD final oral examination at the time they complete their work.

## *Certificate Program*

### American Chemical Society Certification

The American Chemical Society maintains a certification program in which a student graduating with

a specified minimum program is certified to the society upon graduation. To be certified, a graduate must satisfy requirements in addition to the minimum for graduation. The department offers this certificate for the chemistry major only. A list of these requirements may be obtained from the undergraduate Chemistry and Biochemistry office.

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## Central and East European Studies

Students who seek in-depth, interdisciplinary knowledge of the region are encouraged to pursue the certificate in Central and East European Studies (CEES). The certificate program offers students the opportunity to explore the culture, history, and politics of the nations of central and eastern Europe from a variety of disciplinary perspectives.

The purpose of the certificate program is to enhance, rather than to replace, the department major. Students work with CEES faculty advisors to plan an appropriate certificate program. The certificate is issued by the dean of the College of Arts and Sciences, and is awarded in addition to a bachelor's degree in another field.

The certificate program involves 24 hours of credit, including an introductory course (CEES 2002) and at least one course from each of three core clusters (historical, social science, and literature/culture). Students pursuing the CEES certificate are strongly encouraged to take advantage of a recognized study abroad program in Eastern Europe affiliated with CU-Boulder. Courses taken in such a program, as approved by an advisor, count toward the certificate in CEES. Only 9 credits that apply to the major can be used to fulfill requirements for the CEES certificate.

Contact the director of Central and East European Studies, Professor Elizabeth Dunn at **303-492-5388** for information.

Course code for this program is CEES.

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# Civil Engineering

The curricula in civil engineering within the Department of Civil, Environmental, and Architectural Engineering have been designed to qualify students for entry-level positions in professional practice in the areas of civil and environmental engineering. These broad area designations may be separated into the subdisciplines of:

- construction engineering and management;
- environmental engineering;
- geotechnical engineering and geomechanics;
- mechanical systems; structural engineering and structural mechanics; and
- water resource engineering and management

Through the regular curriculum, students will be ready to enter professional practice in the foregoing areas and be equipped to progress to higher levels in many directions. An Engineering Science track is also available for undergraduates who want additional preparation for graduate study and careers in research and development.

## Program Educational Objectives

The overall objectives of the bachelor of science program in civil engineering are:

- Graduates will be successfully employed in engineering, science, or technology careers.
- Graduates will be assuming management or leadership roles.
- Graduates will engage in continual learning by pursuing advanced degrees or additional educational opportunities through course work, professional conferences and training, and/or participation in professional societies.
- Graduates will pursue professional registration or other appropriate certifications.
- Graduates will be active in civic engagement.

## Educational Outcomes

The outcomes that students are expected to have attained upon graduation with a bachelor of science degree in civil engineering are:

- the ability to apply knowledge of mathematics, science, and engineering
- the ability to design and conduct experiments
- the ability to analyze and interpret data
- the ability to design a system or component to meet desired needs
- the ability to function on multidisciplinary teams
- the ability to identify, formulate, and solve engineering problems
- an understanding of professional and ethical responsibilities
- the ability to communicate effectively through writing and/or drawing
- the ability to communicate effectively through oral presentations

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- an understanding of the impact of engineering on society
- an understanding of the necessity to engage in lifelong learning
- a knowledge of contemporary issues in civil, environmental, and architectural engineering
- the ability to use modern engineering techniques, skills, and tools
- the ability to explain basic concepts in management, business, public policy, and leadership

Before their graduation, students in civil and environmental engineering will take a capstone design course in addition to training in structural and foundation design, civil engineering systems, construction, engineering geology, engineering materials, geotechnical engineering, soil mechanics, water quality, environmental engineering, fluid mechanics, computer-aided and manual engineering drawing, mechanics and dynamics, computer modeling, professional practice and ethics seminars, structural analysis and design, surveying, and transportation systems via required and elective courses.

### Research Interests and Facilities

The department has a wide variety of research facilities, including a 15g-ton centrifuge for geotechnical and structural model studies and a large 440g-ton geotechnical centrifuge for use in model testing. Also available is an instructional computing facility, the Bechtel Laboratory, and the M.Y. Leung Computational Laboratory for Soils and Structures, both equipped with Windows and Linux high-performance workstations. In addition, extensive structural engineering, engineering mechanics, and geotechnical capabilities exist such as a one-million-pound universal testing machine and several cubical cells for multi-axial testing of materials. A 40 ft. by 80 ft. structural strong floor with associated equipment permits the testing of a wide variety of structural configurations under controlled, both static and dynamic loading. The hydraulics and water resources research laboratories include excellent facilities in water quality and environmental engineering. A unique workstation laboratory for advanced decision support systems is available. Programs in construction management and building energy are well supported. A state-of-the-art HVAC laboratory is capable of testing full-scale, commercial building HVAC systems and their controls using a one-of-a-kind data acquisition and experimental control system.

The Center for Advanced Decision Support for Water and Environmental Systems (CADSWES) is an interdisciplinary center of excellence, housed within the Department of Civil, Environmental, and Architectural Engineering. CADSWES focuses on applying advanced computing techniques to provide decision makers with decision support systems (DSSs) to help them more effectively manage water and environmental systems.

Current research covers such topics as water and wastewater treatment, surface and subsurface contaminant transport, decision support systems, hydraulic research, land treatment, rapid infiltration, and activated sludge processes. Cost prediction in construction, construction management, energy conservation in buildings, solar applications, and lighting systems are included. Advances in soil mechanics, rock mechanics, soil dynamics and geotechnical earthquake engineering, foundation engineering, computational geomechanics, centrifugal modeling, geosynthetics, and glacier flows have been produced. Research in structures includes stability, damage and fracture, material microstructures, durability, finite element modeling, reinforced concrete, earthquake responses, reinforced masonry structures, prestressed concrete, and dynamic control.

Course code for this program is CVEN.

### *Bachelor's Degree Program(s)*

## Bachelor's Degree in Civil Engineering

The central curriculum requires students to obtain a background in the humanities, a broad knowledge of the basic engineering sciences of chemistry, mathematics (including differential equations), physics, mechanics (including fluid mechanics and soil mechanics), and thermodynamics.

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Social-humanistic hours may be devoted to the social sciences, the humanities, or to approved communication courses, with not more than 12 hours from any one of the three areas.

Advanced technical courses are selected in the senior year. Random selection is not allowed as the objective is to prepare a graduate to enter the engineering profession with a firm groundwork in fundamental engineering science as well as adequate technical fluency in selected areas. Students should consult with their advisors on their choices.

Students are required to take the Fundamentals of Engineering (FE) exam when they are within 32 credit hours of graduation.

## *Curriculum for BS (CE)*

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 General Chemistry Laboratory for Engineers—2
- CHEN 1211 General Chemistry for Engineers—3
- CVEN 1317 Introduction to Civil and Environmental Engineering—2
- GEEN 1400 Engineering Projects or basic engineering elective—3
- Humanities or social science elective—3

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- AREN 1027 Engineering Drawing—3
- CVEN 2012 Introduction to Geomatics—3
- PHYS 1110 General Physics 1—4
- Humanities or social science elective—3

#### **Sophomore Year**

##### ***Fall Semester***

- APPM 2350 Calculus 3 for Engineers—4
- AREN 2110 Thermodynamics—3
- CVEN 2121 Analytical Mechanics 1—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Humanities or social science elective—3

##### ***Spring Semester***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- GEEN 1300 Introduction to Engineering Computing—3
- CVEN 3161 Mechanics of Materials 1—3
- CVEN 3313 Theoretical Fluid Mechanics—3
- CVEN 3698 Engineering Geology—3

#### **Junior Year**

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### **Fall Semester**

- CVEN 3246 Introduction to Construction—3
- CVEN 3323 Hydraulic Engineering—3
- CVEN 3414 Fundamentals of Environmental Engineering—3
- CVEN 3525 Structural Analysis—3
- CVEN 3708 Geotechnical Engineering 1—3

### **Spring Semester**

- CVEN 3111 Analytical Methods II—3
- CVEN 3227 Probability, Statistics, and Decision for Engineers—3
- CVEN Proficiency I—3
- CVEN Proficiency II—3
- WRTG 3030 Writing on Science and Society—3

### **Senior Year**

#### **Fall Semester**

- CVEN Proficiency III—3
- CVEN 4899 Civil Engineering Senior Design Project—4
- CVEN 3602 Transportation Systems—3
- Concentration I—3
- Humanities or social science elective (3000-level or above)—3

#### **Spring Semester**

- CVEN Proficiency IV—3
- Concentration II—3
- Technical electives—5
- Humanities or social science elective (3000- level or above)—3
- **Minimum hours for degree—128**

### **Curriculum Notes**

1. Not more than 6 hours of technical electives may be taken outside the department, and then only for defensible reasons.
2. The capstone course requirement is satisfied by CVEN 4899 Civil Engineering Senior Design Project, to be taken in the year of graduation.

## ***Concurrent Bachelor's/Master's Program***

### **Concurrent BS/MS in Civil Engineering**

A concurrent BS/MS degree program in civil engineering is available. Students may apply to the program when they have completed 75-110 credit hours toward the undergraduate BS degree. Once accepted into the program, students are allowed to count 6 credit hours taken at the graduate level for both the BS and MS degrees (if certain grade and GPA requirement are met); this allows a student to obtain both degrees in a five-year curriculum.

## ***Graduate Degree Program(s)***

### **Graduate Study in Civil Engineering**

Information on the requirements for graduate study in civil engineering is available from the [departmental website](#). The Graduate Record Examination, consisting of the aptitude tests and advanced test in engineering, is used in the evaluation of candidates and competition for university and other fellowships. Therefore, students who wish to be considered for fellowships are advised to

take this examination prior to their arrival on campus. There is no other qualifying examination required by the department for the master of science degree.

The department offers the master of science, master of engineering, and doctor of philosophy degrees with study emphasis in several major areas: building energy systems, construction engineering and management, environmental engineering, life cycle engineering, geotechnical engineering and geomechanics, environmental fluid mechanics, geoenvironmental engineering, structural engineering and structural mechanics, water resources engineering, and general engineering science. A major in transportation and planning is possible through the Denver campus.

## Master of Science Degree

Requirements for this master's degree can be fulfilled in two ways. Under Plan I, the candidate presents 30 semester hours of course work including thesis. Under Plan IIa, 30 credit hours of course work are required, with a minimum of 3 hours being Master's Report credit hours (maximum of 6 credit hours). Under Plan IIb, 30 credit hours are required.

## Doctor of Philosophy Degree

This degree requires a minimum of 30 semester hours of graduate-level work (5000 level or above), the last 15 of which must be taken at this university. The doctoral dissertation likewise requires 30 semester hours. The applicant for this degree normally has completed a master's degree in civil engineering or a closely related field and must demonstrate the capability for both rigorous academic accomplishments and independent research.

### *Dual Degree Programs*

## Double Major with Applied Mathematics

As an exceptional opportunity for talented students who are interested in analytical and computational methods related to civil engineering and general engineering science, the civil engineering and applied mathematics departments offer a streamlined track by which a student can earn a baccalaureate degree from both programs with a minimum of 15 extra credit hours. Consult faculty advisors in civil engineering and applied mathematics for information and admission.

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# Classics

Through consultation with the undergraduate advisor, the bachelor's degree in classics is tailored to the student's interests in the field. Major and minor programs can be arranged with a concentration in either Latin or Greek or a combination of the two, with a focus on classical literature, culture, and thought (including mythology, literature, philosophy, religion, art, archaeology, and history) or with a particular emphasis on classical history, art, and archaeology. Prospective majors and minors should consult with the undergraduate advisor and review the departmental list.

The undergraduate degree in classics emphasizes knowledge and awareness of:

- the fundamental outlines of the history of Greek and Roman literature, from Homer to the end of classical antiquity;
- the historical and cultural contexts of particular works; and
- the art, religion, and philosophy of ancient Greece and Rome and their roles in world cultural history.

In addition, students completing the degree in classics are expected to acquire the ability and skills to:

- read, understand, and interpret written documents and works of literature in ancient Greek or Latin where relevant, as well as in translation;
- communicate in spoken and written form with adequate clarity and complexity for the relevant audience; and
- read and think critically.

Interested students are encouraged to consult [www.colorado.edu/classics/undergrad](http://www.colorado.edu/classics/undergrad) for more information.

Course code for this program is CLAS.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Classics

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below, including at least 18 credit hours of upper-division courses.

#### *Track I: Greek, Latin, or Greek and Latin*

##### *Required Courses and Semester Credit Hours*

- Greek and/or Latin—30  
*Note: Students must designate one language as the primary field of study. The first year of this language does not count toward the major. If you study both languages, the introductory sequence in the second language does count toward the major.*
- Electives (classical literature, culture and thought or ancient history, art and archaeology)

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## Track II: Literature, Culture, and Thought

### Required Courses and Semester Credit Hours

- Classical literature, culture, and thought (CLAS 1010, 1030, 1100, 1110, 1115, 1120, 1140, 2020, 2100, 2110, 2610, 3820, 4040, 4110, 4120, 4130, 4840; HEBR 1030; PHIL 3000) —18
- Ancient history, art, and archaeology (CLAS 1051, 1061, 1509, 2009, 2019, 2041, 3039, 3049, 4021, 4031, 4041, 4061, 4071, 4081, 4091, 4109, 4119, 4129, 4139, 4149, 4169, 4199, 4209, 4219, 4761, 4849; HIST 3011)—12

- Greek and/or Latin—6

*Note: Students must designate either Greek or Latin as the primary field of language study. The first year of this language does not count toward the major. With the approval of the undergraduate advisor, upper-level Greek or Latin courses may be substituted for classical literature, culture, and thought or ancient history, art, and archaeology courses.*

## Track III: History, Art, and Archaeology

### Required Courses and Semester Credit Hours

- Survey course in ancient history or art and archaeology (CLAS 1051, 1061, or 1509)—3
- Ancient history, art, and archaeology (CLAS 1051, 1061, 1509, 2009, 2019, 2041, 3039, 3049, 4021, 4031, 4041, 4061, 4071, 4081, 4091, 4109, 4119, 4129, 4139, 4149, 4169, 4199, 4209, 4219, 4761, 4849; HIST 3011)—15

- Classical literature, culture, and thought (CLAS 1010, 1030, 1100, 1110, 1115, 1120, 1140, 2020, 2100, 2110, 2610, 3820, 4040, 4110, 4120, 4130, 4840; HEBR 1030; PHIL 3000)—12

- Greek and/or Latin—6

*Note: Students must designate either Greek or Latin as the primary field of language study. The first year of this language does not count toward the major. With the approval of the undergraduate advisor, upper-level Greek or Latin courses may be substituted for classical literature, culture, and thought or ancient history, art, or archaeology courses.*

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in classics, students should meet the following requirements:

- Declare the classics major by the beginning of the second semester.
- Students must consult with a major advisor to determine adequate progress toward completion of the major.

## Minor in Classics

The department offers a minor in classics for students who would like to study the world of antiquity, but don't have the time to devote to a major. Students are subject to the College of Arts and Sciences minor requirements, including:

- A minimum of 18 hours, all with a grade of C- or better, in the minor
- A minimum 2.000 GPA for courses in the minor
- A minimum of 9 upper-division hours in the minor

The specific requirements for completion of the classics minor are as follows:

### > Classics

> Cognitive Science Studies

> Communication

> Comparative Literature Graduate Program

> Distributed Studies Program

> Ecology and Evolutionary Biology

> Economics

> English

> Environmental Studies

> Ethnic Studies

> Film Studies

> French and Italian

> Geography

> Geological Sciences

> Germanic and Slavic Languages and Literatures

> History

> Humanities

> Integrative Physiology

> International Affairs

> INVST Community Studies

> Jewish Studies

> Lesbian, Gay, Bisexual, Transgender, and Queer Studies

> Linguistics

> Mathematics

> Medieval and Early Modern Studies

## Track I: Greek and/or Latin Language and Literature

- Greek and/or Latin—12

*NOTE: The minor is offered in Greek, Latin, or Greek and Latin. Students must designate one language as the primary field of study. The introductory sequence in this primary field language (either 1013-1023 or 1014-1024) does not count toward the minor. If a student uses both languages, the introductory sequence in the secondary language does count toward the major.*

- Electives (classical literature, culture, and thought; or ancient history, art, and archaeology courses listed under Track II)—6

## Track II: Classical Studies

- Classical literature, culture, and thought (CLAS 1010, 1100, 1110, 1115, 1120, 1140, 2100, 2110, 2610, 3330, 3820, 4040, 4110, 4120, 4130, 4840; PHIL 3000)—6 or 9
- Ancient history, art, and archaeology (CLAS 1041, 1051, 1061, 1509, 2009, 2019, 2020, 2100, 2110, 3039, 3049, 4021, 4031, 4041, 4051, 4061, 4081, 4091, 4119, 4139, 4149, 4169, 4199, 4761, 4849, HIST 3011)—6 or 9
- Greek and/or Latin—3  
*Notes: Students must elect 6 hours each in the Classical Literature, Culture, and Thought group and the Ancient History, Art, and Archaeology group. 3 remaining hours may be elected in either group.*
- Students must designate either Greek or Latin as the primary field of language study. The introductory sequence in this primary field language (either 1013-1023 or 1014-1024) does not count toward the minor. With the approval of the undergraduate advisor, upper level Greek or Latin courses may be substituted for classical literature, culture, and thought; or ancient history, art, and archaeology courses.

## Graduate Degree Program(s)

### Master's Degrees in Classics

Candidates may choose to emphasize Greek, Latin, classical art and archaeology, classical antiquity, or the teaching of Latin (MAT).

It is expected that students opting for the teaching of Latin either have achieved accreditation at the secondary level or are planning to do so through the School of Education. The MA degree alone does not satisfy the state requirements for certification.

**Degree Requirements.** Candidates for the **MA degree in Latin or Greek** are required to complete at least six graduate level courses in Greek and/or Latin and to pass a written examination in translation of the major language. Students intending to pursue the PhD in classics are strongly advised to develop proficiency in both Latin and Greek, and to acquire a reading knowledge of German, French, or Italian.

Candidates for the **MA degree in classical art and archaeology** are required to complete at least two graduate-level courses in Greek and/or Latin and five graduate-level courses in ancient and/or medieval art and archaeology (of which at least one must be at the 5000-level or above [not 4000/5000] and one must be a preapproved nonclassical course). In addition, they must pass written examinations on Greek and Roman art and archaeology. Students intending to pursue the PhD in classical archaeology are strongly recommended to develop proficiency in both Latin and Greek and to acquire a reading knowledge of German, French, or Italian. With the approval of the associate chair for Graduate Studies, graduate-level classes in Greek or Latin may be substituted for classical archaeology or history.

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> [Nordic Studies \(Scandinavian\)](#)

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> [Religious Studies](#)

> [Scandinavian \(now Nordic Studies\)](#)

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Candidates for the **MA degree with emphasis on classical antiquity** are required to complete at least two graduate-level courses in Greek and/or Latin and must pass a written examination in two of the following fields: history, art and archaeology, religion and mythology, philosophy and political theory, and Greek or Latin translation.

Candidates for the **MA Plan I** (24–27 hours of course work at the 5000-level or above, plus 3–6 credit hours of thesis) take an oral comprehensive examination in defense of the thesis. Candidates for the **MA Plan II** (30 credit hours at the 5000-level or above, without thesis) must have departmental approval and pass an oral comprehensive examination covering their course work and reading lists for their exams.

Candidates for the **MA degree with emphasis on the teaching of Latin** must pass a written examination in Latin translation and an oral comprehensive examination on teaching methods and their own Latin teaching project. Thirty hours of course work, including one Latin workshop and a special project, are required. Plan I is not offered for the MA degree with emphasis on teaching.

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## Doctoral Degrees in Classics

Candidates for the PhD in classics must meet the following requirements:

1. A minimum of 42 hours of course work at the 5000 level or above (excluding thesis and accelerated courses). Course work completed in the MA program at the University of Colorado, or up to 21 hours of graduate credit transferred from another institution, may be applied toward this requirement. Courses should be distributed as follows:
  - a. Four 7000-level graduate seminars (at least one each in Greek and Latin).
  - b. Two courses in ancient history and/or classical archaeology.
  - c. One course in either Greek or Latin prose composition.
  - d. Two courses in special fields such as epigraphy, law, linguistics, literary theory, medieval studies, palaeography, papyrology, philosophy, or religion, as approved by the associate chair for graduate studies.
2. A minimum of 30 hours of doctoral dissertation credit with no more than 10 of these hours in any one semester. No more than 10 dissertation hours may be taken preceding the semester of taking the Oral Comprehensive Examination. Up to 10 hours may be taken during the semester in which the student passes the comprehensive examination.
3. A reading knowledge of German and one other modern foreign language (normally Italian or French). Proficiency is tested by a one-hour written translation test using a dictionary. Students may take a Foreign Language Exam at any time by arrangement with the associate chair for graduate studies. Students are encouraged to pass both modern language exams before the end of the third semester and required to do so before the end of the fourth semester in the PhD program.
4. **Preliminary Examinations in Greek and Latin.** Two written examinations of three hours each, each consisting of two hours of translation and one hour of analysis of texts. The translation portion of each exam will consist of two out of three prose passages and two out of three verse passages for a total of about 100 lines. On each exam, four of the passages for translation (two prose and two poetry) will be drawn from the relevant reading list posted on the department's website; the other two will not. Each written examination will be followed by a one-hour oral examination that covers the range of Greek or Latin literature represented by the reading list and tests the candidate's general knowledge of the primary sources and literary history. There will be two administrations of each exam per year, in the fall and spring. Students are required to pass both exams by the end of the second semester in the PhD program (or the second semester beyond the MA). Successful completion of the MA in Track I or the equivalent at another university, as determined by the graduate committee, will satisfy one of these examination requirements.
5. **Comprehensive Examination.** Two written examinations of three hours each on two topics

or authors chosen in consultation with faculty members selected by the student and approved by the graduate committee, to be chosen from the following broad areas: language and literature, ancient history, archaeology, philosophy, or religion. In selecting the topics for these examinations, students are required to demonstrate balance in the fields of Greek and Roman culture, as determined by the graduate committee. The written comprehensive examinations will be administered twice per year, typically during the last two weeks of the term. Successful completion of the written examination is followed by a two-hour oral exam on Greek and Roman culture within the area of the student's chosen specialization, which should coincide with the student's intended dissertation topic. Students are required to complete these exams by the end of their fourth semester in the PhD program.

6. **Dissertation Prospectus.** To be circulated to the dissertation advisory committee for approval by the end of the fifth semester in the PhD program.
7. **Dissertation.** To be completed by the end of the eighth semester in the PhD program.
8. **Final Examination** (upon submission of dissertation). Two hours of oral defense of the dissertation.



# Communication

The bachelor of arts in communication provides analytic work from both humanistic and social-scientific perspectives, and practical work to improve communication performance in various kinds of situations.

The undergraduate degree in communication emphasizes knowledge and awareness of:

- the history and development of communication as an object of scholarly study, including both the humanistic and social-scientific traditions;
- the basic contexts in which communication is enacted (e.g., interpersonal, group, organizational, and public contexts);
- the various processes of interaction within these contexts;
- the basic methods of investigating questions about communication;
- the ethical issues and responsibilities of communication practice;
- the diversity of communication styles associated with gender and cultural differences; and
- the uses and implications of communication technology.

In addition, students completing the degree in communication are expected to acquire the ability and skills to:

- express ideas in an informed, coherent, and effective manner, particularly the ability to articulate and develop a sustained argument, both orally and in writing;
- analyze, criticize, and evaluate messages and interactions in a variety of practical contexts, both orally and in writing; and
- adapt messages and negotiate interactions responsibly in diverse and changing situations.

Graduate study in communication examines problems of human interaction and relationship, participation and collaboration, and deliberation, dialogue, and decision making in personal relationships, workplace and institutional contexts, and community and public life. The master's program provides students with knowledge of selected bodies of communication scholarship and develops their skills in analyzing complex communication situations for a range of professional positions in business, nonprofit institutions, and other types of community groups, and for doctoral study in communication. The doctoral program provides students with opportunities to conduct theoretically grounded, practically useful research that crosses traditional academic boundaries and that prepares them to assume faculty positions in universities, as well as in research and training programs in business, government, and social service agencies.

Course code for this program is COMM.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Communication

Majors must complete a minimum of 33 hours of course work in communication, 18 of which must be

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upper division (3000 level or higher). Only courses with grades of C- or better count toward the major, and the overall major GPA must be 2.000 (a C- is 1.700).

### **Required Courses and Semester Credit Hours**

- COMM 1210 Perspectives on Human Communication—3
- COMM 1300 Public Speaking—3
- COMM 1600 Group Interaction—3
- COMM 3210 Human Communication Theory—3
- COMM 3300 Rhetorical Foundations of Communication—3
- One methods course: COMM 3740, 3750, or 3760—3
- One senior seminar: COMM 4220, 4300, 4400, 4510, 4600, or 4610—3
- Two of the following:
  - COMM 2360 Campaigns and Revolutions—3
  - COMM 2400 Discourse, Culture, and Identities—3
  - COMM 2500 Interpersonal Communication—3
  - COMM 2600 Organizational Communication—3
- Two additional upper-division electives (3000- or 4000-level courses): 4000-level courses may be taken twice (only twice) with different topics—6

*Up to 8 credit hours of independent study and 6 hours of internships may be taken. These are upper-division elective hours but do not count toward major requirements. Eligible students interested in graduating with department honors should contact the department's honors coordinator as soon as possible.*

The department encourages its majors to take related courses in: business; English; ethnic studies; journalism and mass communication; linguistics; philosophy; political science; sociology; speech, language, and hearing sciences; and theatre and dance.

Students who wish to major in communication should meet with a department advisor, where they will be advised of any changes in this list of requirements.

### **Graduating in Four Years**

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in communication, students should meet the following requirements:

- Declare a communication major by the beginning of the second semester.
- Complete COMM 1210, 1300, and 1600 by the end of the third semester.
- Majors should register at designated times.

### **Graduate Degree Program(s)**

## **Graduate Study in Communication**

The department offers programs of study leading to the MA and PhD in communication. Interested students should contact the department for current admission and degree requirements, or see [comm.colorado.edu](http://comm.colorado.edu).

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> [Cognitive Science Studies](#)

> **Communication**

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> [English](#)

> [Environmental Studies](#)

> [Ethnic Studies](#)

> [Film Studies](#)

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# Comparative Literature Graduate Program

The Comparative Literature Graduate Program enables students to study the production, reception, and interpretation of written texts and related media from a comprehensive perspective involving at least two national literatures. Comparative literature has long crossed national linguistic frontiers. The discipline today questions the very basis of such boundaries, exploring the construction of national literatures, languages, and traditions and, insofar as this can be read in and out of verbal and other media, of nations and national consciousness itself. Extending its reflections on limits still further and in dialogue with other disciplines, the interpretive perspectives of comparative literature are not only crossdisciplinary, multi-media, and multilingual, but global. The aim is to analyze the world's cultures both as expressions of the various interdependent histories that have framed them, and as manifestations of the multifacetedness inscribed in the different forms by which human beings shape and communicate their experience. These forms can range from a single literary genre, period, movement, or tradition to larger concepts and constructs such as gender, sexuality, theory, or culture. Areas of analysis may also include authorship and the literary work, literacy, genre, literary history, and the canon. Students wishing to pursue graduate work in comparative literature should read the guidelines for the MA and PhD degrees in this field. These are available at [complit.colorado.edu](http://complit.colorado.edu).

Course code for this program is COML.

## Graduate Degree Program(s)

### Master's Degree

**Prerequisites.** In addition to an undergraduate major in a relevant field, students applying for admission to the MA program in comparative literature should have completed three years of college-level study or its equivalent in one foreign language. Students are also encouraged to begin study of a second foreign language before applying.

**Course Work Requirements.** Candidates for the MA in comparative literature must take a total of 10 courses (representing 30 credit hours). Half the required credit hours are in courses offered by the Comparative Literature Program. At least 9 hours are in the department of the student's primary literature, and an additional 6 hours are in the department of the secondary literature.

**Examinations and Thesis.** Candidates for the MA in comparative literature must submit and defend orally a master's thesis.

### Doctoral Degree

**Prerequisites.** Students are accepted for doctoral study in comparative literature directly from the BA or after completion of an MA in comparative literature, a national literature, or a related discipline. All students seeking admission to doctoral study must be prepared to take graduate level courses in two foreign languages. The doctoral program does not provide time for remedial language work. Students unable to meet this requirement should consider applying for the MA program.

**Course Work Requirements.** Students who receive their MA in comparative literature from CU-Boulder are required to take a minimum of 48 hours of graduate course work, including 30 hours completed during the preparation for the MA and 18 hours completed during the first year of doctoral

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studies. Students receiving the MA from another institution or in another subject are required to take a minimum of 36 credit hours (12 courses) for the degree. Students who enter the PhD program directly from a BA program are required to take a minimum of 48 hours of graduate course work.

**Examinations and Course Work.** All PhD candidates take a comprehensive examination and a final examination. The final examination is an oral defense of the doctoral dissertation, and is conducted by the student's advisory committee after all other requirements for the PhD have been completed.

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# Computer Science

Computer science is an exciting and challenging field that has impact on many parts of our lives. Computer scientists craft the technologies that enable the digital devices we use every day. They develop the large-scale software that powers business and industry, and advance the computational techniques and write the software that supports scientists in their study of the world around us. Many new applications of computing technology remain to be discovered. Indeed, computing will be at the heart of future revolutions in business, science, and society. Students who study computer science now will be at the forefront of those important advances.

Computer science is concerned with how computers are constructed, how they store and process data, how they are used in problem-solving, and how the quality of those solutions is assessed. It is about the science of creating software for a variety of users. It is about understanding how that software interacts with the hardware on which it is run. Computer science goes well beyond the machine to the study of how people interact with the technologies around them. Applications of computer science reach far and wide.

Computer science graduates from the University of Colorado Boulder are engaged in a wide variety of jobs with many different companies in locations all over the world. They produce the software and systems that touch lives every day in fields ranging from communications to finance to publishing. They are, of course, software developers, but also have become teachers, writers, doctors, lawyers, scientists, military leaders, and entrepreneurs. They work at some of the largest, most influential companies in the world, at research institutions, non-profits, and at the smallest start-ups of every type imaginable. And many lead highly successful companies that they themselves have founded.

## Program Objectives

Within three to five years after graduation, computer science graduates:

- are prepared to be valued individual contributors in a software-oriented organization, to be programmers and designers in an entrepreneurial pursuit, to lead small projects and generally begin preparation for a management career, or to succeed in rigorous postgraduate programs.
- are able to focus their careers on pure computer science technology or to bring computer science expertise to a companion discipline.
- are prepared, where appropriate, to specialize in a broad spectrum of computer science sub-disciplines, ranging across formal computer science (e.g., computational science, bioinformatics, and theory), cognitive science (e.g., human/machine learning, human-computer interaction, collaborative work, and human language technologies), and core computing (e.g., systems, networks and software engineering).

## Program Outcomes

Students completing the undergraduate degree in computer science will possess:

- an ability to apply knowledge of computing and mathematics appropriate to the discipline.
- an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.

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- an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
- an ability to function effectively on teams to accomplish shared computing design, evaluation, or implementation goals.
- an understanding of professional, ethical, legal, security, and social issues and responsibilities for the computing profession.
- an ability to communicate effectively about computing topics with a range of audiences.
- an ability to analyze impacts of computing on individuals, organizations, and society.
- a recognition of the need for and ability to engage in continuing professional development.
- an ability to use current techniques, skills, and tools necessary for computing practice.
- an ability to apply mathematical foundations, algorithm principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
- an ability to apply design and development principles in the construction of software systems of varying complexity.

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## Department Computing Facility

The Department of Computer Science supports its own domain, [www.cs.colorado.edu](http://www.cs.colorado.edu), and a modern computing infrastructure that supports its research and educational missions. The department has a variety of computing facilities for use by faculty, staff, and students. These include general purpose computing labs provided by the university, additional instructional labs and administrative computing resources provided by the department, and specialized labs dedicated to the work of individual research groups. A wide variety of computing resources are available so that students have the opportunity to learn about and use cutting-edge equipment and software.

Course code for this program is CSCI.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Computer Science Requirements

Requirements for the BS degree in computer science include course work in computer science, mathematics, natural science, and the humanities and social sciences, as well as free elective course work. The degree provides considerable freedom in the selection of specific courses to fulfill these requirements, allowing students to tailor the degree to their individual needs and interests.

The department's goal is to prepare students for an intriguing and satisfying career in computer science. The huge number of technical jobs and the shortage of people to fill them mean that opportunities are great for today's computer science graduates.

### *Tracks in the BS in Computer Science Curriculum*

Tracks in the curriculum are geared toward a variety of specializations. These tracks reflect the fact that computer science is transforming such disciplines as medicine, the sciences, and social science. The tracks also illustrate various software and hardware themes within the field of computer science. In addition to the more general degree requirements for all computer science majors, majors need to complete the course requirements for one of the following tracks:

**General Computing.** The general computing track provides a broad-based background drawing from the entire spectrum of computing. Depending on the courses selected, students can be exposed to the design and architecture of computers, the development of software, and the theory and techniques used in designing efficient computer programs. Students can also learn about application of computers to problems in science, in human-computer interaction, and in data management. This

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track prepares students for careers in many different areas of computer science.

**Computational Biology.** Computer science is rapidly becoming critical to many areas of biology, medicine, and health. This track's flexible requirements reflect the diverse fields of computer science that are applied to problems in biology or health, including human-computer interfaces, database design and data mining, algorithms, machine learning, and numerical computation. Students graduating from this track will be ready to work in teams to develop the software and systems for a variety of biomedical applications.

**Computational Science and Engineering.** Problems considered by computational scientists include climate and weather prediction, spacecraft design, video game construction, and the discovery of new medicines and treatments among many others. This track emphasizes courses in numerical computation, high-performance scientific computing, and supporting areas of science and computer science. It provides exposure to leading-edge computing systems.

**Human-Centered Computing.** Students in this track will learn how to design, build, and evaluate socio-technical systems of the future that will tie together technology with communication, collaboration, and other social processes to address the challenges and opportunities of our world. The learning opportunities in this track draw on and integrate research in human computer interaction, design of interactive systems, computer supported cooperative work, computer supported collaborative learning, educational technology, tools that support creativity, user-developed knowledge collections, and gaming.

**Networked Devices and Systems.** It is the role of networked systems professionals to select, design, deploy, integrate, evaluate, and administer network and communication infrastructures. This track emphasizes courses in deployment of networks with specific design and protocol requirements, applying networking to deploy services in multimedia, information storage and distribution, security, and services on the Internet such as the Web and e-mail, and operating systems analysis and management.

**Software Engineering.** Software permeates the very fabric of modern society. This track emphasizes courses in core software engineering concepts, methods, and tools, the understanding of user requirements and user interface design, the ability to design programming languages and software tools that support software development, and working in teams to achieve complex objectives. The position of software engineer is consistently ranked as one of the "best jobs" in the USA.

**Systems.** Computers benefit almost every part of our lives—from entertainment to cars to phones to medical devices. Computer systems engineers work with hardware and software to help application developers make these devices a reality. This track emphasizes courses in direct control of hardware through low-level software, the design and implementation of operating systems and programming languages, networking and performance analysis, as well as embedded system design.

Additional information about the department's programs is available at [www.cs.colorado.edu](http://www.cs.colorado.edu) or by contacting the department at **303-492-7514**.

## *Curriculum for BS (CS)*

### *Required Courses and Semester Credit Hours*

#### **First Year**

##### ***Fall Semester***

- CSCI 1000 Computer Science as a Field of Work and Study—1
- CSCI 1300 Computer Science 1: Programming—4
- APPM 1350 Calculus 1 for Engineers—4

Natural science—4

- Humanities and social sciences—3

**Semester credit hours—16**

### ***Spring Semester***

- CSCI 2270 Computer Science 2: Data Structures—4
- APPM 1360 Calculus 2 for Engineers—4
- Natural science—5
- Humanities and social sciences—3

**Semester credit hours—16**

### **Second Year**

#### ***Fall Semester***

- CSCI 2400 Computer Systems—4
- CSCI 2824 Discrete Structures—3
- CSCI ——— Track Foundation/Core or Computer Science Elective—3
- CSCII ——— Track Foundation/Core or Computer Science Elective—3
- Free Elective — 3

**Semester credit hours —16**

#### ***Spring Semester***

- CSCI 3104 Algorithms— 4
- CSCI 2830 Linear Algebra with Computer Science Applications — 3
- CSCI ——— Track Foundation/Core or Computer Science Elective — 4
- Humanities and social sciences — 3

**Semester credit hours —14**

### **Third Year**

#### ***Fall Semester***

- CSCI 3155 Principles of Programming Languages — 4
- CSCI ——— Track Foundation/Core or Computer Science Elective— 4
- Probability or statistics — 3
- Humanities and social sciences — 3
- Free elective — 3

**Semester credit hours —17**

#### ***Spring Semester***

- CSCI ——— Track Foundation/Core or Computer Science Elective— 3
- CSCI ——— Track Foundation/Core or Computer Science Elective— 3
- CSCI ——— Track Foundation/Core or Computer Science Elective— 3
- WRTG 3030 Writing on Science and Society — 3
- Natural science — 4

**Semester credit hours—16**

### **Fourth Year**

#### ***Fall Semester***

- CSCI — Track Capstone — 4
  - CSCI — Track Foundation/Core or Computer Science Elective — 3
  - Natural science — 4
  - Humanities and social sciences — 3
  - Free elective — 3
- Semester credit hours—17**

### ***Spring Semester***

- CSCI — Track Capstone — 4
  - CSCI — Track Foundation/Core or Computer Science Elective — 3
  - Upper-division humanities and social sciences — 3
  - Humanities and social sciences — 3
  - Free elective — 3
- Semester credit hours—16**  
**Total credit hours—128**

### **Minor Program**

The department offers a minor in computer science that is available to undergraduates on the Boulder campus. The minor offers a basic introduction to the field of computer science.

## *Graduate Degree Program(s)*

### **General Admission Requirements**

Graduate students should consider a major in computer science if they are primarily interested in the general aspects of computational processes, both theoretical and practical, e.g., methods by which algorithms are implemented on a computer, techniques for using computers accurately and efficiently, design of computer systems, and languages and interfaces. A student who is primarily interested in the results of a computer process and its relation to a particular area of application should major in another field and consider a minor in computer science.

Applicants are considered for graduate study in computer science if they hold at least a bachelor's degree or its equivalent from an institution comparable to the University of Colorado. They should have considerable programming experience, sufficient mathematical maturity to understand pure mathematics courses at the upper-division level, and a number of academic computer science courses.

Applicants should satisfy the following requirements for mathematics courses: at least three semesters of mathematics at the level of sophistication of calculus or above, courses such as: differential equations, linear algebra, probability, statistics, and abstract algebra. These courses need not be in a mathematics department; however, they should require mathematical maturity expected of a junior or senior mathematics undergraduate.

In computer science, applicants should have the equivalent of the following University of Colorado courses: CSCI 1300 Computer Science 1: Programming; CSCI 2400 Computer Systems; one course out of CSCI 3155 Programming Languages or CSCI 3753 Operating Systems; CSCI 2270 Computer Science 2: Data Structures; and either CSCI 3104 Algorithms or CSCI 3434 Theory of Computation; and one other upper-division computer science course. Upper-division courses in areas such as artificial intelligence, databases, numerical computation, operating systems, parallel processing, software engineering, and others can be substituted for courses on the above list. However, courses on the list are prerequisites to many of the graduate-level offerings and admitted students lacking

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their equivalent are usually required to make them up, without graduate credit. Students who lack this computer science background but who have exceptionally strong credentials in another field should contact the department for individual consideration.

Applicants should have a GPA of at least 3.000 (on a scale of 4.000). Applicants having the listed qualifications are, if accepted, classified as regular degree students. Applicants with an average below 3.000 and above 2.750 and/or lacking certain of the prerequisites listed above are sometimes considered for admission as provisional students.

These requirements apply to both the master's and PhD programs. Applicants should be aware that admission to both programs is very competitive, and meeting the requirements does not ensure admission. Admission to the PhD program is especially competitive, and successful applicants, in general, have records considerably stronger in breadth and quality than these minimum standards suggest.

PhD applicants are required to submit scores from the aptitude portion of the Graduate Record Examination (GRE). GRE scores are optional for master's applicants but are required if the undergraduate GPA is less than 3.000 (but above a 2.750). These scores are encouraged if previous study was at an institution lacking a strong national reputation.

Financial aid is available to PhD students in the form of teaching and research assistantships and fellowships. Aid is sometimes available for master's students as teaching assistants or graders, but positions are assigned only at the beginning of a semester.

Applications from domestic U.S. students for the master's program should be received by February 28 for fall admission and by October 15 for spring admission. For international students, applications for the MS and PhD programs should be received by December 1 for fall admission and September 1 for spring admission.

Applications from domestic U.S. students for the PhD program should be received by January 2 for fall admission and by October 1 for spring admission. For international students, applications for the PhD program should be received by December 1 for fall admission and by September 1 for spring admission.

## Master's Degree

Admission requirements for this program are given above under General Admission Requirements. Plan I (thesis) or Plan II (no thesis) may be followed. In either plan, students must complete 30 credit hours of course or thesis work. The requirements for Plan I are as stated under the general requirements of the Graduate School section in this catalog. Students in Plan I receive 6 credit hours for thesis work and are examined orally on their thesis. Under either plan a student may take 6 hours in a minor field. Students are expected to work out an acceptable program of course work with their advisor. Specific courses depend on the student's background and field of specialization, but four of the courses must satisfy a breadth requirement.

## Doctor of Philosophy Degree

Admission requirements for this program are listed under General Admission Requirements. Students in this program must pass a preliminary examination in one subarea of computer science to be eligible for admission to PhD candidacy. A minimum of 30 semester hours in courses numbered 5000 or above is required for the degree, but the number of hours in formal courses are ordinarily greater than that total. Specific courses depend on the student's background and field of specialization.

Following the formal course work, a student must pass a comprehensive examination aimed primarily at determining whether the student is adequately prepared to begin doctoral thesis work.

Finally, students who have completed a minimum of 30 semester hours are expected to prepare a doctoral thesis based on original research in the field of computer science. After the thesis has been completed, an oral final examination on the thesis and related topics is conducted by a committee of at least five graduate faculty members.

Further details on either the master's or PhD degree programs are available at [www.cs.colorado.edu/grad](http://www.cs.colorado.edu/grad).

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# Continuing Education and Professional Studies

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The mission of the Division of Continuing Education and Professional Studies is to provide quality, innovative, lifelong learning opportunities to a diverse student population by extending the educational resources of the University of Colorado Boulder. A variety of credit courses, noncredit programs, certificate programs, and seminars is offered through Continuing Education, which also administers CU-Boulder's Summer Session. Only university-approved faculty teach in Continuing Education programs.

The office is located at 1505 University Avenue in Boulder, **303-492-5148** (or **1-800-331-2801**). The fax number is **303-492-5335**, and the website is [conted.colorado.edu](http://conted.colorado.edu).

## Boulder Evening Credit Program

Offered in conjunction with CU-Boulder's academic departments, the Boulder Evening Program provides credit courses in the evening on the Boulder campus. These affordable, smaller-sized classes are provided through various departments including anthropology, communication, economics, English, film studies, art and art history, geography, mathematics, philosophy, psychology, sociology, Spanish, theatre, and more.

## Independent Learning Program

The Independent Learning Program offers online and print correspondence courses representing and approved by more than 20 departments on campus. Term-based courses follow a traditional semester schedule and allow for rich interaction with the instructor and other classmates. Self-paced courses offer students the flexibility of progressing through the course at their own pace, and to finish in less than a full semester or take up to a full year.

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## Applied Music Program

The Applied Music Program offers students the opportunity to earn CU credit for beginning or continuing music lessons on guitar, piano, voice, organ, winds, brass, drums, percussion, or strings. Instruction is available in individual or group sessions depending on instrument.

## Individualized Instruction

Individualized Instruction provides an opportunity for students to receive credit for university courses by meeting with faculty members outside the regular classroom setting. This option may be used when the student cannot reasonably be expected to enroll in the main campus course.

## Center for Advanced Engineering and Technology Education (CAETE)

CAETE, a partnership between the College of Engineering and Applied Science and the Division of Continuing Education and Professional Studies, serves as the distance learning and professional studies arm of the college. CAETE provides graduate engineering and technical education and professional development for practicing engineers and managers of technology. Course sequences may lead to a master's degree in aerospace engineering, computer science, electrical and computer engineering, engineering management, or telecommunications. Elective courses are also offered in civil/environmental and mechanical engineering. Graduate certificates and short courses are available in some fields. CAETE also provides ongoing access to over 100 pre-recorded courses via its virtual library. These courses are available for academic course work, rental, or purchase by companies for in-house training.

## ACCESS and High School Concurrent Programs

In conjunction with CU-Boulder academic departments, ACCESS (Available Credit Courses for Eligible Special Students) enables nondegree students to enroll in Boulder main campus undergraduate and graduate credit courses after most degree-seeking students have registered. Colorado high school juniors and seniors interested in the challenge of university course work may enroll in ACCESS as part of the High School Concurrent Program. In addition to earning college credit, students may also earn credit toward high school graduation requirements.

## Extraordinary and Contract Credit Programs

Through Continuing Education, academic departments can offer special courses that target audiences both on and off campus and provide academic credit for those offerings. Once a course proposal is submitted, Continuing Education coordinates the approval process and provides administrative support to the course initiator. Programs initiated from outside the university community are also considered for approval as well as noncredit and certificate programs.

## CU Complete

The goal of CU Complete is to assist former students in the completion of degrees they began at CU in the past. Advisors work with each student individually and offer a degree analysis, recommendations, resources, and assistance in completing remaining requirements.

## Science Discovery

Science Discovery is a hands-on science, mathematics, and technology outreach program that serves over 1,500 teachers and 25,000 K–12 students each year. Its mission is to stimulate scientific

interest, understanding, and literacy through the use of university resources and academic expertise. Core programs include over 500 annual classroom presentations throughout Colorado; approximately 200 summer and after-school classes for ages 4–14; a series of statewide professional development workshops for teachers; and various outdoor environmental education classes.

## International English Center

The International English Center (IEC) offers language learning, cultural adjustment, and academic preparation programs for international students planning to matriculate at universities and for members of the campus and local community with limited English proficiency. The IEC also contracts with corporate groups to provide language training and professional development courses.

## Outreach: Reaching Off Campus and into Communities

Extending educational opportunities to the citizens of Colorado is a vital part of the university as well as the mission of the Division of Continuing Education and Professional Studies. CU-Boulder faculty and students provide a wide variety of outreach programs to communities across Colorado. These programs extend the scholarship of the faculty and the educational resources of the university and serve various educational, social, economic, and cultural needs. The division annually supports these efforts by designating funds for the CU-Boulder Outreach Committee along with contributions from the offices of the chancellor and the provost. The committee awards funding to faculty projects designed specifically for external audiences that highlight faculty research, creative work, and teaching. Projects feature an extensive range of disciplines, including everything from history, dance, and musical arts to physics, math, and engineering. Visit [outreach.colorado.edu](http://outreach.colorado.edu).

## Summer Session and Maymester at CU-Boulder

Summer Session offers over 500 campus courses and enrolls about 8,000 students in a relaxed, comfortable learning environment. Online and on-campus courses are available. Courses are available to students who wish to enhance or accelerate their academic progress. Courses are also open to students visiting from other colleges, teachers, high school students, or others interested in pursuing their professional development or enrichment.

Maymester is a special three-week Summer Session term immediately following the end of spring semester. It provides intense, accelerated courses for those who need academic credits in an abbreviated time period.

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# Critical Theory

## *Certificate Program*

The Graduate Certificate in Critical Theory offers students a background in the philosophical foundations of critical theory. Drawing on disciplines such as philosophy, psychoanalysis, Marxism, literary criticism, and sociology, critical theory develops analytical tools for describing and evaluating modern society and cultural production. Students who are currently enrolled in a graduate disciplinary degree or a professional degree program are encouraged to apply for the Graduate Certificate in Critical Theory early in their graduate career. For further information, visit the Department of Germanic and Slavic Languages and Literatures website at [gsl.colorado.edu](http://gsl.colorado.edu).

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# Distributed Studies Program

Admission to the distributed studies track requires completion of 60 credits or more and permission from the dean's office. The distributed studies track is intended for students who have accumulated a significant number of credit hours toward the completion of one or more majors and are not eligible to continue in those majors.

An individually structured track also is available in the distributed studies program. Students pursuing the individually structured track must write and defend a thesis based on original scholarly or creative work.

For more information, contact the College of Arts and Sciences Academic Advising Center in Woodbury 109.

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# Ecology and Evolutionary Biology

Ecologists describe and understand the abundance, distribution, and interactions of organisms. Evolutionary biology provides a unifying conceptual framework for all of biology, including the characteristics of organisms and biological diversity. Ecology and evolutionary biology are fundamental, broad, interrelated, and interdisciplinary areas of scientific inquiry. Animal behavior links the evolution and ecology of animals. Study in both areas is necessary for understanding the complex biological issues of today, and for solving some of the world's most demanding problems. EBIO students apply the scientific method to issues in ecology and evolution, with an emphasis on critical evaluation of the literature; generating and testing hypotheses; designing and carrying out experiments to test predictions; and articulating, in oral or written form, the results of investigations.

In the light of the broad importance of ecology and evolution for understanding biology, the undergraduate EBIO degree emphasizes knowledge of:

- The ecology of organisms, populations, and communities
- The distribution and function of terrestrial, freshwater, and marine ecosystems
- Principles and patterns of evolution, including natural selection and the history of life on Earth
- Comparative, systematic, evolutionary, and environmental aspects of botany, microbiology, and zoology
- Adaptation of organisms to the physical and biotic environment
- Animal behavior
- Molecular evolution and population genetics
- Developmental biology and the evolution of development
- Conservation biology
- The relevance of mathematics, chemistry, and physics to biology
- The development of biological thought

EBIO majors include:

- students who have strong and compelling interests in the natural world and who are interested in making a difference
- students interested in pursuing advanced graduate degrees in science, especially biology
- students intending to work in the areas of natural resources management, environmental consulting, environmental law, environmental science, science teaching and scientific journalism, among other professions
- students with a passion to make a difference in the lives of others by improving their physical and mental health
- students with an interest in studying biology, from the molecular to ecosystem levels
- students fascinated with the complexity and diversity of nature

A bachelor of arts degree in EBIO provides excellent training, education, and experience for admission and success in graduate or medical school:

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- because the educational program emphasizes a broad-based training in the physical, chemical, and biological sciences
- because ecology and evolution are subjects of central importance for understanding our place in nature
- because *“nothing in biology makes sense except in the light of evolution”* (T. Dobzhansky)
- because of the department’s strong commitment to providing excellent educational and research opportunities for students

Course code for this program is EBIO.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Ecology and Evolutionary Biology

Students in EBIO gain a well-rounded education in the sciences and mathematics, with an emphasis in ecology and evolutionary biology. In addition to the general College of Arts and Sciences requirements, students in EBIO must complete 15 credits selected from chemistry, physics, and mathematics, plus a statistics course and 38 hours of course work in EBIO. Up to 12 credit hours of courses taken in other departments may be counted toward the 38 credit hours required for the EBIO major. A list of acceptable courses can be obtained from the EBIO advisor. All required courses must be completed with a grade of C- or better. Students with scores of 4 or 5 on the AP biology test receive 8 hours of credit and are exempt from the general biology sequence (EBIO 1210 and 1220 General Biology 1 and 2, and EBIO 1230 and 1240 General Biology Lab 1 and 2). Students who score in the 66th percentile or higher on the CLEP test in biology receive 6 hours of credit and are exempt from EBIO 1210 and EBIO 1220. EBIO majors with transfer credit in biology from other institutions or advanced placement credits must consult with the EBIO undergraduate advisor. Transfer students must complete at least 12 upper-division (3000-level or above) EBIO courses on the Boulder campus.

#### *Required Courses and Semester Credit Hours*

- Biology sequence (EBIO 1210 and 1220 General Biology 1 and 2, and EBIO 1230 and 1240 General Biology Lab 1 and 2)—8
- EBIO 2040 Principles of Ecology—4
- EBIO 2070 Genetics: Molecules to Populations—4
- EBIO 3080 Evolutionary Biology—4
- One EBIO laboratory or field course, 3000 level or above. Possible choices include:  
EBIO 3170/3175 Arctic and Alpine Ecology  
EBIO 3240 Animal Behavior  
EBIO 3400 Microbiology  
EBIO 3540 Functional Plant Biology  
EBIO 3630 Parasitology  
EBIO 3770 Animal Diversity: Vertebrates  
EBIO 3850 Animal Diversity: Invertebrates  
EBIO 4100 Mountain Research Station  
EBIO 4500 Plant Biodiversity and Evolution  
EBIO 4520 Plant Systematics  
EBIO 4510 Plant Anatomy and Development  
EBIO 4660 Insect Biology  
EBIO 4750 Ornithology  
EBIO 4760 Mammalogy
- EBIO 4000-level or above (at least 6 credits).\* Possible choices include:  
EBIO 4020 Stream Biology  
EBIO 4030 Limnology

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EBIO 4060 Landscape Biology  
 EBIO 4140 Plant Ecology  
 EBIO 4100, 4110, or 4120 Advanced Ecology  
 EBIO 4160 Introduction to Biogeochemistry  
 EBIO 4175 Ecosystem Management of Public Lands  
 EBIO 4180 Ecological Perspectives on Global Change  
 EBIO 4290 Molecular Systematics and Evolution  
 EBIO 4350 Biological Field Studies  
 EBIO 4410 Biometry  
 EBIO 4570 Advanced Plant Physiology  
 EBIO 4630 Field Techniques  
 EBIO 4660 Insect Biology  
 EBIO 4740 Biology of Amphibians and Reptiles  
 EBIO 4750 Ornithology  
 EBIO 4760 Mammalogy  
 EBIO 4800 Critical Thinking  
 EBIO 4840, 4870 Independent Study/Research

- EBIO electives to bring total in major to 38

**Statistics:** MATH 2510, MATH 2520, IPHY 2800, PSYC 3101, or EBIO 4410 (of these, only EBIO 4410 counts toward the 38 hours of EBIO credit required for the major.)

*\* These 6 hours must be taken in the EBIO department on the Boulder campus, which includes the Mountain Research Station and CU-approved study abroad programs. This can include critical thinking courses, and may include a maximum of 3 hours of independent study or independent research.*

## Ancillary Course Work

Choose three classes from the following:

- \*CHEM 1113/1114 General Chemistry 1 and Lab—5
- \*CHEM 1133/1134 General Chemistry 2 and Lab—5
- PHYS 1110 General Physics 1 (calculus-based)—4
- PHYS 2010 General Physics 1 (algebra-based)—5
- \*PHYS 1120/1140 General Physics 2 and Lab (calculus-based)—5
- PHYS 2020 General Physics 2 (algebra-based)—5
- MATH 1300 Analytical Geometry and Calculus 1 (5 hrs), MATH 1310 Calculus, Statistics, and Modeling (5 hrs) or APPM 1350 Calculus 1 for Engineers (4 hrs)
- MATH 2300 Mathematics for the Environment (5 hrs) or APPM 1360 Calculus 2 for Engineers (4 hrs)

\*Students must take the lecture and lab for these courses

## Minor Program

A minor is offered in ecology and evolutionary biology. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

- A total of 20 credit hours in EBIO with grades of C- or better.
- A 2.000 GPA or higher for all course work attempted in EBIO.
- 9 hours of upper-division credits in EBIO.
- 6 hours of 4000-level credits in EBIO.
- A minimum of 12 credit hours must be taken on the Boulder campus, including a minimum of 6 of the 9 upper-division credits. Mountain Research Station is considered the Boulder campus.
- All courses must have an EBIO prefix.

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- EBIO 1030, 1040, 1050, 1300, 3010, 3940, and all independent study and independent research do not count toward the minor requirements.

### **Required Courses and Semester Credit Hours**

- EBIO 1210 General Biology 1—3
- EBIO 1220 General Biology 2—3
- EBIO 1230 General Biology Lab 1—1
- EBIO 1240 General Biology Lab 2—1
- Complete 3 credit hours of lower- or upper-division EBIO courses—3
- Complete 3 credit hours of 3000-or 4000-level EBIO courses—3
- Complete 6 credit hours of 4000-level EBIO courses—6

**Minimum total hours for the minor—20**

## *Concurrent Bachelor's/Master's Program*

### **BA/MA in Ecology and Evolutionary Biology**

A combined BA and MA degree with thesis is offered for the highly motivated undergraduate major who is interested in completing a bachelor and master's degree within five years. Applications for the BA/MA degree are considered on a competitive basis. Freshmen, sophomores, and juniors are eligible. Applicants must have an overall GPA of 3.00 or higher in the EBIO major and the support of a faculty research advisor. Applications are available from the EBIO graduate coordinator, and are due on October 15 and March 15.

Candidates for this degree must complete all college core requirements by the end of the senior year. To be awarded BA and MA degrees, students must maintain a GPA of 3.00 or better and complete at least 144 credit hours. The degree requires 24 hours of graduate credit at the 5000-level or above and 4–6 hours of thesis credit. In addition to a thesis based on original research, the candidate is required to take a comprehensive examination in three subject areas by the end of the senior year. The final examination consists of a thesis defense to the thesis committee; it should be scheduled by the end of the fifth year.

Students interested in this degree are encouraged to consult with the director of the program early in their undergraduate career. No financial support is available from the department for students enrolled in this program.

## *Graduate Degree Program(s)*

### **Graduate Study in Ecology and Evolutionary Biology**

The Department of Ecology and Evolutionary Biology offers degree programs leading to the MA and PhD in a wide range of areas of biological inquiry, as generally described above in the description of the undergraduate program. Modern laboratory facilities for graduate study are in the Ramaley biology building. In addition, the department has strong ties with the University Museum, the Institute of Arctic and Alpine Research (INSTAAR), the Institute of Behavioral Genetics (IBG), the Cooperative Institute for Research in Environmental Sciences (CIRES), the Environmental Studies Program (ENVS), and the Departments of Integrative Physiology, Geology, Geography, Anthropology, and Molecular, Cellular, and Developmental Biology. INSTAAR operates the Mountain Research Station, an alpine field laboratory 25 miles from campus. Graduate research support is available in the form of fellowships, teaching assistantships, and research assistantships.

**Graduate Admission.** Admission information may be obtained from the departmental office or from the CU-Boulder web page. Completed applications are due in the departmental office by December 31 for consideration for fall semester admission. A complete application includes a statement of intent, letters of recommendation, official transcripts, and GRE scores. Applications for spring

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semester admission are not accepted. Students are required to have a bachelor's degree in biology or an equivalent. Students admitted without a sufficient background in chemistry, physics, or mathematics are expected to make up those deficiencies during their first year of graduate study.

## The MA I Program

A master's degree with thesis is offered for students interested in continuing their training as professional biologists. For some students the MA I provides a basis for work on a PhD at the University of Colorado or at another institution, although the MA is not required for admission to the PhD program. Prospective students are urged to consult with faculty advisors before December 31 to see whether application for the MA I or PhD program is appropriate. Applications for the MA I program are considered on a competitive basis; the department only admits students for whom financial support is available. Thirty hours of course work are required for the degree, at least 24 of which must be at the 5000 level or above, including 4–6 hours of thesis credit. The thesis topic is presented to the thesis committee as a written research proposal. The MA I final examination consists of the thesis defense; it should be scheduled within two years for full-time students.

## The MA II Program

A non-thesis master's degree program is offered for students who are interested in obtaining a greater knowledge of ecology and evolutionary biology but who are not interested in degree work beyond the MA. This program is suitable for secondary school teachers and others whose career choices do not require a research thesis. A faculty sponsor is required before admission can be granted; applicants are encouraged to communicate with potential sponsors before December 31. Financial support is not guaranteed for MA II students. Thirty credit hours of course work are required for the degree, at least 24 of which must be at the 5000 level or above, including 4 hours of independent research leading to a paper to be presented to the faculty sponsor. A final oral exam may be required by the student's MAII faculty advisory committee.

## Doctoral Program

The PhD is a research degree, involving the production of a major piece of original research (the dissertation). Most recipients of the PhD from EBIO go on to teach and conduct research in a university setting, or to do research and pursue leadership roles in private or governmental institutions. Applicants are encouraged to communicate directly with potential thesis advisors and visit the department before completing the application. Applications are considered on a competitive basis and financial support in the form of fellowships or assistantships usually is made available. Students are expected to form an advisory committee of five faculty members (including one from outside EBIO) soon after beginning their studies. This committee aids the student in designing a research program and in making choices concerning course work. The PhD comprehensive exam is administered by the student's dissertation committee and must be taken within the first five semesters of degree work. It consists of a written research proposal on the dissertation topic, a formal presentation summarizing the student's research progress, and an oral examination centered on the student's research. Upon completion of the dissertation, the student will be given a final examination administered by the dissertation committee.

A total of 30 hours of course work must be taken, although independent study credit may be included in this total. A total of 30 hours of PhD dissertation credits must also be taken. PhD students are required to teach at least one year, generally by serving as a departmental teaching assistant.



# Economics

The undergraduate degree in economics emphasizes knowledge and awareness of:

- the conditions for efficiency in free market production and exchange;
- contemporary theories concerning economic growth, inflation, unemployment, distribution of income, and international environment;
- specialized fields of economics, such as international economics and finance, natural resources and environment, the economics of gender and discrimination, and public economics;
- the descriptive statistics commonly used by economists; and
- the institutional characteristics of the U.S. economy, and how these differ from those in other economies.

In addition, students completing the degree in economics are expected to acquire the ability and skills to:

- apply the tools of microeconomic theory to reach sound conclusions for simple economic problems;
- follow arguments concerning macroeconomic theory, to distinguish between sound and fallacious reasoning, and understand how differences in policy prescription may arise;
- perform statistical analysis such as multiple regression and understand similar analyses performed by others; and
- communicate economic reasoning in writing, understand similar writing by others, and appreciate the diversity of views that may reasonably exist about economic problems.

Course code for this program is ECON.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Economics

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

#### *Required Courses and Semester Credit Hours*

- ECON 2010 and 2020 Principles of Microeconomics and Macroeconomics—8
- ECON 1078 and 1088 Math Tools for Economists I and II; or MATH 1071 and 1081; or MATH 1071 and MATH 1300 Analytic Geometry and Calculus 1; or MATH 1150 and MATH 1300; or mathematics at or above the level of MATH 1300 (or APPM 1350) plus any one mathematics course above the level of MATH 1300. Students who come into the program with MATH 1300 but not ECON 1078 (or equivalent) must meet the second course requirement with ECON 4070, 4808, 4818, 4838, 4848, 4858; or MATH 2300; or APPM 1360. Note that ECON 4818 and 4848 cannot be used to simultaneously meet this requirement and the major's

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requirement for ECON 4818 or 4848—6–8

- ECON 3070 Intermediate Microeconomic Theory and ECON 3080 Intermediate Macroeconomic Theory—6
- ECON 3818 Introduction to Statistics with Computer Applications—4
- ECON 4818 Introduction to Econometrics or ECON 4848 Applied Econometrics—3
- Electives in upper-division ECON courses—12
- **Total Economics Credits—32-33**

*Note: Transfer students majoring in economics must complete at least 12 credit hours of upper-division economics courses at CU-Boulder.*

## Graduating in Four Years

Consult the “Four-Year Guarantee Requirements” for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in economics, students should meet the following requirements:

- Declare economics as a major by the beginning of the second semester.
- Complete ECON 2010 and 2020 and all mathematics requirements by the end of the fourth semester.
- Complete ECON 3070, 3080, and 3818, as well as 4818 or 4848 by the end of the sixth semester.
- Complete 12 credit hours of additional upper-division economics credit by the end of the eighth semester.

## Minor Program

A minor is offered in economics. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. Completion of the minor requires a total of 20 credit hours in economics.

### Required Courses and Semester Credit Hours

- ECON 2010 and 2020 Principles of Microeconomics and Macroeconomics—8
- ECON 3070 Intermediate Microeconomic Theory and ECON 3080 Intermediate Macroeconomic Theory—6
- Electives in upper-division ECON courses—6

*NOTE: Students must complete at least one 4000-level course as an upper division elective.*

All course work applied to the minor must be completed with a grade of C- or better. No *pass/fail* work may be applied. The GPA for all minor degree course work must equal 2.000 or higher.

Students will be allowed to apply no more than 9 credit hours, including 6 upper-division credit hours, of transfer work toward a minor. If transferred course work includes replacements for ECON 2010 or ECON 2020 that are fewer than 4 credit hours per course, an additional upper-division elective will be added to the requirements for a minor.

Students may elect to take the 3000-level ECON courses that are designed for non-economics majors (e.g., ECON 3403, 3535, 3545).

ECON 3070, 3080, 3818, and 4808 all require a prerequisite of Calculus 1. Students may take the following courses to meet this prerequisite: ECON 1088; OR MATH 1081; OR MATH 1300; or APPM 1350.

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Students pursuing an individually structured major or who are pursuing a major in distributed studies will not be eligible to earn a minor in economics.

## *Economics Honors Program*

The honors program in economics provides an opportunity for highly motivated majors to undertake individualized research and to graduate with honors (cum laude, magna cum laude, summa cum laude) in economics. Economics majors with senior standing and both economics and overall GPAs of 3.40 or better are eligible to participate. Participants enroll in the economics honors seminars, which provide instruction in research methodology essential to the preparation of the honors thesis. Students interested in the economics honors program should contact the departmental honors advisor during their junior year.

## *Areas of Emphasis*

### *Special Emphasis Options*

The Economics Department offers four tracks for students who have a relatively high GPA and want to focus their upper-division course work in a specific area of interest. Interested students must have completed at least 6 hours of economics course work at CU in order to declare the special emphasis. Students must have completed two out of three upper-division core courses, ECON 3070, 3080, and 3818, with a minimum of 3.000 GPA in these courses, and must also have a minimum of 3.000 GPA in economics course work at CU by the time of declaration and completion of the special emphasis. Requirements are listed on the economics website at [www.colorado.edu/economics](http://www.colorado.edu/economics).

### **Business Emphasis**

The business emphasis is designed for students interested in sampling the business core courses. This option allows students to supplement their economics major with core business skills in areas of accounting, finance, marketing, and management. This option may be of interest to students planning careers in business or intending to pursue graduate studies in business.

### **International Emphasis**

The international emphasis is designed for students who have an interest in courses with an international perspective both within economics and outside the department. Courses in international trade and finance are combined with selections of international courses in related social science disciplines. This program may be of particular interest to students seeking careers in international business, international organizations, nongovernmental organizations, and government agencies.

### **Public Economics Emphasis**

The public economics emphasis is designed for students who have an interest in taking courses with a public policy perspective both within economics and outside the department. Courses in public economics are combined with selections of policy oriented courses from various social sciences. This emphasis is recommended for students with interests in public policy seeking careers in local, state, national, or international agencies.

### **Quantitative Emphasis**

The quantitative emphasis is designed for well-qualified majors with an interest in either theoretical or applied mathematics. Economics courses in quantitative methods are combined with courses from the Department of Mathematics and the Department of Applied Mathematics. This program may be of interest to students planning to pursue graduate studies in economics or those seeking a career in applied quantitative research.

## *Graduate Degree Program(s)*

### **Master's Degree in Economics**

The Department of Economics does not currently offer a stand-alone MA degree program, although students enrolled in our PhD program will earn their MA degree as they progress toward their

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doctorate. See more information below.

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## Doctoral Degree in Economics

**Admission.** An applicant for admission as a regular degree student must:

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- Hold a baccalaureate degree from a college or university of recognized standing, or have done work equivalent to that required for such a degree and equivalent to the degree given at this university. The undergraduate grade point average must be at least 2.75 (2.00=C).
- Have completed intermediate microeconomic and macroeconomic theory courses, 6 semester hours of calculus at the university level or equivalent, and statistics.
- Submit Graduate Record Examination (GRE) scores for aptitude (verbal and quantitative). International applicants whose native language is not English must also submit a TOEFL score with a speaking component, even if they have attended college in an English speaking country.
- Arrange for the submission of three letters of recommendation.

Graduate study in economics is quantitative and analytical. Students should be comfortable with basic calculus (derivatives and integration), linear algebra, matrix algebra, and basic statistics.

The university deadline for international applications is December 1 for the following fall semester. The department encourages international applicants to comply with this deadline. Late applications may be considered. However, they may be at a disadvantage with respect to the award of financial aid. United States applicants who wish to be considered for financial assistance should apply by January 15. Students must begin the program in a fall semester.

**Degree Requirements.** Full-time students are expected to complete all requirements for the PhD degree within five years of entering the program (the maximum time allowed by the Graduate School is six years). The schedule of required courses below is centered on this expectation. Failure to make timely and satisfactory progress toward the degree may result in loss of financial assistance or dismissal from the program.

### Course Requirements

1. Prior to beginning the program, students must demonstrate an acceptable degree of competence in differential and integral calculus and optimization techniques. (This requirement is in addition to the six hours of calculus required to apply to the program.) Such competence is normally demonstrated by taking ECON 7800 (an intensive, two-week preparatory course offered immediately prior to each fall semester) and passing its final examination with a grade of B- or better. No credit is offered for this course.

Other methods by which the required competence may be demonstrated are:

- Obtain a letter from the Director of Graduate Studies (DGS) confirming that the student has had sufficient mathematical preparation in prior studies;
- Pass the final examination in ECON 7800 at a level of B- without taking the course; or
- Pass a course which is substantially equivalent to ECON 7800 at another accredited graduate institution.

Students who fail the examination in ECON 7800 will be given a second opportunity to pass an equivalent examination two weeks later. Students who fail this examination on the second attempt must enter into extensive consultation with the DGS.

2. There are seven core courses in the PhD program: ECON 7010, 7020, 7030, 7040, 7050, 7818, and 7828. Course requirements beyond the core courses include:

- 
- Seven elective courses at the 8000 level. Basic fields of specialization are econometrics, economic development, economic history, industrial organization, international trade and finance, labor and human resources, natural resources and environmental economics, public economics, and urban and regional economics. Ordinarily, a student would take two elective courses in a basic field of specialization in preparation for a dissertation.
  - 6 credit hours in a research colloquium.
  - At least 30 hours of dissertation credit.
3. At least four of the core courses must be taken on the Boulder campus. Courses transferred for credit must be approved by the DGS. After entry into the PhD program, all remaining courses must be taken on the Boulder campus.
4. All courses for PhD credit taken on the Boulder campus must be passed with a grade of *B-* or better. A student who receives a grade of *C+* or lower in a core course must retake that course the following academic year.
5. No more than 12 credit hours (exclusive of dissertation credit) from a single faculty member may be counted toward PhD requirements. Independent study is allowed only to satisfy elective requirements. No more than 6 credit hours of independent study may be applied to the PhD degree and no more than 3 credit hours of independent study may be taken from a single faculty member. In consultation with the DGS, students may choose to take up to two graduate offerings in other departments as elective courses.
6. Course requirements in the first and second years include:

### **First Year**

#### ***Fall Semester***

- ECON 7010 Microeconomic Theory 1
- ECON 7020 Macroeconomic Theory 1
- ECON 7818 Mathematical Statistics for Economists

#### ***Spring Semester***

- ECON 7030 Microeconomic Theory 2
- ECON 7040 Macroeconomic Theory 2
- ECON 7828 Econometrics

### **Second Year**

#### ***Fall Semester***

- ECON 7050 Advanced Economic Theory
- Elective course
- Elective course

#### ***Spring Semester***

- Elective course
- Elective course
- Elective course

7. Course requirements in the third year include:

- 
- ECON 8209 (fall) and ECON 8219 (spring), which constitute the third-year research colloquium
  - Remaining elective course(s)
  - Dissertation research, if practicable.

8. Course requirements in the fourth and fifth years consist of relevant dissertation credit hours.

**Preliminary Examinations.** Written preliminary examinations in microeconomic theory, macroeconomic theory, and econometrics must be taken in the examination period following the successful completion of core courses in these areas. Under most circumstances this period would be in August prior to the second year. An examination attempted and failed must be taken again and passed in the next examination period. A second failure results in dismissal from the program, subject to appeal to the GCRC under extraordinary circumstances. In no case are attempts beyond the third granted.

Students who have failed any of the core courses are ineligible to take the preliminary examination in the area of failure. These students must retake the failed course(s) in the following year and attempt the relevant preliminary examination in the first scheduled examination period after they pass.

Students must pass all preliminary examinations within two-and-one-half years of beginning the PhD program.

**MA Degree.** An MA degree will be awarded to students who have successfully completed all core courses in the PhD program, completed 30 hours of graduate credit, and performed satisfactorily within two attempts on at least two out of three preliminary examinations.

**Third-Year Research Colloquium.** Third-year students are expected to register for 3 credit hours per semester in the research colloquium, which will meet weekly under the direction of a faculty member. The purpose of the colloquium is to provide students the opportunity and guidance to complete the required third-year paper and to facilitate progress toward the dissertation stage.

Under some circumstances, students may delay taking this colloquium until the fourth year with the approval of the DGS.

**Comprehensive Examinations.** Students must take an oral comprehensive examination before admission to PhD candidacy. This examination may occur either at the time of the student's research presentation in ECON 8219 or at a later date and will encompass the materials in the presentation and all relevant course work completed by the candidate. Students who fail this comprehensive examination will be given a second chance during the following semester. For those students for whom the presentation in ECON 8219 does not serve as the oral comprehensive examination, a separate oral examination must be scheduled before admission to candidacy.

**Admission to Candidacy and Dissertation Requirements.** Students are formally admitted to candidacy for the PhD degree after completing all course requirements and all preliminary and comprehensive examinations and after earning four semesters of residency (see the front section of this catalog for details). After admission to candidacy, students must register each fall and spring semester for dissertation credit (ECON 8999) until attaining the degree; the accumulated credit for the thesis must total at least 30 semester credit hours to attain the degree. A student must prepare a written dissertation and successfully pass an oral examination before a dissertation committee and other interested persons on its content before receiving the degree. The minimum residence requirement for the PhD degree is six semesters of scholarly work beyond the bachelor's degree.

**Administration: Examining Committees for Examinations.** Examining committees for preliminary examinations consist of three members of the economics department who teach in the relevant area. Examining committees for comprehensive examinations consist of at least three members of the

economics department.

### **Preliminary Examinations.**

1. Written examinations are numbered so that insofar as possible the identity of the student is unknown. Each faculty member grades independently and writes no comments in the examination booklet. A meeting of the graders is called by the chair of the examination committee and the committee grade is submitted to the graduate program coordinator. The possible grades include High Pass or Distinction (used sparingly), Pass, and Fail.
2. In cases where there is a question of pass or fail on any exam, if two of the members of the examination committee vote affirmatively, a grade of pass will be recorded; if two of the members of the grading committee vote negatively, a grade of fail will be recorded. If the vote of the grading committee is tied and the third member is absent (but will be available within seven days), the decision to pass or to fail is to be made by the reconvened grading committee. If fewer than two members of the grading committee are present and voting, or if the vote of the grading committee is tied and the third member is not available within seven days, the decision to pass or fail will be made by the Graduate Curriculum and Review Committee (GCRC); in such circumstances the grade is reported as pass or fail, based on a majority vote.
3. When examination results are reported, a student who failed should have an opportunity to discuss his performance with a member of the examining committee.

### **Dissertation Guidelines.**

1. In January of the academic year following the research colloquium, each student must submit a written dissertation proposal and conduct an oral defense of that proposal before his or her basic committee. A dissertation proposal form must be signed by each member of the basic committee and submitted to the graduate program coordinator. The basic committee consists of the student's faculty supervisor and three other faculty members from the department. An acceptable proposal must include a statement of purpose and a justification for the importance of the work; a full literature review and a statement of how this research will contribute to the literature; and a detailed description of the methodologies to be used and of the data bases, if appropriate.
2. Normally students are expected to complete their dissertations by the end of their fifth academic year. The graduate program coordinator provides details on submission of the dissertation and arrangements for the oral defense. The final defense is conducted before a basic committee of four faculty members from the department plus one outside member. After the defense, minor changes are agreed upon between candidate and supervisor before the final dissertation is submitted.

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# Electrical, Computing, and Energy Engineering

Electrical, computer, and energy engineering is about the science and technology of information and energy. Two undergraduate curricula lead to bachelor's degrees: one in electrical engineering, and another in electrical and computer engineering. These curricula are revised frequently to keep pace with changes in this dynamic field.

Up-to-date curricula and policies are contained in the department's *HELP! Guide*, available through the department and on the Web at [ecee.colorado.edu](http://ecee.colorado.edu).

## Career Opportunities

A degree in electrical engineering or electrical and computer engineering provides graduates the opportunity to enter the profession of engineering and to engage in work as a design, production, testing, consulting, research, teaching, or management professional in a wide variety of careers in the computer industry, telecommunications, instruments, the power and renewable energy industry, the biomedical industry, aerospace, and academia. Some graduates also go on to develop careers in other professions like law and medicine.

Examples of career opportunities include development of new electrical or electronic devices, instruments, or products; design of equipment or systems; production and quality control of electrical products for private industry or government; sales or management for a private firm or government; and teaching and research in a university.

## Research Centers

**Colorado Power Electronics Center (CoPEC).** Since it was founded in 1983, the power electronics group at the University of Colorado has maintained a tradition of innovative design-oriented and application-driven research. Colorado Power Electronics Center (CoPEC) activities now span the range of applications from high-efficiency milliwatt converters for portable battery-operated systems, to hundreds or thousands of watts for computer, aerospace, telecommunications, medical, and automotive power conversion, to hundreds of kilowatts for wind generation systems.

Our current research activities include projects in high-efficiency, high-power converter technology, power electronics for portable, battery-operated systems, converter modeling and computer-aided analysis, low harmonic rectifier technology for single-phase and three-phase applications, and advanced control techniques and their mixed-signal ASIC implementation. We collaborate with other research groups at the University of Colorado, including those in machines and power systems, microelectronics packaging, EMI, control, and semiconductor devices. For more information call **303-492-7327** or visit [ecee.colorado.edu/~pwrelect](http://ecee.colorado.edu/~pwrelect).

**The University of Colorado Center for Environmental Technology (CET).** Understanding and managing the environment—whether for agriculture, health, water resources, disaster mitigation, energy generation, transportation, weather forecasting, climate modeling, or biodiversity—requires accurate knowledge of many variables on a wide range of time and space scales. Measurements for environmental purposes are made either using in situ or remote sensors, and rely upon a variety of

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different means, including acoustic and electromagnetic waves, point measurements and wide-area imaging, and active and passive systems. A variety of different types of platforms can be used for environmental observation, including ships and submersibles, aircraft (both manned and unmanned), spacecraft, and stationary sites.

Research and educational activities at the CU Center for Environmental Technology are focused on developing sensors, systems of sensors, and associated hardware and algorithms for environmental observation with a focus on new remote and in situ techniques to meet contemporary scientific and applications goals. This is accomplished by direct involvement of CU faculty, CET engineering staff, and undergraduate and graduate students on the development of sensing systems to meet the observational needs of a number of government and industry sponsors. CET training involves close interaction between students and experienced professional engineers, practicing scientists, and CU faculty.

The CET was established in 2006 with a major donation of equipment from the NOAA Earth System Research Laboratory, and has members, associates, and students from within the broad earth science and engineering communities of Colorado. For further information contact the CET director at **303-492-9688** or visit [cet.colorado.edu](http://cet.colorado.edu).

**Center for Research and Education in Wind (CREW).** Launched in 2009, CREW is a consortium of over 70 wind energy researchers and educators from four institutions—the University of Colorado Boulder (lead institution), the National Renewable Energy Laboratory, the Colorado School of Mines, and Colorado State University. In CREW, faculty and researchers from the four institutions have come together to work to address the research and operational issues of wind energy in a coordinated manner as well as train a new generation of scientists, engineers, and managers. The center has also formed partnerships with the National Center for Atmospheric Research and the National Oceanic and Atmospheric Administration. Its research thrusts include atmosphere sciences, wind turbine and wind farm model development and validation, control of wind energy systems, electrical systems, and turbine testing, and a center-wide thrust on education and outreach. For more information visit [www.coloradocollaboratory.org/crew.html](http://www.coloradocollaboratory.org/crew.html).

## Research and Instructional Equipment

The department's special equipment and facilities include a class 1000 clean room facility for epitaxial growth and fabrication of microwave and optical devices; high-vacuum and vacuum deposition equipment for thin-films research; an integrated circuits laboratory; ion implantation equipment; crystal growing facilities; a modern systems laboratory; a laboratory for data storage research; a digital system design laboratory; a power electronics research laboratory; undergraduate laboratories in circuits, electronics; power electronics; digital signal processing and communications; embedded systems; microwaves; a holography and optics laboratory; an advanced optical metrology lab; numerous special purpose computers; micro-computer system development laboratory; a roof-mounted antenna range; a special microscope for laser manipulation of microorganisms in vivo; a bio-microwave laboratory; and a solar power lab.

The Department of Electrical, Computer, and Energy Engineering has a large variety of computing equipment to support its research and instructional activities. In addition to specialized computing equipment, this includes several hundred PC, Macintosh, a department server, and a student server. These machines are connected to the campuswide ethernet network.

Course code for this program is ECEN.

## *Bachelor's Degree Program(s)*

# Bachelor's Degree in Electrical, Computer, and Energy Engineering

## Bachelor's Degree Requirements

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A minimum of 128 semester hours must be completed for either the BS in electrical engineering (EE) or the BS in electrical and computer engineering (ECE).

Students in both undergraduate degree programs take the same courses in their freshman and sophomore years. They also begin the sequence of core courses that covers the sophomore and junior years. With this background, students are then able to specialize—or diversify—beginning in the second semester of the junior year or in the senior year. EE majors take two junior-level elective courses that prepare them for three senior theory and two senior lab elective courses in addition to the electrical engineering capstone design lab or the electrical and computer engineering design lab. These senior courses may be chosen from the following areas: biomedical engineering; communication and digital signal processing; computer engineering and VLSI; electromagnetic fields; electronics; optics; power and power electronics; renewable energy; solid-state materials and devices; and systems and controls.

For ECE majors, the senior elective courses are: two computer science courses; computer organization; switching and finite automata; and the appropriate capstone design lab course.

Practical experience in well-equipped laboratories augments the theoretical approach throughout the program. Students are encouraged to develop interests outside their electrical engineering specialties by enrolling in nontechnical courses in other colleges of the university. They are encouraged to participate in college and university activities, as well as in meetings of the two very active electrical engineering technical societies (IEEE and HKN).

In just four years it is impossible to study all areas in detail. Qualified students may specialize further by pursuing a graduate program or by taking continuing education courses after completing the BS degree requirements. A graduating senior with high scholarship can finish a master's degree in electrical engineering with about one additional full year of work at any of the nation's major universities. Another option for especially well-qualified students is the department's BS/MS program, which allows early admission to the MSEE program during the junior year. This option is described below under Concurrent BS/MS Program in Electrical and Computer Engineering.

### **Biomedical Engineering Option and Premedical Studies in ECEE**

The biomedical engineering option, available to both EEEN and ECEN majors, focuses on the application of engineering concepts to the improvement and protection of health. Successful completion of this option is noted on a student's transcript, and may meet medical school requirements. Course work in the ECEN/EEEN curriculum is coupled with specialized courses linking electrical engineering to such biomedical applications as neural signals and systems, bioeffects of electromagnetic fields, and therapeutic and diagnostic uses of bioelectric phenomena. Undergraduates may also undertake independent study in these areas.

Students interested in biomedical engineering may receive elective credit for two semesters of biology if they also complete two bioengineering courses from the ECEN/EEEN offerings. One of these ECEN/EEEN courses can also be used to satisfy course distribution requirements. The basic biomedical engineering option is thus composed of two semesters of biology and two ECEN/EEEN bioengineering courses taken in lieu of electives.

Students who wish to complete course requirements for medical (or dental, veterinary, etc.) school should add two semesters of organic chemistry to the ECEN/EEEN biomedical engineering option. Premedical ECEN/EEEN students may petition to have these courses substituted for other electives.

Interested students are urged to contact the departmental biomedical engineering advisor for additional information.

## ***BS Degree in Electrical Engineering (EEEN)***

### **Program Objectives for a BS Degree in Electrical Engineering (EEEN)**

- 
- **Graduates will be situated in growing careers involving the design, development or support of electrical or electronic systems, devices, instruments, or products, or will be successfully pursuing an advanced degree.**

Graduates attaining the EE degree will have comprehensive knowledge and experience in the concepts and design of electrical and electronic devices, circuits, and systems. This is achieved through a sequence of required courses in these areas, culminating in a major design project incorporating realistic engineering constraints. Moreover, graduates will have advanced, specialized knowledge and skills in elective areas such as communications and digital signal processing, control systems, analog and digital integrated circuit design, semiconductor devices and optoelectronics, electromagnetics and wireless systems, power electronics, renewable energy, bioelectronics, and digital systems.

EE graduates will have attained other professional skills that will be useful throughout their careers, including verbal and written communication and the ability to function on multidisciplinary teams.

The EE curriculum is rich in laboratory work. EE graduates will have achieved extensive practical experience in the laboratory techniques, tools, and skills that provide a bridge between theory and practice.

- **Graduates will have advanced professional standing based on their technical accomplishments, and will have accumulated additional technical expertise to remain globally competitive.**

EE graduates experience a curriculum that contains a broad core of classes focused on mathematical and physical principles that are fundamental to the field of electrical engineering. Hence, they understand the physical and mathematical principles underlying electrical and electronic technology, and are able to analyze and solve electrical engineering problems using this knowledge. In addition to basic classes in mathematics, science, and computing, the EE curriculum includes a sequence of courses in analog and digital electronic circuits and systems, and electromagnetic fields.

- **Graduates will have demonstrated professional and personal leadership and growth.**

To lay the foundation for a long career in a rapidly changing field, a broad background of fundamental knowledge is required. This is achieved in the EE curriculum through a sequence of required courses in mathematics, physics, chemistry, and the EE core. In addition, the graduate must be capable of lifelong learning; this is taught through assignments and projects that require independent research and study.

The curriculum includes a significant component of electives in the humanities and social sciences. EE graduates will have knowledge of the broader contemporary issues that impact engineering solutions in a global and societal context. They will have the verbal and written communication skills necessary for a successful career in industry or academia. Graduates also understand the meaning and importance of professional and ethical responsibility.

## **Curriculum for BS (EE)**

The following information may be changed by the time this catalog is printed and distributed. Up-to-date policies are contained in the department's HELP! Guide, which is given to students who enter the program.

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- ECEN 1100 Freshman Seminar—1
- ECEN/GEEN 1400 Freshman Projects—3
- PHYS 1110 General Physics 1—4
- Lower-division humanities/social science—3

### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- ECEN 1030 C Programming for EE/ECE —4
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Lower-division humanities/social science—3

### **Sophomore Year**

#### ***Fall Semester***

- APPM 2360 Differential Equations with Linear Algebra—4
- ECEN 24-- Sophomore Elective 1—3
- ECEN 2250 Introduction to Circuits and Electronics—3
- ECEN 2350 Digital Logic—3
- Lower-division humanities/social science—3

#### ***Spring Semester***

- APPM 2350 Calculus 3 for Engineers—4
- ECEN 24-- Sophomore Elective 2—3
- ECEN 2260 Circuits as Systems—3
- ECEN 2270 Electronics Design Lab—3
- General science elective —3

### **Junior Year**

#### ***Fall Semester***

- ECEN 3350 Programming of Digital Systems—3
- ECEN 3810 Probability—3
- ECEN 3--- Analog Elective 1—3
- ECEN 3--- Analog Elective 2—3
- Lower-division humanities/social science—3

#### ***Spring Semester***

- ECEN 3--- Analog Elective 3—3
- ECEN 3360 Digital Design Lab—3
- Approved upper-division writing—3
- Technical electives—6
- Free elective—3

### **Senior Year**

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### **Fall Semester**

- Capstone, Part 1—2
- Technical electives—9
- Upper-division humanities/social science—3
- Free elective—3

### **Spring Semester**

- Capstone, Part 2—3
- Technical electives—9
- Upper-division humanities/social science—3
- Minimum total hours for degree—128

## **Program Objectives for a BS Degree in Electrical and Computer Engineering (ECEN)**

- **Graduates will be situated in growing careers involving the design, development or support of electrical, electronic, and computer hardware and software systems, software engineering, devices instruments, or products, or will be successfully pursuing an advanced degree.**

Graduates attaining the ECE degree will have comprehensive knowledge and experience in the concepts and design of electrical, electronic, and computer devices, circuits, and systems. Besides emphasizing computer hardware and software, the ECE curriculum also emphasizes design, integration, implementation, and application of computer systems, as well as experience in software development. This is achieved through a sequence of required courses in these areas, culminating in a major design project incorporating realistic engineering constraints. The curriculum also provides opportunities for specialization in areas such as compiler design, embedded systems, software engineering, and VLSI design, as well as in the electrical engineering specialties.

ECE graduates will have attained other professional skills that will be useful throughout their careers, including verbal and written communication and the ability to function on multidisciplinary teams.

The ECE curriculum is rich in laboratory work. ECE graduates will have achieved extensive practical experience in the laboratory techniques, tools, and skills that provide a bridge between theory and practice.

- **Graduates will have advanced in professional standing based on their technical accomplishments and will have accumulated additional technical expertise to remain globally competitive.**

ECE graduates experience a curriculum that contains a broad core of classes focused on mathematical and physical principles that are fundamental to the fields of electrical and computer engineering. Hence, they understand the physical and mathematical principles underlying electrical and electronic technology and computer systems, and are able to analyze and solve electrical and computer engineering problems using this knowledge. In addition to basic classes in mathematics, science, and computing, the ECE curriculum includes a sequence of courses in analog and digital electronic circuits and systems, electromagnetic fields, probability, computer software, and computer design and architecture.

- **Graduates will have demonstrated professional and personal leadership and growth.**

To lay the foundation of a long career in a rapidly changing field, a broad background of fundamental

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knowledge is required. This is achieved in the ECE curriculum through a sequence of required classes in mathematics, physics, chemistry, and the ECE core. In addition, the graduate must be capable of lifelong learning; this is taught through assignments and projects that require independent research and study.

The curriculum includes a significant component of electives in the humanities and social sciences. ECE graduates will have knowledge of the broader contemporary issues that impact engineering solutions in a global and societal context. They will have the verbal and written communications skills necessary for a successful career in industry or academia. Graduates also understand the meaning and importance of professional and ethical responsibility.

## *Curriculum for BS (ECE)*

The following information may be changed by the time this catalog is printed and distributed. Up-to-date policies are contained in the department's *HELP! Guide*, which is given to students who enter the program.

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- ECEN 1100 Freshman Seminar—1
- ECEN/GEEN 1400 Freshmen Projects—3
- PHYS 1110 General Physics 1—4
- Lower-division humanities/social science—3

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- ECEN 1030 C Programming for EE/ECE—4
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Lower-division humanities/social science—3

#### **Sophomore Year**

##### ***Fall Semester***

- APPM 2360 Differential Equations with Linear Algebra—4
- ECEN 2250 Introduction to Circuits and Electronics—3
- ECEN 24-- Sophomore Elective 1—3
- ECEN 2703 Discrete Math for Computer Engineers—3
- Lower-division humanities/social science—3

##### ***Spring Semester***

- APPM 2350 Calculus 3 for Engineers—4
- ECEN 2260 Circuits as Systems—3
- ECEN 2270 Electronics Design Lab—3
- ECEN 2350 Digital Logic—3
- General science elective—3

## Junior Year

### *Fall Semester*

- CSCI 2270 Data Structures—4
- ECEN 3350 Programming of Digital Systems—3
- ECEN 3810 Probability—3
- ECEN 3---Analog Elective—3
- Lower-division humanities/social science—3

### *Spring Semester*

- ECEN 3360 Digital Design Lab—3
- ECEN 4593 Computer Organization—3
- ECEN 3--- Analog Elective—3
- Technical electives—6
- Approved upper-division writing—3

## Senior Year

### *Fall Semester*

- Capstone, Part 1—2
- Technical electives—9
- Upper-division humanities/social science—3
- Free elective—3

### *Spring Semester*

- Capstone, Part 2—3
- Software elective—3
- Technical elective—3
- Upper-division humanities/social science—3
- Free elective—3
- Minimum total hours for degree—128

## *Concurrent Bachelor's/Master's Program*

### **BS/MS Program in Electrical and Computer Engineering**

The concurrent BS/MS program in electrical and computer engineering enables especially well qualified EEEN and ECEN majors to be admitted to the MS program during the junior year of their BS program, and to work simultaneously towards BS and MS degrees in electrical engineering. This program allows for early planning of the MS portion of the student's education, taking graduate courses as part of the BS degree, more flexibility in the order in which courses are taken, and more efficient use of what would otherwise be a final semester with a light credit-hour load.

## *Graduate Degree Program(s)*

### **Graduate Study in Electrical, Computing, and Energy Engineering**

Electrical engineering graduate programs leading to ME, MS, and PhD degrees include the areas of biomedical engineering; communications and signal processing; computer engineering; dynamics and controls; electromagnetics; RF and microwaves; optics and photonics; power electronics and

renewable energy systems; remote sensing; nanostructures and devices; and VLSI/CAD.

Close cooperation with the National Institute of Standards and Technology (NIST), the National Oceanographic and Atmospheric Administration (NOAA), the National Renewable Energy Laboratory (NREL), the National Nanotechnology Infrastructure Network (NNIN), and Colorado Front Range industrial organizations in communications, computers, and instrumentation enhances the graduate program, and both teaching and research capabilities are strengthened by the addition of adjunct faculty members from these institutions.

## Master's and Doctoral Degrees

A minimum undergraduate GPA of 3.000 is required for application to the master's program. Minimum requirements for admission to the PhD program include a 3.500 undergraduate GPA, good GRE scores, and demonstration of research ability. Exceptional students with a BS degree are encouraged to apply directly to the PhD program. Information and application forms may be obtained by going to [ecee.colorado.edu/academics/grad/admission.html](http://ecee.colorado.edu/academics/grad/admission.html). Qualified students in their senior year at the University of Colorado and within 18 hours of graduation may be admitted into the graduate program and apply graduate-level credit hours above the 128-semester-hour BS requirement toward an advanced degree. Students formally accepted into the graduate program are assigned to program advisors.

Master's students may choose either an MS thesis option under Plan I or a nonthesis option of 30 hours under Plan II. The ME program is discussed in the College of Engineering and Applied Science general section on graduate study.

All students accepted into the PhD program must take the PhD preliminary examination the first time it is offered (usually in January). The exam covers undergraduate electrical and computer engineering, computer science, math and physics, and a student's designated area of specialization. Further information is available in the ECEE graduate office.

## *Certificate Program*

### Professional Certificate Programs

Professional Certificate Programs are offered in embedded systems, power electronics, and software engineering. For more information, see [Interdisciplinary Programs and Certificates](#) in the Graduate School section.

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# Embedded Systems

In the last few years, commercially available digital systems (microprocessors, microcontrollers, memory chips, interface systems, and systems that handle image, voice, music, and other types of signals) have experienced explosive growth in the electronics industry. These devices are increasingly powerful, cheap, and flexible as design components.

## *Certificate Program*

### Embedded Systems Certificate

The certificate in embedded systems, which is offered by the Department of Electrical, Computer, and Energy Engineering and the Center for Advanced Engineering and Technology Education, with support of the Division of Continuing Education, offers students the hardware and software knowledge and skills needed to design and implement these systems. The curriculum consists of two core courses and one elective course from an approved list. The two core courses are:

- ECEN 4613/5613 Embedded System Design
- ECEN 4623/5623 Real-Time Embedded Systems or ECEN 4033/5033 Real-time Digital Media Systems

The list of approved electives is periodically updated and currently includes:

- ECEN 4573 ECE Capstone (course number is now 4033, but students may still apply with old course number)
- ECEN 4033/5543 Software Engineering of Stand-Alone Programs
- ECEN 4633/5633 Hybrid Embedded Systems
- ECEN 4532/5532 DSP Lab

Applicants for the certificate program must have been or currently be enrolled for a baccalaureate degree from an accredited institution and have satisfied the prerequisites for each course through course work or work experience. They need not be enrolled in a degree-granting program at CU-Boulder. A grade of *B-* or better is required for each course applied toward the certificate. For more information, visit [ecee.colorado.edu/academics/cert\\_programs/overview.html](http://ecee.colorado.edu/academics/cert_programs/overview.html).

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> **[Embedded Systems Certificate](#)**



# Engineering Management

The engineering management graduate curriculum offers a master of engineering degree to students from a variety of engineering and science backgrounds. The goal is to prepare technical professionals with a minimum of two years of post-baccalaureate work experience for advancement into management positions. Areas of concentration are available in managing innovation, project management, performance excellence, engineering entrepreneurship, quality systems, software management, research and development, and Six Sigma methodologies. The program is available via distance learning as well as on campus. Go to [emp.colorado.edu](http://emp.colorado.edu) for more information.

Graduate certificates are also available in 10 core competency areas. Credits accrued toward a certificate can be applied toward a master's degree. For more information, see [colorado.edu/catalog/gradschool/emp](http://colorado.edu/catalog/gradschool/emp).

Course code for this program is EMEN.

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# Engineering Management

## *Graduate Degree Program(s)*

### Master's Degree in Engineering Management

The Engineering Management Program at the College of Engineering and Applied Science offers a master of engineering degree in engineering management and several professional certificates. The ME degree is designed for professionals who seek to develop in-depth managerial and entrepreneurial skills specific to engineering and the applied sciences. The curriculum provides in-depth engineering and management knowledge. Courses may be taken on campus or through our distance learning program.

The master of engineering degree in engineering management consists of 30 credit hours, six core courses, and four elective courses. The electives offer competency in the following areas:

- Engineering Entrepreneurship
- Leadership and Ethics
- Management of Research and Development
- Managing Applied Research
- Performance Excellence in Technology Management
- Project Management
- Quality Systems
- Six Sigma (Green Belt, Black Belt, Master Black Belt)
- Software Management
- Technology Ventures

Graduate certificates are also available in many of the above core competency areas. Credits accrued toward a certificate can be applied toward a master's degree.

Visit [emp.colorado.edu](http://emp.colorado.edu) for more information.

## *Certificate Program*

### Engineering Entrepreneurship Certificate

**(12 credit hours)**

This certificate is offered in partnership with the nationally renowned Deming Center for Entrepreneurship in Colorado. It provides the student with the essential knowledge, understanding, and skills to successfully practice entrepreneurship in a start-up venture or within a larger corporation (intrapreneurship). The focus is on how much to launch, lead, and manage a viable business starting with concept validation to commercialization and business formation. The program culminates with the development of a business plan for a project that the student chooses and then pitches to business community leaders and venture capitalists.

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- EMEN 5050 Leadership or EMEN 5020 Finance and Accounting for Engineering Managers
- EMEN 5710 Applied Business Decisions
- EMEN 5090 High Technology Marketing
- EMEN 5825 Entrepreneurial Business Plan

## Engineering Management Certificate (12 credit hours)

The certificate provides a broad-based view of the key principles and concepts that are important for technical managers, including finance and accounting, leadership and management, quality management, and project management. The certificate requires four courses selected from the five core courses in the Engineering Management graduate curriculum.

- EMEN 5010 Introduction to Engineering Management
- EMEN 5020 Finance and Accounting for Engineering Managers
- EMEN 5030 Project Management Systems
- EMEN 5040 Quality, Strategy, and Value Creation
- EMEN 5050 Leadership

## Leadership and Ethical Decision-making Certificate (9 credit hours)

Engineers and scientists can think systemically, visualize complex technical and human interactions, and resolve conflicting viewpoints. This certificate develops technical professionals so that they may apply these talents more broadly and play a leadership role in their organizations. Students develop the knowledge and skills necessary to lead and learn the ethical decision-making processes they need to make real-world decisions. There are two core courses:

- EMEN 5050 Leadership
- EMEN 5080 Ethical Decision-making

The third course is chosen by the student from the following list. Each of these courses provides grounding and context for the different situations in which technical professionals work.

- EMEN 5010 Introduction to Engineering Management
- EMEN 5040 Quality, Strategy, and Value Creation
- EMEN 5825 Entrepreneurial Business Plan Preparation

## Managing Applied Research in Technology Certificate (12 credit hours)

This certificate provides engineering managers with the tools to effectively and efficiently manage applied research in areas such as sustaining engineering, customer and supplier evaluation, quality improvement and problem solving, new process and facility start-up, the design of complex and interdependent systems, and cost reduction analysis. Methods taught include advanced experimental design, sample sizes, use of powerful parametric and nonparametric analyses, and data mining.

- EMEN 5042 Methods for Quality Improvement
- EMEN 5610 Advanced Statistical Methods for Engineering Research

### > Engineering Management

> Environment, Policy, and Society

> Geophysics

> Human Language Technology

> Hydrologic Sciences

> Molecular Biophysics

> Museum and Field Studies

> Neuroscience

> Peace Corps

> Population Studies

> Power Electronics

> Remote Sensing

> Renewable and Sustainable Energy

> Science and Technology Policy

> Software Engineering

> Telecommunications

> Women and Gender Studies

> Journalism & Mass Communication Program

> Law

> Music

> Other Academic Programs

- 
- EMEN 5620 Data Mining and Screening Experiments for Engineering Research
  - EMEN 5900 Research Methods

## Managing Research and Development Certificate

**(9 credit hours)**

The formal name for innovation within a corporate setting is R&D. Innovation has become essential to every company's survival and well-being. Innovation takes many forms including product, process, and business model innovation. Individuals who understand and can manage innovation and creativity have great career opportunities. This certificate provides proven concepts and tools for managing the innovation process of strategy formation, portfolio development, and project execution in both hardware and software environments.

- EMEN 5030 Project Management Systems
- EMEN 5300 Management of Research and Development (R&D)
- EMEN 5400 Product Development or EMEN 5430 Software Product Management

## Performance Excellence in Technology Management Certificate

**(12 credit hours)**

This certificate provides a cutting-edge model for Business Performance Excellence (BPE). BPE is a facilitating system, enabling companies to successfully execute their improvement program efforts, such as Six Sigma, to increase profitability. In addition to cost reduction, the application of quality principles and allocated cost accounting enables identification of revenue generating "sweet spots" for profit optimization.

- EMEN 5040 Quality, Strategy, and Value Creation
- EMEN 5041 Advanced Topics in Value Creation
- EMEN 5042 Methods for Quality Improvement
- EMEN 5050 Leadership

## Project Management Certificate

**(9 credit hours)**

This certificate is designed around the Project Management Body of Knowledge (PMBOK) and builds a foundation for the preparation of PMP certification. This certificate can be completed in one calendar year.

- EMEN 5030 Project Management Systems
- EMEN 5032 Advanced Topics in Project Management
- EMEN 6830 Project Management Capstone or EMEN 5050 Leadership

## Quality Systems for Product and Process Engineering Certificate

**(12 credit hours)**

This certificate provides engineering managers with the technical expertise needed to manage initiatives in quality improvement, problem-solving, and reliability improvement. Upon completion, students are certified as Green Belts for Six Sigma programs.

- EMEN 5040 Quality, Strategy, and Value Creation
- EMEN 5042 Methods for Quality Improvement
- EMEN 5043 Advanced Topics in Quality Systems/Engineering
- EMEN 5900 Research Methods

## Six Sigma Practitioner Certificate

This certificate is designed to educate students in the advanced statistical tools that are used in business to solve problems and improve product and service quality. The curriculum focuses on the use of basic and advanced statistical techniques and how to use them to identify and achieve improvement opportunities in the real world. Numerous case studies from business and industry will emphasize the connection that applied statistics has to making optimal business decisions.

- APPM 5570/EMEN 5005 Introduction to Applied Statistics
- APPM 5580/EMEN 5900 Research Methods
- EMEN 5610 Advanced Statistical Methods
- EMEN 5620 Data Mining and Screening Experiments for Engineering Research

## Technology Ventures and Product Management Certificate

(12 credit hours)

Technology venture management and product development is key to the sustained success of any high-technology business in today's intensely competitive and global marketplace. This certificate is designed for the engineer in any size company (Fortune 500 to start-up) who wants to embrace the challenge of managing the strategy and implementation of new technology product development. Using case studies and realistic business emulation exercises, the student will gain an understanding and practice the skills required to evaluate technology, consider its viability as a product, and manage the development effort required to deliver a product that provides an exceptional customer experience.

- EMEN 5050 Leadership or EMEN 5020 Finance and Accounting for Engineering Managers
- EMEN 5090 High Technology Marketing
- EMEN 5400 Product Development or EMEN 5430 Software Project Management
- EMEN 5710 Applied Business Decisions

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# Engineering Physics

The engineering physics program focuses on the foundations of modern technology. The program prepares students for research, development, and entrepreneurial careers in many frontier areas of engineering, including quantum devices, ultra fast lasers, adaptive optics, cryogenic electronics, computer simulation of physical systems, solar cells, magnetic storage technology, micro-mechanical systems, and molecular electronics. All students study the core theoretical subjects of mechanics, electricity and magnetism, thermal physics, and quantum mechanics, supplemented by courses in mathematics, computation, and laboratory technique. The program can be tailored to a student's interests through electives in engineering, physics, or other sciences.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Engineering Physics Requirements

During the freshman and sophomore years, students receive a broad introduction to physics and chemistry as well as five semesters of applied mathematics and mathematical methods in physics. Starting in the junior year, students take a full year of electrodynamics, a year of quantum mechanics, a semester of classical mechanics, a semester of thermodynamics and statistical mechanics, a year of physical chemistry, and an additional semester of advanced mathematics. Laboratory courses emphasize student-developed and student-designed independent projects where students use the knowledge acquired to build apparatus of their own choosing. The Advanced Laboratory (PHYS 4430) provides students with hands-on experience with optical spectroscopy, nuclear magnetic resonance, scanning tunneling microscopy, and laser cooling and trapping of atoms, among other experiments. The program encourages the formation of student research collaborations with faculty in the pursuit of senior thesis projects. Recent projects include research in pulsed laser deposition of high-temperature superconductors, electron diffraction studies of protein structure, and lattice distortion theory of colossal magnetoresistance materials.

Additional information about the bachelor's degree in engineering physics may be obtained from the physics department, Duane Physics E-1B32, by phone at **303-492-6953**, or online at [www.colorado.edu/physics](http://www.colorado.edu/physics).

Students who plan to become registered professional engineers should check the requirements for registration in their state before choosing their engineering electives.

In order to earn a bachelor's degree in engineering physics, students must complete the curriculum in the undergraduate major programs available through the Department of Physics. (Some variations may be possible; see an engineering physics advisor.) In addition, students must meet the general undergraduate degree requirements of the College of Engineering and Applied Science.

## *Curriculum for BS in Engineering Physics*

Below is a typical schedule only. For a complete description of the engineering physics course requirements, go to [www.colorado.edu/physics](http://www.colorado.edu/physics).

### *Required Courses and Semester Credit Hours*

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## Freshman Year

### Fall Semester

- APPM 1350 Calculus 1 for Engineers—4
- MCEN 1025 or AREN 1027 CAD/Engineering Drawing (Note 1)—3
- PHYS 1110 General Physics 1—4
- Humanities or social science electives (Note 2)—6

### Spring Semester

- APPM 1360 Calculus 2 for Engineers —4
- CSCI 1300 Computer Science 1: Programming (Note 1) —4
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Humanities or social science elective (Note 2)—3

## Sophomore Year

### Fall Semester

- APPM 2350 Calculus 3 for Engineers —4
- CHEM 1221 General Chemistry Lab for Engineers (Note 5)—2
- CHEN 1211 General Chemistry for Engineers (Note 5)—3
- PHYS 2150 Experimental Physics—1
- PHYS 2170 Foundations of Modern Physics—3
- Elective (Note 3) —3

### Spring Semester

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- Elective (Note 3) —3
- Humanities or social science elective (Note 2)—3

## Junior Year

### Fall Semester

- CHEM 4521 Physical Chemistry (Note 5)—3
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3330 Junior Laboratory—2
- Upper-division mathematics elective —3
- Elective (Note 3)—3

### Spring Semester

- CHEM 4541 Physical Chemistry Lab (Note 5)—2
- PHYS 3220 Quantum Mechanics—3
- PHYS 3320 Principles of Electricity and Magnetism 2—3

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Physics elective (Note 4)—6

- Elective (Note 3)—3

## Senior Year

### *Fall Semester*

- PHYS 4230 Thermodynamics and Statistical Mechanics—3
- PHYS 4410 Atomic and Nuclear Physics —3
- Electives (Note 3)—8
- WRTG 3030 Writing on Science and Society—3

### *Spring Semester*

- Engineering electives (Note 3)—10-12
- Physics electives (Note 4)—3-5
- Humanities or social science elective (Note 2)—3

**Minimum total hours for the degree—128**

### **Curriculum Notes**

1. Engineering physics computer science/drafting requirement (6–8 hours) is as follows: CSCI 1300-4 or GEEN 1300-3, plus AREN 1027-3 or MCEN 1025-3 or second computer science course (of at least 3 credit hours) other than CSCI 1300 or GEEN 1300.

2. A total of 18 credit hours of humanities or social science courses is required. See [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss) for specific requirements.

3. Engineering electives: 17–19 engineering elective hours above and beyond the required courses for engineering physics plan 4, including one upper-division laboratory course. Total hours required in engineering electives plus the required computer sciences and drafting hours: 25.

4. Nine hours of physics electives are required. For details, see [www.colorado.edu/physics](http://www.colorado.edu/physics).

5. The 10-hour chemistry requirement may also be met with CHEM 1113/1114 and 1133/1134.

## Minor Program

The Department of Physics offers a minor in physics. A detailed plan can be found at [www.colorado.edu/physics](http://www.colorado.edu/physics).

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# English

The undergraduate degree in English emphasizes knowledge and awareness of:

- canonical and non-canonical works of English and American literature;
- the general outlines of the history of British and American literature;
- literary theories, including recent theoretical developments; and
- the social and historical contexts in which the traditions developed.

In addition, students completing the degree in English are expected to acquire the ability and skills to:

- analyze literary texts;
- interpret texts on the basis of such analysis;
- relate analyses and interpretations of different texts to one another; and
- communicate such interpretations competently in written form.

The undergraduate degree in creative writing emphasizes knowledge and awareness of:

- literary works, including the genres of fiction, poetry, playwriting, and screenwriting, and the major texts of contemporary writers;
- literary history, including the origins and development of genres, major writers of the past, and the role of the writer in society; and
- literary analysis, including theories of literary composition and critical theory.

In addition, students completing the degree in creative writing are expected to acquire the ability and skills to:

- write in various poetic modes and styles;
- write in various fictive styles;
- write in various nonfiction styles; and
- evaluate other students' written work.

Course code for this program is ENGL.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in English

A minimum of 12 hours of upper-division course work for the English major must be completed on the Boulder campus. English courses taken at other colleges must be evaluated by the Department of English. Courses taken in other departments (except approved cross-listed courses) normally do not count toward the English major. English courses taken on a *pass/fail* basis do not fulfill major requirements. Independent study credit hours cannot fulfill a major requirement unless that requirement is not being offered or available within the year that the student graduates.

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> [Chemistry and Biochemistry](#)

Note: For the Advanced Placement examination in English literature and composition, students will receive credit for ENGL 1500 for an exam score of 4 or 5.

Students must complete the general requirements of the College of Arts and Sciences and one of the two programs listed below.

## Literature

Students are subject to the major requirements in effect at the time they formally declare the major. A minimum of 36 credit hours must be earned in the Department of English, 18 of which must be upper division. Requirements may be fulfilled by taking specific courses designated by the Department of English.

### Required Courses and Semester Credit Hours

- ENGL 2000 Literary Analysis—3
- ENGL 2010 Introduction to Literary Theory—3
- One course from each: backgrounds to literature in English, British literature to 1660, British literature after 1660, and American literature—12
- One course from both categories: advanced theory/genre studies/popular culture and multicultural/gender studies—6
- ENGL 4038 Critical Thinking in English Studies—3
- Three elective courses in English—9
- In addition to the 36 hours required for the major, another 9 hours may be taken, for a maximum of 45 hours in English.
- The recommended sequence of courses to be taken during the initial year of the literature program is ENGL 2000 and an English elective for the first semester, and ENGL 2010 and a 2000-level ENGL course for the second semester.

## Creative Writing

Students are subject to those major requirements in effect at the time they formally declare the major.

A minimum of 36 credit hours must be earned in the Department of English, 18 of which must be upper division.

### Required Courses and Semester Credit Hours

- ENGL 2000 Literary Analysis—3
- ENGL 2010 Introduction to Literary Theory—3
- One course from any two of the following: backgrounds to literature in English, British literature to 1660, British literature after 1660, and American literature—6
- One course from advanced theory/genre studies/popular culture or multicultural/gender studies—3
- ENGL 4038 Critical Thinking in English Studies—3
- Six creative writing workshops, three of which must be upper division—18
- In addition to the 36 hours required for the major, another 9 hours may be taken, for a maximum of 45 hours in English.
- The recommended sequence of courses to be taken during the initial year of the creative writing program is ENGL 2000 and ENGL 1191 for the first semester, and ENGL 2010 and a 2000-level workshop for the second semester.

Admission to the creative writing major is not automatic. Students must have completed at least 6

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hours of writing within the program before being considered; for transfer students, 3 hours of creative writing can be transferred. In addition, they must submit two copies of a manuscript (at least 7 poems, 20 pages of fiction, or a short stage or screen play) to the admissions committee for approval. Students should apply no later than the second semester of their junior year.

In order to take a workshop beyond the 2000-level, students who have not been formally admitted to the creative writing program must submit a manuscript to the Department of English prior to registration. Each workshop may be taken three times for credit. Students may not take two poetry or two fiction workshops in the department in the same semester.

### *Minor Program in Creative Writing*

Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. Students majoring in English, literature track, cannot declare a creative writing minor. Students are subject to those minor requirements in effect at the time they formally declare the minor.

Completion of the minor requires 18 credit hours, at least 9 of which must be upper division.

#### *Required Courses and Semester Credit Hours*

- ENGL 1191 Intro to Creative Writing—3
- ENGL 3041 Studies in Fiction and Poetry—3
- Four creative writing workshops, taken in progressive order—12

Admission to the creative writing minor can be made at any time after a student completed ENGL 1191 Intro to Creative Writing. 3 hours of transfer workshop credits can be applied. Students should ideally apply no later than the second semester of their junior year.

Each workshop may be taken three times for credit. Students may not take two poetry or two fiction workshops in the department in the same semester.

### *Advising*

Upon declaring an English major, students are assigned an English advisor. The advisors are available to meet with students by appointment or on a drop-in basis. The advisors monitor and evaluate student progress in completing the arts and sciences core curriculum and major requirements, and certify students for graduation. The department encourages students to meet with their primary advisor at least once each semester to update their student file and ensure that they are making satisfactory progress in meeting the core and major requirements.

### *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in English, students should meet the following requirements:

- Declare the English major and begin course work in the major no later than the beginning of the second semester.
- Successfully complete one-third of the hour requirements for the major by the end of the fourth semester. For literature track majors, this includes ENGL 2000, 2010, an English elective, and any 2000-level course for the major. For creative writing track majors, this includes ENGL 2000, 1191, 2010, and 2021 or 2051, as well as formal admission to the program.
- Successfully complete two-thirds of the hour requirements for the major by the end of the sixth semester.
- Successfully complete the remaining major requirements by the end of the eighth semester.

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## *Departmental Honors*

Students interested in pursuing a special program leading to graduation with departmental honors should confer with the associate chair for undergraduate studies as soon as possible, but definitely no later than the beginning of spring term in their junior year.

## *Students Who Contemplate Teaching*

Sheets listing the curriculum required for a teaching license for secondary schools may be obtained in Education 151. Since fulfilling requirements for both education and English makes a very tight schedule, students should seek early advising to complete their college requirements.

## *Undergraduate English Awards and Prizes*

**The Alex McGuiggan Scholarship** was established in spring 2010 to recognize the achievement of an undergraduate English major studying creative writing with a preference for students whose strength is in writing poetry. The scholarship was established in memory of Alex McGuiggan, an English major at the University of Colorado Boulder.

**The Curtis Michael Gimeno Memorial Scholarship.** This scholarship benefits students with a creative writing emphasis who exemplify promise of talent in communicating through the written language. The scholarship was generously established by Donna Jorgenson Farrell in memory of and as a legacy to her son, Curtis Michael Gimeno, who enjoyed writing.

**The Gentian Ascension Scholarship.** This scholarship is a variable annual award established to benefit an undergraduate student who exhibits a past that demonstrates overcoming academic obstacles and shows budding talent as a writer.

**The Harold D. Kelling Essay Prize.** The Kelling prize is a variable cash award for the best essay on literature submitted by an undergraduate currently enrolled in the university. The essay must have been written for an English class at CU-Boulder and should be submitted to the English department before March 15.

**The Joanne Easley Arnold Award.** The Joanne Easley Arnold English Scholars Fund is a two-year award designed to recognize and provide financial and intellectual support to a top English major in honor of the donor, Joanne Easley Arnold, who was a dean with the university.

**The Jovanovich Imaginative Writing Prize.** The Jovanovich prize is an annual award for excellence in poetry, fiction, playwriting, or nonfiction prose. Information is available in Hellems 111.

**The Katherine Lamont Scholarship.** The Lamont scholarship is a variable annual award to a continuing English major in recognition of sustained excellence and exceptional scholarly performance in the major.

## *Graduate Degree Program(s)*

### Graduate Study in English

#### *Admission Requirements*

**Master's Degree in English.** The MA program offers theory and literary history combined with a rigorous training in critical analysis. Applicants interested in English literature should have satisfactory scores on the verbal and analytical writing sections of the GRE General Test. In addition, at least 24 credit hours in English (exclusive of composition, creative writing, and speech) are normally required for admission. Upper-division courses must comprise 15 of the 24 hours.

**Master of Fine Arts Degree in Creative Writing.** Applicants interested in creative writing must submit satisfactory scores on the verbal and analytical writing sections of the GRE. In addition, a BA degree, with an English major or at least 18 credit hours in English, is normally required. Each

student must submit a manuscript of at least 10 pages of poetry or a minimum of 25 pages of fiction or nonfiction prose (other than literary criticism).

**Doctoral Degree in English.** Students must present satisfactory scores on the verbal and analytical writing sections of the GRE General Test and have either an MA or a BA degree in English. Entering graduate students with no degree beyond the BA are usually admitted to the MA program but may apply to be admitted directly to the PhD program. MA students may apply for admission to the PhD program upon completion of their degree.

### *Degree Requirements*

Students wishing to pursue graduate work in English should note requirements for advanced degrees in the Graduate School section and write the department for a more complete description of graduate programs in English, or visit [www.colorado.edu/English](http://www.colorado.edu/English).

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# Environment, Policy, and Society

## *Certificate Program*

### Certificate Program

In order to understand contemporary environmental issues, today's scholars must transcend historical academic disciplinary boundaries. Indeed, complex issues related to energy, climate change, species preservation, and air and water quality are best addressed by valuing insights from multiple perspectives. The Graduate Certificate Program in Environment, Policy, and Society allows students the opportunity to engage in interdisciplinary exploration of these contemporary environmental problems by drawing from courses across a wide range of social science disciplines. The certificate curriculum incorporates courses from many departments in the College of Arts and Sciences, including anthropology, biology, economics, geography, philosophy, political science, psychology, and sociology. In addition, pertinent courses are available in the College of Architecture and Planning, the Leeds School of Business, the College of Engineering and Applied Science, the School of Journalism and Mass Communication, and the School of Law. Tracks are available in:

- Environment and Society
- Environmental Policy
- Energy and Society
- Water and Society

Students will be expected to complete the interdisciplinary cornerstone course, an integrative capstone course, and 9–12 hours from the menu of courses available for each track.

Admission to the certificate program is open to students in any regular graduate degree program at the University of Colorado. A limited number of individuals already holding master's or doctoral degrees from other institutions may be admitted, provided they meet the normal admission requirements of a participating department.

To receive the certificate, students must complete 18 hours of approved course work, including 6 hours of cornerstone/capstone seminars. At least 12 of the 18 hours must be in courses outside the department in which the student is currently enrolled. The certificate is awarded to recognize the additional course work beyond that required for the student's regular degree program. Hence, transfer credit for courses taken elsewhere may not be counted toward certificate requirements.

For more information, please consult the Environmental Studies Program website at [envs.colorado.edu](http://envs.colorado.edu).

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# Environmental Engineering

Environmental engineers play a vital role in maintaining the quality of both human environmental systems and the natural environment. Environmental engineering encompasses the scientific assessment and development of engineering solutions to environmental problems impacting the biosphere, land, water, and air quality. Environmental issues affect almost all commercial and industrial sectors, and are a central concern for the public, for all levels of government, and in international relations. These issues include safe drinking water, wastewater processing, solid and hazardous waste disposal, outdoor air pollution, indoor air pollution and transfer of infectious diseases, human health and ecological risk management, prevention of pollution through product or process design, and renewable and sustainable energy sources.

To address these challenges, environmental engineers often encounter challenging problems that must be solved in data-poor situations as members of multidisciplinary teams. Environmental problems require creative solutions blended with contributions from scientists, lawyers, business people, and the public. Good communication skills, as well as technical proficiency, are essential for success in this arena. In addition, technology designed to address environmental problems is marketed globally, opening up increasing opportunities for international work in the environmental engineering field.

The faculty of the Environmental Engineering Program (EVEN) is drawn from the Departments of Civil, Environmental, and Architectural Engineering; Mechanical Engineering; Chemical and Biological Engineering; and Aerospace Engineering. The EVEN faculty, its Professional Advisory Board (representing prospective employers of its graduates), and EVEN alumni and current students have contributed to the creation of the program's mission and the educational objectives of the EVEN BS degree.

## Mission

The mission of the EVEN Program is to provide a multidisciplinary undergraduate environmental engineering education that emphasizes mastery of principles and practices, inspires service for the global public good, endows a desire for lifelong learning, and prepares students for broad and dynamic career paths in environmental engineering.

## Educational Objective

The educational objective of the environmental engineering bachelor of science degree is to produce graduates who reach the following achievements three to five years after graduation:

- become established in professional careers and/or earn advanced degrees;
- apply multidisciplinary approaches to manage the unique challenges and balance the competing social, political, economic, and technical goals of environmental problems and solutions; and
- serve the needs of our society and protect the future of our planet in an ethical manner.

## Program Outcomes

The Environmental Engineering Program demonstrates that its graduates:

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- have sufficient knowledge of engineering, mathematics, and science fundamentals to succeed in environmental engineering practice or advanced degrees;
- have sufficient knowledge of advanced environmental engineering applications and complementary natural sciences to succeed in environmental engineering practice or advanced degrees;
- have sufficient knowledge of engineering approaches to problem solving (hypothesis, design, testing; team work) to succeed in environmental engineering practice or advanced degrees;
- have sufficient knowledge of basic engineering skills and tools (computer, laboratory, and field) to succeed in environmental engineering practice or advanced degrees;
- have adequate writing and oral presentation skills to succeed in environmental engineering practice or advanced degrees;
- have adequate understanding of the social, economic, political, and ethical context of environmental problems and solutions;
- have adequate opportunity to include service at the local, state, national, or global levels as an important part of their environmental engineering education; and
- recognize the importance of life-long learning by seeking advanced degrees and pursuing continuing education.

Course code for this program is EVEN.

## *Bachelor's Degree Program(s)*

# Bachelor's Degree in Environmental Engineering

## Requirements

The bachelor of science degree in environmental engineering (EVEN) at the University of Colorado provides preparation for professional proficiency or graduate training in environmental engineering in a four-year curriculum. The curriculum includes courses in engineering fundamentals and applications, advanced mathematics, chemistry, physics, biology, earth science, along with courses in the arts, humanities, and social sciences.

Courses specific to environmental engineering practice include water chemistry, microbiology, and air pollution control. In addition, environmental engineering requires hands-on laboratory experiences, up-to-date skills in the use of computers for modeling and data analysis, and experience in the design of environmental engineering systems. Many of the required engineering courses in the bachelor of science curriculum are culled from aerospace engineering sciences; chemical and biological engineering; civil, environmental, and architectural engineering; and mechanical engineering.

The curriculum also includes three technical electives, three option courses, and one free elective. Technical elective courses include a broad range of science and engineering courses, and must include an earth sciences course. The option courses represent an area of specialization in environmental engineering selected by the student beginning in the junior year. The curriculum includes six sets of options:

- Air Quality
- Applied Ecology
- Chemical Processing
- Energy Conversion Fundamentals
- Environmental Site Characterization and Remediation
- Water Resources and Treatment

In addition to these prescribed options, students may also formulate their own sequence of option

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courses (referred to as a “special option”) representing an area of specialization not included in the six sets of option courses listed above. This selection must be done by petition to the Environmental Engineering Program.

Students in the program are also encouraged to participate in research through independent study or senior thesis projects, the Undergraduate Research Opportunities Program (UROP), or as undergraduate research assistants in sponsored research programs. Students are required to take the Fundamentals of Engineering (FE) exam when they are within 32 credit hours of graduation.

## *Curriculum for the BS in Environmental Engineering*

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 Engineering General Chemistry Laboratory—2
- CHEN 1211 General Chemistry for Engineers—3
- EVEN 1000 Introduction to Environmental Engineering (Note 4)—1
- GEEN 1400 Engineering Projects—3
- Humanities and social science elective (Note 1)—3

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- GEEN 1300 Introduction to Engineering Computing—3
- PHYS 1110 General Physics 1—4
- Humanities and social science elective (Note 1)—3
- Technical elective (Note 2)—3

#### **Sophomore Year**

##### ***Fall Semester***

- APPM 2350 Calculus 3 for Engineers—4
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics 1—1
- **Solid mechanics:** CVEN 2121 Analytic Mechanics, GEEN 3851 Statics for Engineers, or MCEN 2023 Statics and Structures—3
- Humanities and social science elective (Note 1)—3

##### ***Spring Semester***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- CHEM 4521 Physical Chemistry for Engineers (Note 4)—3
- CHEN 2120 Material and Energy Balances—3
- CVEN 3414 Fundamentals of Environmental Engineering—3
- Humanities and social science elective (Note 1)—3

#### **Junior Year**

##### ***Fall Semester***

- CVEN 4404 Water Chemistry (Note 4)—3
- CVEN 4414 Water Chemistry Lab (Note 4)—1
- **Engineering Economics** (Note 4): CVEN 4147 Civil Engineering Systems or EMEN 4100 Business Methods and Economics for Engineers—3
- **Fluid Mechanics:** CHEN 3200 Chemical Engineering Fluid Mechanics, CVEN 3313 Theoretical Fluid Mechanics, GEEN 3853 Fluid Mechanics for Engineers, or MCEN 3021 Fluid Mechanics—3
- **Thermodynamics:** AREN 2110 Thermodynamics, CHEN 3320 Chemical Engineering Thermodynamics, GEEN 3852 Thermodynamics for Engineers, or MCEN 3012 Thermodynamics—3
- Required writing course (Note 1)—3

### ***Spring Semester***

- CVEN 4484 Introduction to Environmental Microbiology (Note 4)—3
- MCEN 4131 Air Pollution Control (Note 4)—3
- **Heat Transfer:** CHEN 3210 Chemical Engineering Heat Transfer or MCEN 3022 Heat Transfer—3
- **Probability and Statistics:** APPM 4570 Statistical Methods; CHEN 3010 Applied Data Analysis; CVEN 3227 Probability, Statistics, and Decision; or MCEN 3037 Experimental Design and Data Analysis—2
- Option course I (Note 3)—3

### **Senior Year**

#### ***Fall Semester***

- CVEN XXXX Environmental Engineering Processes (Note 4)—3
- Humanities and social science elective (Note 1)—3
- Air or earth science laboratory or field course—3
- Option course II (Note 3)—3
- Technical elective II (Note 2) or Senior Thesis (Note 5)—3
- Free Elective—3

#### ***Spring Semester***

- CVEN 4333 Engineering Hydrology (Note 4)—3
- CVEN 4424 Environmental Organic Chemistry—3
- CVEN 4434 Environmental Engineering Design (Note 4)—4
- Option course III (Note 3)—3
- Technical elective III (Note 2) or Senior Thesis (Note 5)—3

**Minimum total semester hours —128**

### ***Curriculum Notes***

1. A total of 15 credit hours of humanities and social sciences electives, along with 3 credit hours of an approved writing course, is required. See [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss) for specific requirements.

2. A total of 9 credit hours of technical electives is required. Three technical elective credits may be lower-division (1000-2000-level). Three technical elective credits must be in the earth sciences, either lower or upper division. Remaining technical elective credits must be upper division in engineering, mathematics, or sciences. Independent study (EVEN 4840) or senior thesis (EVEN 4980 and 4990) may be completed as technical electives for up to 6 credits.

3. A list of courses for the Air Quality, Applied Ecology, Chemical Processing, Energy Conversion Fundamentals, Environmental Remediation, and Water and Wastewater Options is available in the program office.

4. Only offered in the semester shown (not including summer offerings).

5. A senior thesis can be completed on a single research topic, with faculty approval and direction, and can apply toward technical elective requirements.

## *Concurrent Bachelor's/Master's Program*

# Concurrent Bachelor of Science/Master of Science Degree

A concurrent EVEN BS/CVEN MS degree program is available in cooperation with the Department of Civil, Environmental, and Architectural Engineering. Students may apply to the program when they have completed 75–110 credit hours toward the undergraduate EVEN degree. Once accepted into the program, students are allowed to count 6 credit hours taken at the graduate level for both the environmental engineering BS and the civil engineering MS degrees, thus allowing them to obtain both degrees in a five-year curriculum.

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# Environmental Studies

The environmental studies major is administered through the Office of Environmental Studies and draws from curricula in the earth and natural sciences and the social sciences. See the program website at [envs.colorado.edu/undergrad\\_program/C31/curriculum](http://envs.colorado.edu/undergrad_program/C31/curriculum) for details of the program requirements and current courses.

The bachelor's degree program is composed of a required common curriculum that exposes all students to the basics of physical and social environmental sciences, as well as a choice among three specializations: climate and energy, natural resources and the environment, or sustainable development.

The undergraduate degree in environmental studies emphasizes knowledge and awareness of:

- the causes, scale, and relative importance of the major environmental problems in the United States and the world;
- the complexity of factors relating to human interaction with the environment, especially the fact that environmental problems have both human and biophysical components; and
- the general principles of human-environmental interaction, global habitability and environmental change, and sustainable human societies.

Environmental studies is an interdisciplinary program, drawing on courses and expertise from over a dozen departments. Students who also wish to pursue a traditional, discipline-based education are encouraged to double major or complete a minor in one of the participating departments. An internship program is offered to provide the upper-level student with practical experience working in the field.

Students interested in environmental studies may want to consider the Baker Residential Academic Program. See [Residential Academic Programs](#) for more information.

Course code for this program is ENVS.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Environmental Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

#### Common Curriculum

Students are expected to complete the following common curriculum:

#### *Required Courses and Semester Credit Hours*

- ENVS 1000 Introduction to Environmental Studies—4

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### **Biology Sequence (7-8 hours)**

- EBIO 1030/EBIO 1040 and EBIO 1050 Biology: A Human Approach and lab
- EBIO 1210/EBIO 1220 and 1230/1240 General Biology and labs

### **Chemistry or Physics (3-5 hours)**

- CHEM 1011 Environmental Chemistry or CHEM 1113/1114 General Chemistry 1 and lab
- PHYS 2010 General Physics with lab or PHYS 1110 General Physics

### **Earth Science Sequence (7-8 hours)**

- ATOC 1050/ATOC 1060 and ATOC 1070 Weather and the Atmosphere/Our Changing Environment: El Niño, Ozone, and Climate and lab
- GEOG 1001/GEOG 1011 Environmental Systems with labs
- GEOL 1010/GEOL 1060 (or /GEOL 1020 or /GEOL 1040) and GEOL 1030 Introduction to Geology/Global Change: An Earth Science Perspective (or /Introduction to Earth History or /Geology of Colorado) and lab

### **Intermediate Natural Science (3-4 hours)**

- ATOC 3600/ENVS 3600/GEOG 3601 Principles of Climate
- CVEN/ENVS 3434 Applied Ecology
- EBIO 2040 Principles of Ecology with lab
- GEOG 3511 Hydrology with lab

### **Intermediate Social Science (3 hours)**

- ANTH 4020 Explorations in Anthropology: Conservation and Indigenous Peoples
- SOCY 2077 Environment and Society
- SOCY 4007 Global Human Ecology
- SOCY/ENVS 4027 Inequality, Democracy, and the Environment

### **Introductory and Intermediate Values (9 hours)**

- ECON 2010 Principles of Microeconomics
- Choose one:  
ECON 3535 Natural Resources Economics  
ECON 3545 Environmental Economics
- Choose one:  
ENVS/PHIL 3140 Environmental Ethics  
GEOG 3422 Conservation Thought  
PSCI 3064 Environmental Political Theory

### **Intermediate Policy (3 hours)**

- PSCI 2106 Introduction to Public Policy Analysis
- PSCI 2116 Introduction to Environmental Policy and Policy Analysis
- PSCI 3206 The Environment and Public Policy

### **Skills**

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One statistics or calculus course for 3-5 hours:

- EBIO 4410-4 Biometry
- ECON 3818-3 Introduction to Statistics with Computer Applications
- GEOG/GEOL 3023-4 Statistics for Earth Sciences
- MATH 2510-3 Introduction to Statistics
- MATH 2520-3 Introduction to Biometry
- PSCI 2075-3 Quantitative Research Methods
- PSCI 3105-3 Designing Social Inquiry: An Introduction to Analyzing Political Phenomena
- PSYC 3101-4 Statistics and Research Methods in Psychology
- SOCY 2061-3 Introduction to Social Statistics
- MATH 1300-5 Analytic Geometry and Calculus 1
- MATH 1310-5 Calculus, Stochastics and Modeling
- APPM 1350-4 Calculus 1 for Engineers

### Advanced Writing (3-5 hours)

- EBIO 3940 Argument in Scientific Writing
- ENVS 3020 Advanced Writing in Environmental Studies

### Application (minimum of 3 hours)

- EBIO 4090 Coral Reef Ecology
- EBIO 4100 Mountain Research Station field course
- EBIO/ENVS/MUSM 4795 Museum Field Methods/Zoology and Botany
- ENVS 2100 Colorado Ecosystem Studies
- ENVS 3001 Sustainable Solutions Consulting
- ENVS/CVEN 3434 Applied Ecology
- ENVS/GEOL 3520 Mining 4 Corners or ENVS 3930 Internship
- EVEN 4100 Environmental Sampling and Analysis
- GEOL 2700 and GEOL 4715
- GEOL 4716 Field Geology

### Capstone Course (3 hours)

- ATOC 4800 Policy Implications of Climate Controversies
- ENVS 3800 The Art of Research or
- ENVS 4800 (Biofuels; Cultural Politics of Climate Change; Environmental Health Risk; Environmental Property and Protest; Philosophy of Climate Science; Rethinking Hurricane Katrina; Sustainable Development; or U.S. Environmental Policy)
- ENVS 4990 Senior Thesis
- EBIO 4800 (Discovering Climate Change or Ecosystem Management; Land Use Sustainability; Microbial Ecology; Novel Ecosystems; or Soil Ecology)
- GEOG 4742 Environment and Peoples
- GEOG 4430 Conservation Trends
- JOUR 4871 Environment, Media, and Culture

### Specialization Courses

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

> [Philosophy](#)

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Choose one and complete 15 credits within it. Additional course options may be available.

## Climate and Energy

- ATOC 3300/GEOG 3301 Analysis of Climate and Weather Observations—3
- ATOC 3500 Air Chemistry and Pollution—3
- ATOC 4215 Descriptive Physical Oceanography—3
- ATOC 4700 Special Topics: Weather Analysis and Forecasting—1-3
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics—3
- ATOC 4750 Desert Meteorology and Climate—3
- ENVS/PHYS 3070 Energy and the Environment—3
- ENVS /GEOG 3520 Environmental Issues in Geosciences—3
- ENVS 3621 Energy Policy and Society—3
- ENVS 4100 Topics in Environmental Policy: Energy Policy—3
- ENVS 4800 Policy and Climate—3
- ENVS/GEOG 4201 Biometeorology—3
- GEOG 4271 The Arctic Climate System—3
- GEOL 3040 Global Change: The Recent Geological Record—3
- GEOL 4060 Oceanography—4

## Natural Resources and the Environment

- CVEN 4404 Water Chemistry—3
- CVEN 4414 Water Chemistry Laboratory—1
- EBIO/ENVS 3040 Conservation Biology—4
- EBIO 3190 Tropical Marine Ecology—3
- EBIO 3270 Ecostream Ecology—3
- EBIO 4020 Stream Biology—3
- EBIO 4030 Limnology—3
- EBIO 4060 Landscape Ecology—3
- EBIO/ENVS/GEOL 4160 Introduction to Biogeochemistry—3
- EBIO 4460 Fish Ecology—1-5
- ENVD 4023 Environmental Impact Assessment—3
- ENVS/PHYS 3070 Energy and the Environment—3
- ENVS 4120 Food and the Environment—3
- GEOG 3053 Cartography: Visualization and Information Design—4
- GEOG 3251 Mountain Geography—3
- GEOG 3351 Biogeography—3
- GEOG 4120 Glaciers and Permafrost—1-3
- GEOG 4321 Snow Hydrology—3-4
- GEOG 4501 Water Resources and Water Management of Western U.S.—3
- GEOG/GEOL 4093 Remote Sensing of the Environment—4
- GEOG/GEOL 4241 Principles of Geomorphology—4
- GEOG 4371 Forest Geography: Principles and Dynamics—3
- GEOL 3030 Introduction to Hydrogeology—3
- GEOL 3320 Introduction to Geochemistry—3
- GEOL 4060 Oceanography—4

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## Sustainable Development

- ANTH 4020 Explorations in Anthropology: Conservation and Indigenous Peoples
- ECON 3403 International Economics and Policy—3
- ECON 3784 Economic Development and Policy—3
- ENVS 4100 Agriculture and the Environment—3
- ENVS 4800 Sustainable Development—3
- GEOG 3402 Natural Hazards—3
- GEOG 3682 Geography of International Development—3
- GEOG 3812 Mexico, Central America, and the Caribbean—3
- GEOG 3822 Geography of China—3
- GEOG 3862 Geography of Africa—3
- GEOG 4632 Development of Geography—3
- GEOG 4712 Political Geography—3
- GEOG 4732 Population Geography—3
- GEOG 4852 Health and Medical Geography—3
- HIST 4417 Environmental History of North America—3
- PHIL 2140 Environmental Justice—3
- PSCI 3206 The Environment and Public Policy—3
- PSCI 4012 Global Development—3
- SOCY 3002 Population and Society—3

## *Graduating in Four Years*

Consult the [Four-Year Guarantee Requirements](#) for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in environmental studies, students should meet the following requirements:

- Begin the common curriculum in the freshman year.
- Declare environmental studies as the major by the beginning of the second semester.
- Students must consult with a major advisor to determine adequate progress toward completion of major requirements.

## *Graduate Degree Program(s)*

### Graduate Study in Environmental Studies

Opportunities for interdisciplinary graduate studies and original research, leading to the MS and PhD degrees, are available with a variety of emphases, including water sciences, environmental policy and sustainability, energy, environmental social sciences, and biogeosciences. Particular programs of study are limited only by course offerings and faculty expertise.

The graduate program in environmental studies is undergoing revision. Students should consult the website at [envs.colorado.edu/grad\\_program](https://envs.colorado.edu/grad_program) for updated information.

## Master's Degree

Candidates for the master's degree in environmental studies must complete at least 36 credit hours of graduate course work. Both thesis (Plan I) and non-thesis (Plan II) options are available. Plan I requires that the student write and successfully defend a thesis for 6 research credits. Students who opt for Plan II must complete a 2-credit internship as part of their program. Additional information can

be found at [envs.colorado.edu/grad\\_program/C22/Masters/](https://envs.colorado.edu/grad_program/C22/Masters/).

## Doctoral Degree

The PhD degree is a research degree, involving the production of a major piece of original research (the dissertation). Candidates for the doctoral degree must complete at least 42 degree-hours from a list of approved ENVS core and elective courses. In addition, 30 semester hours of dissertation credit must be taken. Students are expected to form an advisory committee of five faculty members (including one from outside ENVS) soon after beginning their studies. This committee helps the student in designing a research program and in making choices concerning course work. The PhD comprehensive exam is administered by the student dissertation committee and must be taken within the first five semesters of degree work. It consists of a written research proposal on the dissertation topic, a formal presentation summarizing the student research progress, and an oral examination centered on the student research. Upon the student completion of the dissertation, a final examination is administered by the dissertation committee.

Additional information may be found at [envs.colorado.edu/grad\\_program/C23/PhD](https://envs.colorado.edu/grad_program/C23/PhD).

## *Dual Degree Programs*

### MS/MBA

This is a dual degree program offered in conjunction with the Leeds School of Business. It requires 36 hours of graduate work in environmental studies and 43 hours of MBA course work (with 12 hours of environmental studies course work applying toward the required 55 credits for the MBA). The MBA program will be considered the student's primary program. Additional information is available at [envs.colorado.edu/grad\\_program/C55/ENVS-Business](https://envs.colorado.edu/grad_program/C55/ENVS-Business).

### MS/JD or PhD/JD

This is a dual degree program offered in conjunction with the Law School. The Law School will grant credit for acceptable performance in graduate-level environmental studies courses toward the JD degree for up to 9 (for MS students) or 12 (for PhD students) credit hours of the required 89 credits for the JD degree. Environmental studies will grant up to 9 (for MS students) or 12 (for PhD students) credit hours of acceptable performance in law courses. The JD program will be considered the student's primary program. Additional information is available at [envs.colorado.edu/grad\\_program/C54/ENVS-law](https://envs.colorado.edu/grad_program/C54/ENVS-law).

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# Ethnic Studies

The ethnic studies major was created to initiate and promote interdisciplinary research and teaching in Africana studies, American Indian Studies, Asian American studies, Chicana and Chicano studies, American studies, and cross cultural/comparative studies.

The discipline of ethnic studies comprises a series of distinct approaches and theoretical analyses of the historical, political, social, and cultural forces and phenomena that have shaped the development of America's diverse racial and ethnic peoples. This approach begins with an overview and understanding of these group experiences prior to the time of the European invasion, and continues with a subsequent and primary analysis of the impact that race and ethnicity has had in America during the past 500 years.

The ethnic studies major provides a broad liberal arts education to all students. It imparts fundamental skills in critical thinking, comparative analysis, and oral and written expression. The major provides appropriate training especially for those considering admission to graduate or professional schools and careers in education, law, medicine, public health, school work, journalism, business, urban planning, politics, counseling, international relations, creative writing, as well as university teaching and research.

The Department of Ethnic Studies has a core faculty of its own, but also draws on the faculty resources of many departments in the College of Arts and Sciences, as well as the College of Architecture and Planning, the School of Education, the School of Journalism and Mass Communication, the School of Law, the College of Music, and University Libraries.

## *Study Abroad*

The Department of Ethnic Studies encourages students to participate in the study abroad programs offered through the Office of International Education. These programs give students a deeper understanding of culture and attitudes of people of color in other parts of the world and their carryover into the United States. CU-Boulder partners with several study abroad organizations that offer summer, semester, and full year programs in many locations around the world, most notably in Africa, Asia, and Latin America. Programs of special interest include study abroad in Mexico, Dominican Republic, Peru, Bolivia, Ecuador, Ghana, Morocco, Spain, Taiwan, Japan, Australia, and South Africa.

For additional information, contact the Office of International Education. Students should always consult with their academic advisor prior to choosing their study abroad program.

Course code for this program is ETHN.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Ethnic Studies

In addition to the general requirements of the College of Arts and Sciences, students must complete 33 credit hours of ethnic studies requirements: 12 hours of required ethnic studies core classes and

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an additional 21 credit hours in ethnic studies, 15 hours of which must be upper division for a total of 24 upper-division credits in the major (required courses mentioned below are included). The 21 credit hours in ethnic studies can be selected from the current ethnic studies course offerings; they may include courses that are cross-listed with the Department of Ethnic Studies, as listed in this catalog.

A grade of C- or better must be received in all courses used to satisfy the major requirements, with an overall average of 2.00 in the major. No more than 6 credit hours may be taken in independent study. No *pass/fail* graded courses may satisfy the 33-semester-hour minimum requirement.

### **Required Courses and Semester Credit Hours**

- ETHN 2001 Foundations of Ethnic Studies—3
- ETHN 3501 Theory, Writing, and Methods in Ethnic Studies—3
- ETHN 4951 Senior Seminar in Ethnic Studies—3
- ETHN topic. Select one: ETHN 3101, 3102, 3103, 3105, or 3106—3

### **Graduating in Four Years**

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in ethnic studies, students should meet the following requirements:

- Declare ethnic studies as their major.
- Complete at least 12 credit hours toward the ethnic studies major requirements by the fourth semester.
- Complete at least 21 credit hours toward the ethnic studies major requirements by the end of the sixth semester.
- Complete ETHN 4511 Research Practicum in Ethnic Studies no later than the seventh semester.
- Complete ETHN 3501 Theory, Writing, and Methods in Ethnic Studies not later than the seventh semester.
- Complete at least one ethnic studies selected topics course selected from the following: ETHN 3101, 3102, 3103, 3105, or 3106 no later than the eighth semester.
- Complete ETHN 4951 Senior Seminar in Ethnic Studies no later than the eighth semester.

### **Minor Program**

A minor is offered in ethnic studies. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. To obtain the ethnic studies minor, students must:

- Declare a minor in ethnic studies
- Complete 18 credits hours in ethnic studies course work; requirements include the following:  
Complete ETHN 2001 Foundations of Ethnic Studies (3 credit hours)  
Complete 15 credit hours from elective courses in the Department of Ethnic Studies. Nine credit hours of the elective courses must be at the upper-division (3000-4000) level

The minor emphasizes critical thinking, the construction of grounded social theory, data gathering, and comparative analysis. The minor also fosters developmental, experiential learning of appropriate skills in research design and implementation. A principal focus of the curriculum is the recognition and incorporation of multicultural definitions and values that can become part of the university’s mission.

### **Graduate Degree Program(s)**

- > Classics
- > Cognitive Science Studies
- > Communication
- > Comparative Literature Graduate Program
- > Distributed Studies Program
- > Ecology and Evolutionary Biology
- > Economics
- > English
- > Environmental Studies
- > **Ethnic Studies**
- > Film Studies
- > French and Italian
- > Geography
- > Geological Sciences
- Germanic and Slavic
- > Languages and Literatures
- > History
- > Humanities
- > Integrative Physiology
- > International Affairs
- > INVST Community Studies
- > Jewish Studies
- Lesbian, Gay, Bisexual,
- > Transgender, and Queer Studies
- > Linguistics
- > Mathematics
- > Medieval and Early Modern Studies

## *Ethnic Studies Faculty Involvement in Graduate Studies*

Faculty actively work to recruit African American, American Indian, Asian American, and Chicana/o students for graduate studies at the CU-Boulder, with special attention given to students who are interested in carrying out theses and/or dissertations that involve substantive and theoretical work revolving around the broad topic of “ethnicity, race, and gender in America.” Faculty are further committed to the intellectual mentorship of such students, which might include instruction in graduate courses, directed reading courses, service on students’ MA or PhD committees, as well as helping to prepare graduate students for their qualifying examinations. An important dimension of this commitment includes attention to the step-by-step progress of these graduate students through their academic course work and research agendas.

Ethnic studies faculty will also recruit and employ whenever possible such students as graders and teaching assistants in large undergraduate courses, with the intention of providing experience in all aspects of classroom instruction, including syllabus design, design of assignments, grading, and issues of pedagogy vis-à-vis course content.

Ethnic studies faculty will mentor such graduate students in the area of writing for publication, and seek to facilitate publication opportunities in journals focusing on “ethnicity, race, and gender.” After successful completion of graduate studies, faculty will assist graduates with their employment goals.

In sum, by making an active commitment in each of these areas, ethnic studies faculty assume a responsible, proactive role in ensuring a greater diversity in the graduate programs at the University of Colorado.

## *Certificate Program*

### Graduate Certificate in Comparative Ethnic Studies (GCCES)

In order to enhance the Graduate School training for enrolled graduate students at the University of Colorado Boulder, the Department of Ethnic Studies (DES) has been approved to offer a 12-credit Graduate Certificate in Comparative Ethnic Studies (GCCES). The purpose of the certificate is to provide specialized training opportunities in race/ethnicity and gender studies, research and interdisciplinary training in Africana studies, American Indian studies, Asian American studies, Chicana/o-Latina/o studies, decolonial feminist studies, comparative ethnic studies, race and sexuality studies, and transnational/ hemispheric ethnic studies to students pursuing degrees in various disciplines on campus. The certificate is the initial phase of graduate study within the department and signals the forthcoming Department of Ethnic Studies PhD program in comparative ethnic studies. This doctoral degree is pending approval from the president and the Board of Regents.

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# Film Studies

The Film Studies Program educates students in the history and development of film as an art form and contemporary medium. The curriculum instills an informed analytic awareness of the ways in which film has been used and provides the resources for significant creative exploration of the medium.

The undergraduate degrees in film studies emphasize knowledge and awareness of:

- the major artistic contributions to the evolution of film, from the advent of the moving image to the present;
- the general outlines of world film from the silent period to the present, with emphasis on the historical contributions of major national cinemas; and
- film criticism and film theory.

Students completing either the BA or the BFA degree in film studies are expected to acquire the ability and skills to:

- analyze and interpret films critically;
- communicate such interpretations competently in essay form; and
- make a short creative film or video work (BFA majors only).

NOTE: Admission to any class after the third meeting of the class is contingent on professor permission. The department may drop a student from a class if the student misses the first two classes of the semester.

Course code for this program is FILM.

## *Bachelor's Degree Program(s)*

### Bachelor of Arts in Film Studies

No more than 6 hours of independent study may be credited toward the major. Students must complete the required film courses with a grade of C or better. The arts and sciences 18-hour minimum of upper-division hours must be met with CU film studies courses.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. The Film Studies Program requires a minimum of 38 hours in support of the BA requirements, including film courses and courses taken in other departments.

The Film Studies Program strongly urges the purchase of film and sound media-capable Apple computing systems for those pursuing production classes in the BA degree program (see [www.colorado.edu/FilmStudies](http://www.colorado.edu/FilmStudies)).

#### *Required Courses and Semester Credit Hours*

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## Literature and the Arts Requirement

In addition to the 6-hour literature and the arts core requirement, Film Studies majors must take an additional 6 hours (3 of them upper-division) of literature and the arts core courses to satisfy the degree requirements. Students taking the HUMN 1010/1020 sequence are exempted from the 3-hour upper-division requirement.

## Required Critical Studies Courses

- FILM 1502 Introduction to Film Studies (Note 1)—3
- FILM 3051 and 3061 Film History 1 and 2 (Note 2)—8
- FILM 3104 Film Theory and Criticism—3

## Critical Studies Elective Requirements

BA students must complete 18 hours from the following courses. At least 12 must be upper division.

- FILM 2002 Recent International Cinema—3
- FILM 2003 Film Topics (Note 3)—3
- FILM 2005 Movies and Screenplays—3
- FILM 2013 Film and the Quest for Truth—3
- FILM 2312 Film Trilogies—3
- FILM 2412 Melodrama and Culture—3
- FILM 2513 Major Asian Filmmakers—3
- FILM 2521 Classics of the Foreign Film: 1960s to the present—3
- FILM 2613 Good/Evil through Film—3
- FILM 3002 Major Film Movements (Note 3)—3
- FILM 3003 Major Film Directors (Note 3)—3
- FILM 3004 Films of Alfred Hitchcock—3
- FILM 3005 Issues in Film Comedy—3
- FILM 3012 Documentary Film—3
- FILM 3013 Women and Film—3
- FILM 3022 Jung, Film, and Literature—3
- FILM 3023 Stage Drama into Film: O'Neill and Williams—3
- FILM 3032 Stage Tragedy and Film—3
- FILM 3033 Color and Cinema—3
- FILM 3042 Horror Film—3
- FILM 3043 Topics in Film Critical Studies (Note 3)—3
- FILM 3081 American Film in the 1980s and 1990s—3
- FILM 3091 Post-War American Film/Culture/Politics—3
- FILM 3191 The Golden Age—3
- FILM 3211 History of Russian Cinema—3
- FILM 3301 Contemporary Issues in Russian Film—3
- FILM 3422 Genre: Hollywood Musical—3
- FILM 3503 German Film Through WWII—3
- FILM 3504 Topics in German Film—3
- FILM 3513 German Film After WWII—3
- FILM 3514 German Film and Society after 1989—3

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> [Lesbian, Gay, Bisexual, Transgender, and Queer Studies](#)

> [Linguistics](#)

> [Mathematics](#)

> [Medieval and Early Modern Studies](#)

- FILM 3603 Sound and Vision—3
- FILM 3901 Independent Study (Note 4)—1-6
- FILM 3940 Film Studies Internship—1-6
- FILM 4001 Screening Race, Class, and Gender in the U.S. and the Global Borderland—3
- FILM 4003 Film and Fiction—3
- FILM 4004 Topics in Film Theory (Note 3)—3
- FILM 4013 Film, Photography, and Modernism 3
- FILM 4023 Topics in International Cinema (Note 3)—3
- FILM 4024 Advanced Research Seminar (Note 3)—3
- FILM 4043 Topics in Film Studies: Critical Studies (Note 3)—1-3
- FILM 4105 Advanced Screenwriting—3
- FILM 4135 Art and Psychoanalysis—3
- FILM 4453 Elective Affinities: Avant-garde Film and the Arts—3
- FILM 4604 Colloquium in Film Aesthetics—3
- Any FILM class crosslisted with another department (i.e., foreign language) that has been approved by the film studies chair—3

### Production Electives (not required)

Some production electives may be taken for BA credit; please see advisor for specific courses.

### Curriculum Notes

1. This course is a prerequisite for FILM 2000 and 3051.
2. Must be taken in chronological order. FILM 1502 is a prerequisite.
3. Course may be taken for credit more than once, provided that the topics vary.
4. Total number of independent study credit hours cannot exceed 6.

### *Graduating in Four Years with a BA*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BA in film studies, students should meet the following requirements:

- Declare a film studies major by the beginning of the second semester
- Complete the lower- or upper-division literature and the arts requirement (3 credit hours) and FILM 1502 (3 credit hours) by the end of the fourth semester.
- Complete the upper-division literature and the arts requirement (3 credit hours) and FILM 3051 and 3061 by the end of the sixth semester.
- Complete 6 critical studies elective credit hours by the end of the seventh semester (at least 3 of these credits must be upper-division credits).
- Complete an additional 12 credit hours of critical studies elective courses, including at least three upper-division courses (9 credit hours), and FILM 3104 (3 credits) by the eighth semester.

## Bachelor of Fine Arts in Film Studies

### *Admission to the BFA Program*

Students are encouraged to consult with the Film Studies advisor in order to obtain advice and current information.

### New Admission Requirements for Students Matriculating in Fall 2012

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

> [Philosophy](#)

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> [Psychology and Neuroscience](#)

> [Religious Studies](#)

> [Scandinavian \(now Nordic Studies\)](#)

> [Sociology](#)

> [Spanish and Portuguese](#)

> [Speech, Language, and Hearing Sciences](#)

> [Theatre and Dance](#)

> [Western American Studies](#)

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> [Writing and Rhetoric, Program for](#)

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The BFA degree is competitive. In order to graduate with a BFA degree, students must first satisfy a number of prerequisites and then submit a formal application to the BFA program at the prescribed time (deadline will be posted each semester on the film studies website). In particular, applicants must have a cumulative GPA at CU-Boulder of 2.750 or higher and have passed FILM 1502, 2000 (or 2300), and 2500 each with a grade of C or higher, with a mean GPA in all three courses of at least 3.400. Applicants must submit a written application, a writing sample, and the FILM 2500 assignment (see FILM 2500 instructions for details). Applicants may also submit one additional “best” example of creative work (see specific admission guidelines for details). Admission into the BFA program and registration for FILM 3400, 4500, and other upper-division production courses are contingent upon approval of the application materials by the BFA committee. Students may only apply twice to the BFA program; complete details on the BFA application procedure are available on the film studies website. Students are required to attend a BFA orientation meeting prior to the semester in which they enroll in FILM 3400. The program recommends that BFA students purchase film and sound media-capable Apple computing systems (see [www.colorado.edu/FilmStudies](http://www.colorado.edu/FilmStudies)). BFA students are required to pass FILM 3400, 3515, and 3525 before they will be allowed to continue in the major.

No more than 6 hours of independent study may be credited toward the major. Students must complete the required film courses with a grade of C or better.

Students must complete the general requirements of the College of Arts and Sciences as well as the required courses listed below. The Film Studies Program requires a minimum of 46 hours in support of the BFA degree requirements.

### ***Required Courses and Semester Credit Hours***

#### **Literature and the Arts Requirement**

In addition to the 6-hour literature and the arts core requirement, Film Studies majors must take an additional 6 hours (3 of them upper division) of literature and the arts core courses to satisfy the degree requirements. Students taking the HUMN 1010/1020 sequence are exempted from the 3-hour upper-division requirement.

#### **Required Critical Studies Courses**

- FILM 1502 Introduction to Film Studies (Note 1)—3
- FILM 3051 and 3061: Film History 1 and 2 (Note 2)—8

#### **Required Production Courses**

- FILM 2000 or 2300 Beginning/Intermediate Filmmaking (Note 3)—3
- FILM 2500 Introduction to Cinematography—3
- FILM 3400 Cinema Production 1—3
- FILM 3515 Camera Workshop—1
- FILM 3525 Editing Workshop—1
- FILM 4500 Cinema Production 2 (Note 4)—3

#### **Production Course Electives**

BFA students must take 9 hours of any combination of the following courses:

- FILM 2010 Moving Image Computer Foundations—3
- FILM 2105 Intro to the Screenplay—3
- FILM 2610 Animation Production—3

> [Journalism & Mass  
Communication Program](#)

> [Law](#)

> [Music](#)

> [Other Academic Programs](#)

- FILM 2900 Lighting Workshop—3
- FILM 3010 Film Production Topics—3
- FILM 3030 Cinema Alternative Process—3
- FILM 3501 Film Production Management or FILM 3563 Producing the Feature Film (Both are usually offered through Continuing Education; only one may count toward the film studies degree.)—3
- FILM 3563 Producing the Film—3
- FILM 3600 Digital Post-production Process—3
- FILM 3620 Experimental Digital Animation—3
- FILM 3700 Digital Audio Design—3
- FILM 3900 Production Independent Study (Note 5)—1-6
- FILM 3920 Professional Seminar—3
- FILM 3940 Internship—1-2
- FILM 4000 Advanced Digital Post-production—3
- FILM 4005 Screenwriting: Short Form—3
- FILM 4010 Topics in Film Studies: Production (Note 4)—1-3
- FILM 4021 Directing/Acting for the Camera—3
- FILM 4030 Visiting Filmmakers Seminar (Note 3)—3
- FILM 4075 Scriptwriting Workshop—3
- FILM 4105 Advanced Screenwriting—3
- FILM 4240 Beginning Video Production—3
- FILM 4340 Intermediate Video Production—3
- FILM 4440 Advanced Video Production—3
- FILM 4500 Cinema Production 2 (taken a second time)—3
- FILM 4505 Screenwriting: Long Form—3
- FILM 4600 Creative Digital Cinematography (Note 4)—3

### **Curriculum Notes**

1. This course is a prerequisite for FILM 2000 and 3051
2. Must be taken in chronological order.
3. Either FILM 2000 or 2300 may be taken for degree credit. Only one of the two courses may be counted toward the BFA degree. FILM 2300 is offered summer session only.
4. Course may be taken for credit more than once.
5. Total number of independent study credit hours cannot exceed 6, and they cannot be used to duplicate regular course offerings.
6. Course may be taken for credit more than once, provided the topics vary.

### **Critical Studies Elective Requirements**

BFA students must complete 6 hours.

- FILM 2002 Recent International Cinema—3
- FILM 2003 Film Topics (Note 3)—3
- FILM 2005 Movies and Screenplays—3
- FILM 2013 Film and the Quest for Truth—3
- FILM 2312 Film Trilogies—3
- FILM 2412 Melodrama and Culture—3
- FILM 2513 Major Asian Filmmakers—3
- FILM 2521 Classics of the Foreign Film: 1960s to the present—3

- FILM 2613 Good/Evil through Film—3
- FILM 3002 Major Film Movements (Note 3)—3
- FILM 3003 Major Film Directors (Note 3)—3
- FILM 3004 Films of Alfred Hitchcock—3
- FILM 3005 Issues in Film Comedy—3
- FILM 3012 Documentary Film—3
- FILM 3013 Women and Film—3
- FILM 3022 Jung, Film, and Literature—3
- FILM 3023 Stage Drama into Film: O'Neill and Williams—3
- FILM 3032 Stage Tragedy and Film—3
- FILM 3033 Color and Cinema—3
- FILM 3042 Horror Film—3
- FILM 3043 Topics in Film Critical Studies (Note 3)—3
- FILM 3081 American Film in the 1980s and 1990s—3
- FILM 3091 Post-War American Film/Culture/Politics—3
- FILM 3104 Film Theory and Criticism—3
- FILM 3191 The Golden Age—3
- FILM 3211 History of Russian Cinema—3
- FILM 3301 Contemporary Issues in Russian Film—3
- FILM 3422 Genre: Hollywood Musical—3
- FILM 3503 German Film Through WWII—3
- FILM 3504 Topics in German Film—3
- FILM 3513 German Film After WWII—3
- FILM 3514 German Film and Society after 1989—3
- FILM 3603 Sound and Vision—3
- FILM 3901 Independent Study (Note 4)—1-6
- FILM 3940 Film Studies Internship—1-6
- FILM 4001 Screening Race, Class, and Gender in the U.S. and the Global Borderland—3
- FILM 4003 Film and Fiction—3
- FILM 4004 Topics in Film Theory (Notes 3)—3
- FILM 4013 Film, Photography, and Modernism—3
- FILM 4023 Topics in International Cinema 3 (Note 3)—3
- FILM 4024 Advanced Research Seminar (Note 3) 3
- FILM 4043 Topics in Film Studies: Critical Studies (Note 3)—3
- FILM 4105 Advanced Screenwriting—1-3
- FILM 4135 Art and Psychoanalysis—3
- FILM 4453 Elective Affinities: Avant-garde Film and the Arts—3
- FILM 4604 Colloquium in Film Aesthetics—3
- Any FILM class crosslisted with another department (i.e., foreign language) that has been approved by the film studies chair—3

### **Curriculum Notes**

1. This course is a prerequisite for FILM 2000 and 3051.
2. Must be taken in chronological order. FILM 1502 is a prerequisite.
3. Course may be taken for credit more than once, provided that the topics vary.
4. Total number of independent study credit hours cannot exceed 6.

*Graduating in Four Years with a BFA*

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Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BFA in film studies, students should meet the following requirements:

- Declare and start the film studies major the first semester freshman year.
- Complete FILM 1502 (3 credit hours), FILM 2000 (3 credit hours), and one lower- or upper-division critical studies course for 3 credits by the end of the third semester.
- Complete the Literature and the Arts lower- or upper-division requirement (3 credit hours), and FILM 2500 (3 credit hours) by the end of the fourth semester.
- Note: In order to graduate in four years, a student must be accepted into the BFA program on the first application. See “Admission to the BFA Program” for details of the application process.
- Complete 3 credit hours of upper-division Literature and the Arts requirement (3 credit hours) and FILM 3051 and FILM 3061 (8 credit hours) by the end of the fifth semester.
- Complete FILM 3400 (3 credit hours), 3515 (1 credit hour), 3525 (1 credit hour), and an additional 3 credit hours of upper-division critical studies elective requirements by the end of the sixth semester.
- Complete two courses (6 credit hours) of production electives by the end of the seventh semester.
- Complete 3 credit hours of FILM 4500 and 3 more credit hours of production electives by the end of the eighth semester.

## *Concurrent Bachelor's/Master's Program*

### **Bachelor of Arts/Master of Arts (BAMA)**

**Overview.** The film studies/art and art history bachelor of arts/master of arts critical studies degree gives highly-motivated BA students the opportunity to earn an MA degree using an accelerated undergraduate program in combination with a fifth year of study.

**Program Description.** The BA/MA degree in film studies (FS) is a critical studies track under the auspices of the Art and Art History (AAH) MA program. This collaboration between AAH and FS is an extension of our common interests in visual art and grows from our current shared MFA in filmmaking. The film studies tenured and tenured track faculty also has graduate faculty standing within art and art history.

The FS/AAH BA/MA track prepares students for professional careers in teaching and criticism, from the perspective of innovative critical approaches and in preparation for a PhD track at another university. The aim of the BA/MA film program is to aid in the advancement of the scholarly understanding of film art, with emphasis on theoretical and research approaches and their role in academia. The BA/MA will, therefore, prepare its graduates to assume the responsibilities of the academic study of cinema as one of the fine arts and to pursue careers in teaching, research, curating, and the overall advancement of the study of cinema as art.

The program offers studies leading to the MA in the areas of film criticism and theory. Advanced students are encouraged to explore interdisciplinary approaches as well as to enhance their program of study with cognate courses in other departments such as history, comparative literature, anthropology, English, women’s studies, ethnic studies, Spanish and Portuguese, French and Italian, Germanic and Slavic languages and literatures, and others. Film studies offers a broad selection of seminar topics on their current faculty research interests and in response to student demand. The Visiting Film Artist program brings additional distinguished, innovative film and video artists and critics to campus and students are encouraged to register for their seminars.

### **Admission to the Program**

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- Admission to the program occurs during the second semester of the junior year. Applicants should have a cumulative GPA of 3.00 and have completed all MAPS deficiencies.
  - Only currently enrolled CU-Boulder students may be considered for admission to the program. Transfer students must complete at least 24 credit hours as degree-seeking students before applying to the program. The BA/MA degree is limited to film BA (critical studies) students. By definition BFA (production) students do not have the BA/MA option.
  - Students who are admitted to the concurrent degree program may not pursue a double degree or double major of any other kind.
  - Applicants to the BA/MA program must complete the application process no later than the first Friday of October during their junior year. Prior to applying, they should have completed FILM 1502, 3051, and 3061 (for recommended sequence, see [www.colorado.edu/FilmStudies/degrees/bama/reqs.htm](http://www.colorado.edu/FilmStudies/degrees/bama/reqs.htm)).

The application form can be downloaded from [www.colorado.edu/GraduateSchool/GSForms/ConcurrentForms/Concurrentapplication.pdf](http://www.colorado.edu/GraduateSchool/GSForms/ConcurrentForms/Concurrentapplication.pdf). Note: Applicants should specify on the form that they are applying for the spring term, BA/MA degree, major codes AS-FLM2 and GR-ART2.

For more information visit [www.colorado.edu/FilmStudies/degrees/bama/index.shtml](http://www.colorado.edu/FilmStudies/degrees/bama/index.shtml).

## *Graduate Degree Program(s)*

### Master of Fine Arts in Film

The Graduate MFA degree in film studies is a filmmaking track integrated into the Art and Art History MFA program in much the same way as the tracks in painting and drawing, ceramics, sculpture, media arts, the IAP, and printmaking. The filmmaking track prepares students for professional artistic careers in filmmaking from the perspective of innovative image making. The aim of the MFA film program is to aid in the advancement of the practice and understanding of art, with emphasis on the moving image and its role in this advancement. The MFA will, therefore, prepare graduates to assume creative leadership roles in filmmaking.

The interdisciplinary nature of the MFA program allows graduate students to work in various areas, in addition to their area of specialization. The MFA guidelines include a second area of the student's choice as a requirement. The thesis project is two-fold, involving 1.) the student's creative work (e.g., a film), displayed at the MFA exhibition, and 2.) a written thesis that eventually goes to the library.

See the Art and Art History section for descriptions of the MFA ARTF courses.

**Prerequisites.** The following are required for admission to the graduate program:

- Bachelor's degree from an approved college or school of art with a minimum grade point average of 2.75.
- Minimum of 34 credit hours of acceptable work in art; 12 credits in fine arts history is preferred.
- Submission of films and other examples representing creative work or electronic media. Students should submit a portfolio of creative work to include video and/or audio tapes, film, etc., as appropriate (especially for documentation of performance and/or installations) for screening by the electronic media committee for presentation to the full graduate faculty.

**Degree Requirements.** Effective fall 2008, the MFA program is a two-and-a-half year program. The degree requires a minimum of 54 credit hours of course work, of which 36 must be taken in residence on the Boulder campus, with the following requirements:

#### *Required Courses and Semester Credit Hours*

- Home studio (major area)—min. 12
- Electives (studio and non-studio; up to 6 credits may be taken in an allied field, at the 3000 level and above)—21
- Art history and theory—9
- Visiting artist seminar—3
- Graduate art seminar—3
- Thesis—6
- For the Film Track MFA students: ARTF 5030 Visiting Filmmakers Seminar is allowed as a substitute for ARTS 5118 Visiting Artist Seminar; ARTF Critical Studies courses are allowed as alternates to fulfill 3 hours of the art history requirement.

See the art and art history department section of this catalog and [www.colorado.edu/FineArts/mfa/mfa\\_degree.html](http://www.colorado.edu/FineArts/mfa/mfa_degree.html) for more information on requirements.

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# French and Italian

## French

Beyond providing mastery of the language skills (listening, speaking, reading, writing) of modern French needed for all purposes of daily life, the major introduces students to a central tradition of western and world culture. Since the Middle Ages, French literature, thought, taste, and art have helped shape the essential experience and self-understanding of humanity at large. Survey courses and upper-division seminars offer a range of exposures to the French cultural past and the far-flung ethnic and national diversity of the French-speaking present. The major explores distinctively French contributions to world culture, such as Arthurian romance, troubadour poetry, and Gothic architecture; the love sonnets of the Pléiade, the comic novels of Rabelais, and the essays of Montaigne; the neoclassical theatre of Corneille, Molière, and Racine and the critical philosophy of Descartes and Pascal; the Enlightenment philosophies of Voltaire, Diderot, and Rousseau; the psychological refinements of French fiction from Mme de La Fayette to Proust; artistic revolutions like impressionism and surrealism; the renewal of artistic conventions in the Theatre of the Absurd, the New Novel, and the cinema of the New Wave; the French-language literature of Africa, Canada, and the Caribbean; and the vital presence of French writers in major movements of 20th century thought like existentialism, structuralism, feminism, psychoanalysis, and contemporary cultural studies and multiculturalism.

The undergraduate degree in French emphasizes knowledge and awareness of:

- the fundamental outlines of the history of French literature from the Middle Ages to the present;
- significant works of French literature and the literary culture of the French-speaking world;
- the historical context in which particular works were written and the relation between literature and other forms of cultural expression (e.g., art, philosophy, politics, religion);
- contemporary French culture, politics, and current events;
- a range of literary genres, their development and reception, and relevant critical methodologies; and
- the grammatical structure of modern standard French.

In addition, students completing the degree in French are expected to acquire the ability and skills to:

- speak and understand modern, spoken standard French sufficient for all purposes of daily life and for intellectual discussion in academic settings;
- read and write modern standard French with sufficient fluency and correctness for successful literary or linguistic analysis of French texts;
- analyze and interpret literary texts in terms of style, plot, structure, characters, themes, and the use of literary devices;
- communicate such analyses and interpretations simply in French or at a more sophisticated level in English, and discuss a wide range of topics concerning French culture, civilization, and current events; and

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follow with reasonable comprehension French broadcasts or film.

## Italian

The major provides the language skills (listening, speaking, reading, writing) of modern Italian needed for all purposes of daily life. Moreover, by combining courses offered by the faculty of the Department of French and Italian with courses of Italian interest taught in other units, including film studies, fine arts, and history, the program promotes an understanding of the role of the Italian literary and cultural tradition within western civilization at large. As the birthplace of Dante, Petrarca, Boccaccio, Ariosto, Tasso, Marino, Michelangelo, Raphael, and Da Vinci, Italy is the cradle of the Renaissance. Italy projects a powerful, formative influence into our own day through the work of 19th- and 20th century writers like Leopardi, Manzoni, Pirandello, Levi, and Calvino; operatic composers like Rossini, Puccini, and Verdi; philosophers and critics like Croce, d'Annunzio, Gramsci, and Ginzburg; and filmmakers like Fellini, Pasolini, and Bertolucci. Thus, in addition to supplying the necessary background for advanced professional study and specialization, the Italian major introduces students to a rich literary, artistic, and intellectual history at the roots of the modern world.

Students wishing to major in Italian are required to have a thorough advising session with the Italian program advisor. In this session the student program of study is outlined in detail. Students are required to see the advisor in the event that any of their major courses are canceled so that substitutions and revisions in their programs can be made. The department will not approve a major in Italian unless the student has been advised by the program advisor.

For courses in other departments with an Italian emphasis (e.g., comparative literature, fine arts, history, honors, etc.), see those sections.

The undergraduate degree in Italian emphasizes knowledge and awareness of:

- the fundamental outlines of the history of Italian literature from the Middle Ages to the present;
- significant works of Italian literature and the contribution to world literature of Italian letters;
- the historical context in which particular works were written;
- contemporary Italian culture, politics, and current events;
- a range of literary genres, their development and reception, and relevant critical methodologies; and
- the grammatical structure of modern standard Italian.

In addition, students completing the degree in Italian are expected to acquire the ability and skills to:

- speak and understand modern, spoken, standard Italian sufficient for all purposes of daily life and for intellectual discussion in academic settings;
- read and write modern standard Italian with sufficient fluency and correctness for successful literary or linguistic analysis of Italian texts;
- analyze and interpret literary texts in terms of style, plot structure, characters, themes, and the use of literary devices;
- communicate such analyses and interpretations simply in Italian or at a more sophisticated level in English, and discuss a wide range of topics concerning Italian culture, civilization, and current events; and
- follow with reasonable comprehension authentic Italian broadcasts or film.

Course codes for these programs are FREN and ITAL.

## *Bachelor's Degree Program(s)*

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> [Communication](#)

> [Comparative Literature Graduate Program](#)

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# Bachelor's Degree in French

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. Students wishing to pursue an Honors major should also consult the Honors requirements listed below.

Note: Students undertaking a major in French should expect to have regular conferences with a college advisor to ensure that they are making adequate progress and that requirements are being met in a timely way. The department will not certify majors for graduation when a failure to satisfy requirements is the fault of the student.

A minimum of 30 upper-division hours in French must be completed (see below for specific courses). FREN 2120 or its equivalent is the prerequisite for admission to courses required for the major.

## *Required Courses and Semester Credit Hours*

- FREN 3010 French Phonetics and Pronunciation—3
- FREN 3050, 3060 French Composition 1 and 2—6
- FREN 3100 Critical Reading and Writing in French Literature—3
- FREN 3110, 3120 Main Currents of French Literature 1 and 2—6
- Four or more other courses at the 3000 or 4000 level, of which 9 hours must be at the 4100 level or above (6 of which must be completed at CU).—12
- FREN 4990 Senior Seminar (including a senior essay and oral presentation, except where a student elects to present a senior honors thesis). Note: The seminar runs concurrently with one of the three courses taken at the 4100 level or above. See departmental brochure for details.—3

## *Honors Requirements*

Honors candidates must meet all of the regular requirements for the major plus the following:

- FREN 3200 Introduction to Literary Theory—3
- One semester of independent study. NOTE: The semester of independent study is taken concurrently with FREN 4980, and is devoted to one-on-one work on the senior honors thesis with a faculty advisor. See department for details—3

## *Graduating in Four Years with a BA in French*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in French, students should meet the following requirements:

- Declare French major by the beginning of the second semester of study.
- Complete FREN 3010, 3050, 3060, and 3100 by the end of the second (sophomore) year.
- Complete FREN 3110 and 3120 and two other 3000- or 4000-level courses (including one at the 4100 level or above) by the end of the third (junior) year.
- Note: Completion of French requirements includes the successful written and oral presentation of a senior essay or honors thesis by the end of the fourth (senior) year.

## *Minor Program in French*

A minor program is offered in French. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

- A total of 18 upper-division hours is required for the minor. All courses counted for the minor

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> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

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must be numbered 3000 or above. Courses taught by the department in English, do not, in general, apply to the minor, with the exception of FREN 3200.

- Prerequisite for admission to courses for the minor is completion of Level IV French, second-year college French (FREN 2120 at CU-Boulder), or equivalent.
- A maximum of 6 hours upper-division credit may be transferred from other universities or non-CU-Boulder study abroad programs. Courses taken on CU-Boulder study abroad programs are considered to be CU credit, and not subject to this limitation.
- All courses for minor credit must be taken for a grade. The only exception to this rule is course credit, which although taken for a grade, is recorded *pass/fail* on the student's transcript (this includes transfer credit from accredited universities and courses taken on CU study abroad programs).
- Students must earn a minimum grade of C- in all courses counted for the minor.

To declare a French minor, please go to <http://www.colorado.edu/aac/pas.html>.

## Bachelor's Degree in Italian

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. Thirty-six hours beyond the first year with a 2.00 (C) grade point average or better are required, as listed below.

### *Required Courses and Semester Credit Hours*

#### **Italian Lower-division—9**

- ITAL 2110 Intermediate Italian Reading, Grammar, and Composition 1
- ITAL 2120 Intermediate Italian Reading, Grammar, and Composition 2
- ITAL 2130 Introduction to Literary Analysis

#### **Italian 3000-level—12**

- ITAL 3015 Advanced Composition
- Choose one from the following three courses:  
ITAL 3025 Advanced Composition 2  
ITAL 3025 Storia Dell'Arte  
ITAL 3040 Italian Conversation through Cinema
- Choose two from the following three courses (prereq. ITAL 2130):  
ITAL 3140 Readings in Italian Literature: 20th Century  
ITAL 3150 Readings in Italian Literature: 19th Century  
ITAL 3160 Readings in Italian Literature: Medieval/Renaissance

#### **Italian 4000-level—9**

- Students must take at least three 4000-level courses in the Italian department, of which one will be ITAL 4990, the Senior Seminar. Before registering for ITAL 4990, students must meet with the Italian advisor

#### **Upper-division Electives—6**

- Electives may be chosen from courses outside the Department of French and Italian, the content of which is consistent with the goals of the Italian major, and always in consultation with the major advisor. It is recommended that students select courses in diverse disciplines and time periods.

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  - > [Other Academic Programs](#)

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## *Honors Requirements*

Honors candidates must meet all of the regular requirements for the major plus the following:

- FREN 3200 Introduction to Literary Theory. NOTE: FREN 3200 is taught in English and presupposes no knowledge of French.—3
- One semester of independent study. NOTE: The semester of independent study is taken concurrently with ITAL 4980, and is devoted to one-on-one work on the senior honors thesis with a faculty advisor. It does not run concurrently with required 4000-level courses. See departmental brochure for details.—3

## *Graduating in Four Years with a BA in Italian*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in Italian, students should meet the following requirements:

- Declare the Italian major by the beginning of the second semester of study.
- Complete 12 credit hours of requirements (including ITAL 2110 and 2120) by the end of the second (sophomore) year.
- Complete 12 of the remaining 24 credit hours by the end of the third (junior) year.
- Complete the remainder of the major requirements in the fourth (senior) year.

## *Minor Program in Italian*

A minor program is offered in Italian. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

- All courses must carry an ITAL prefix.
- Students may apply credits to the Italian minor which are earned through a CU-Boulder Study Abroad program in Italy. Specific course equivalencies must be determined by the Italian advisor.
- Students may apply a maximum of 9 transfer credit hours to the Italian minor, and a maximum of 6 hours at the upper-division level, from other study abroad programs of other accredited universities. Specific course equivalencies must be determined by the Italian advisor.
- Students may apply a maximum of 3 hours from Italian courses taught in English.
- Students must consult with the Italian advisor during each registration period and before a study abroad program.
- Students must maintain an overall and Italian grade point average of 2.000 (C). They must earn a grade of C- or higher in ALL courses required for the Italian minor and may not take minor requirement courses *pass/fail*.

To declare an Italian minor, go to <http://www.colorado.edu/aac/pas.html> and make an appointment with the Italian advisor, Janice Oldroyd.

### ***Required Courses and Semester Credit Hours***

A total of 18 hours beyond the first year level is to be earned for the minor, as follows:

#### **Lower-division—9**

- ITAL 2110 Intermediate Italian Reading, Grammar and Composition 1—3
- ITAL 2120 Intermediate Italian Reading, Grammar and Composition 2—3

- ITAL 2130 Introduction to Literary Analysis—3  
*NOTE: ITAL 2120 and 2130 may be taken concurrently, see Italian advisor.*

## Upper-Division—9

- ITAL 3015 Advanced Composition—3
- Choose one of the following courses (prereq. of ITAL 2130 must be met):
  - ITAL 3140 Readings in Italian Literature: 20th century—3
  - ITAL 3150 Readings in Italian Literature: 19th century—3
  - ITAL 3160 Readings in Italian Literature: Medieval/Renaissance—3
- Italian upper-division elective—3

## *Study Abroad*

CU-Boulder offers French study abroad programs in Annecy, Paris, Rennes, Strasbourg, and Toulouse, France. In addition, students may study in Quebec, Brussels, Geneva, and in the Francophone African nations of Cameroon, Madagascar, Mali, and Senegal. CU-Boulder offers Italian study abroad programs in Ferrara, Florence, and Perugia, Italy. Students may obtain course-credit equivalences for work done while abroad. For further information about study abroad programs, students may visit departmental advisors or the Office of International Education. CU-Boulder also supports a summer program in Italy that focuses on Italian history and culture in Rome. Credits earned on this program may be applied to the Italian major. Students may also take a summer film class in Rome and/or Paris (in alternate years). This class is taught in English. The Ayer Romance Language Scholarship is available for majors who plan to study abroad; it is awarded by the Department of French and Italian.

## *Concurrent Bachelor's/Master's Program*

### Concurrent BA/MA Program in French

The department also administers a concurrent undergraduate and graduate degree program in French, offering students the opportunity to graduate with a BA and an MA in French in five years. Students interested in this program should consult a college advisor and the associate chair for graduate studies for details. Students should also read the relevant guidelines available in the main department office.

## *Graduate Degree Program(s)*

### Graduate Study in French

Students wishing to pursue graduate work in French leading to candidacy for an advanced degree should read carefully Requirements for Advanced Degrees in the Graduate School section. A graduate teaching exchange at the University of Tours is available to students who have earned a master's degree.

## Master's Degree in French

**Prerequisites.** The following are prerequisite to graduate study in French: the ability to read, write, speak, and understand spoken standard French; general knowledge of French literature and civilization; and ability to read one language in addition to English and French. This last requirement may be fulfilled by passing a reading examination offered by the department. See department guidelines for the specific requirements for the MA in French.

## Doctoral Degree in French

**Prerequisites.** Doctoral candidates should possess excellence in reading, speaking, writing, and understanding spoken standard French; general knowledge of French literature and civilization; and knowledge of one language other than English and French (see below).

**Required Courses.** See department guidelines for PhD candidates.

**Language Requirement.** A sound reading knowledge of one modern language other than English and French is required. Such reading knowledge must be certified by the student passing a reading examination in the language. The examination normally consists of a timed translation of a literary text or a text dealing with literature (e.g., literary criticism). A dictionary is permitted. This language should be relevant to the student's academic program.

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# Geography

The Department of Geography offers theoretical and practical work in physical geography, including climatology, hydrology, geomorphology, and biogeography; conservation of natural resources, including environmental education; human geography, including urban, social, economic, political, cultural, and population geography; geographic information science (GIS), including spatial analysis using GIS, remote sensing, computer cartography, GIS and society, and geography education; and regional analysis, including mountains, natural hazards, and specific regional courses. To complement its curriculum, the department offers geography majors internship opportunities.

The Department of Geography offers BA, MA, and PhD degree programs in geography.

The undergraduate degree in geography emphasizes knowledge and awareness of:

- the unique contributions of the discipline to understanding the spatial components of problems and the diverse factors relating to human interaction with the environment;
- the spatial distributions of physical and human characteristics on the Earth surface, the general patterns these form, and the processes that have created and are changing these patterns;
- the major themes of geographical analysis, including absolute and relative location; human and physical characteristics of place; human and environmental relations; movement of people, ideas, and products; and regionalization; and
- the general geographical principles of human-environment interaction, global change, and human spatial organization.

In addition, students completing the degree in geography are expected to acquire proficiency in:

- one or more of the specific geographic skill areas of cartography, remote sensing, and geographic information systems;
- writing, quantitative methods, computer literacy, and library and field methods of data collection; and
- identifying the geographic dimensions of a problem and analyzing, synthesizing, and evaluating relevant data, and applying geographic principles offering a geographic perspective on that problem.

## *MAPS (Minimum Academic Preparation Standards)*

To fulfill a MAPS deficiency in geography, students may take any one of the following courses: GEOG 1982, 1992, 2002, or 2412, or pass the Geography Exemption Exam. For more information on the exemption exam, contact Testing Services at **303-492-5854** or [careerservices.colorado.edu/testing.cs](http://careerservices.colorado.edu/testing.cs).

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Geography

Students must complete the general requirements of the College of Arts and Sciences and the

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required courses listed below. Students must complete at least 36 and no more than 45 credit hours in geography courses with grades of C- or better (22 hours must be upper division). No *pass/fail* grades are allowed in the major. Transfer students majoring in geography must complete at least 12 credit hours of upper-division geography courses at CU-Boulder.

### Required Courses and Semester Credit Hours

- GEOG 1001 Environmental Systems I: Climate and Vegetation—4
- GEOG 1011 Environmental Systems II: Landscapes and Water—4
- One of the following:
  - GEOG 1982 World Regional Geography—3
  - GEOG 1992 Human Geographies—3
  - GEOG 2002 Geographies of Global Change—3
  - GEOG 2412 Environment and Culture—3
- One additional upper- OR lower-division human geography course (courses ending in 2)
- One of the following:
  - GEOG 2053 Mapping a Changing World—4
  - GEOG 3053 Cartography 1: Visualization and Information Design (introductory statistics course recommended; may be taken concurrently)—4
- One of the following:
  - GEOG 3093 Geographic Interpretation of Aerial Photographs—3
  - GEOG 4023 Introduction to Quantitative Methods in Human Geography (prereq: GEOG 3023)—3
  - GEOG 4043 Cartography 2: Interactive and Multimedia Mapping (prereq: GEOG 3053)—4
  - GEOG 4093 Remote Sensing of the Environment—4
  - GEOG 4103 Introduction to Geographic Information Science (prereq: GEOG 2053, 3053 or equivalent and introductory statistics course)—4
  - GEOG 4173 Research Seminar (restricted to senior GEOG and ENVS majors)—3
  - GEOG 4203 Geographic Information Science: Modeling Applications (prereq: GEOG 4103)—4
  - GEOG 4383 Methods of Vegetation Analysis (prereq or coreq: GEOG 4371)—3
  - GEOG 4411 Methods of Soil Analysis (prereq: GEOG 1001 or 1011; prereq/coreq GEOG 4401/5401)—3
- **Introductory Statistics** (Note 1)
  - ANTH 4000 Quantitative Methods in Anthropology—3
  - BCOR 1020 Business Statistics—3
  - ECON 3818 Introduction to Statistics w/Computer Applications—4
  - GEOG 3023 Statistics for Geography—4
  - MATH 2510 Introduction to Statistics—3
  - PSCI 2074 Quantitative Research Methods—3
  - PSYC 3101 Statistics and Research Methods in Psychology—4
  - SOCY 2061 Introduction to Social Statistics—3
  - SOCY 4061 Social Statistics—3

### Notes

*1 Courses taken in other departments may be used to satisfy the statistics requirement, but credits earned in these courses are not counted in the 36 hours of geography. Only GEOG 3023 applies to the 36 hours required in the Department of Geography.*

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in geography, students should meet the following requirements:

- Declare a geography major by the beginning of the second semester.
- Complete GEOG 1001, 1011, and one of the following courses: GEOG 1982, 1992, 2002, or

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2412, by the end of the third semester.

- Complete GEOG 1982, 1992, 2002, or 2412 or an approved upper-division human geography course (must be different than the course used to complete the previous requirement) and 9 credit hours of upper-division geography courses by the end of the sixth semester.
- Complete GEOG 2053 or 3053 and statistics by the end of the sixth semester.
- Complete the remaining upper-division credit hours by the eighth semester.

## Minor Program

A minor is offered in geography. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

- Participation in the minor program is optional on the part of the student.
- A minimum of 18 credit hours must be taken in the minor area, including a minimum of 9 upper-division.
- All course work applied to the minor must be completed with a grade of C- or better. No *pass/fail* work may be applied. The grade point average of all minor degree course work must equal 2.000 (C) or higher.
- Students pursuing an individually structured major, or who are pursuing a major in distributed studies, will not be eligible to earn a minor.
- Students will be allowed to apply no more than 9 credit hours (including six 6 upper-division) of transfer work toward a minor.
- Students may earn no more than two minors.
- Course work applied toward a minor may also be applied toward general education (core/college list) and major requirements.
- No specific concentration is required. However, students who do wish to focus on one area of geography should see the following suggested course lists below:

## Human Geography Concentration

One of the following four courses—GEOG 1982, 1992, 2002, and 2412—are prerequisites to all upper-division courses listed below. Additional prerequisites are listed.

- GEOG 1982 World Regional Geography
- GEOG 1992 Human Geographies
- GEOG 2002 Geographies of Global Change
- GEOG 2412 Environment and Culture
- GEOG 3672 Gender and Global Economy\*
- GEOG 3682 Geography of International Development
- GEOG 3742 Power, Place and Contemporary Culture
- GEOG 3812 Mexico, Central America, and the Caribbean
- GEOG 3822 Geography of China
- GEOG 3862 Geography of Africa
- GEOG 4023 Introduction to Quantitative Methods in Human Geography (prereq: GEOG 3023)
- GEOG 4292 Migration, Urbanization, and Development
- GEOG 4622 City Life\*
- GEOG 4712 Political Geography
- GEOG 4732 Population Geography
- GEOG 4742 Environment and Peoples\*
- GEOG 4812 Environment and Development in South America\* (recommended Prereq: GEOG 3812 or 3422)

> [Molecular, Cellular, and Developmental Biology](#)

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- GEOG 4822 Environment and Development in China\*
- GEOG 4832 Geography of Tibet (prereq. GEOG 3822)
- GEOG 4892 Geography of Western Europe

\*core curriculum course

### *Environment-Society Relations Concentration*

Two of the following four courses—GEOG 1982, 1992, 2002, and 2412—are prerequisites to all upper-division courses listed below. Additional prerequisites may be listed.

- GEOG 1001 Environmental Systems 1: Climate and Vegetation\*
- GEOG 1011 Environmental Systems 2: Landscapes and Water\*
- GEOG 1982 World Regional Geography
- GEOG 1992 Human Geographies
- GEOG 2002 Geographies of Global Change
- GEOG 2412 Environment and Culture
- GEOG 3251 Mountain Geography
- GEOG 3301 Analysis of Climate and Weather Observations\*
- GEOG 3351 Biogeography
- GEOG 3402 Natural Hazards
- GEOG 3412 Conservation Practice and Resource Management
- GEOG 3422 Conservation Thought
- GEOG 3511 Introduction to Hydrology\*
- GEOG 3601 Principles of Climate\*
- GEOG 3612 Geography of American Cities
- GEOG 3682 Geography of International Development
- GEOG 3812 Mexico, Central America, and the Caribbean
- GEOG 3822 Geography of China\*
- GEOG 3862 Geography of Africa
- GEOG 4401 Soils Geography (prereq: GEOG 1011; recommended prereq: inorganic chemistry)
- GEOG 4430 Seminar: Conservation Trends\*
- GEOG 4501 Water Resources and Water Management in the Western U.S.
- GEOG 4632 Development Geography
- GEOG 4742 Environments and Peoples\*
- GEOG 4812 Environment and Development in South America\*
- GEOG 4822 Environment and Development in China\*
- GEOG 4852 Health and Medical Geography

\*core curriculum course

### *Physical Geography Concentration*

- GEOG 1001 Environmental Systems: Climate and Vegetation\*
- GEOG 1011 Environmental Systems 2: Landscapes and Water\*
- GEOG 3301 Analysis of Climate and Weather Observations\* (prereq: GEOG 1001 or ATOC 1050/1060, 3600 and a statistics course)
- GEOG 3601 Principles of Climate\* (prereq: 1 semester calculus or instructor approval)
- GEOG 3351 Biogeography (prereq: GEOG 1001)
- GEOG 3511 Introduction to Hydrology\* (prereq: GEOG 1011)

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- GEOG 4211 Physical Climatology: Principles (prereq: GEOG 1001)
- GEOG 4231 Physical Climatology/Field Methods (prereq: GEOG 1001 and 4211 or 5211)
- GEOG 4241 Principles of Geomorphology\* (prereq: GEOG 1011) (restricted to junior/senior GEOG/GEOL/ENVS majors)
- GEOG 4311 Watershed Biogeochemistry (prereq: GEOG 1011, 3511)
- GEOG 4321 Snow Hydrology (prereq: GEOG 1001 and 1011; any statistics course)
- GEOG 4331 Mountain Climatology (prereq GEOG 1001 or ATOC 1050/1060)
- GEOG 4371 Forest Geography: Principles and Dynamics (prereq: GEOG 1001)
- GEOG 4383 Methods of Vegetation Analysis (prereq or coreq GEOG 4371)
- GEOG 4401 Soils Geography (prereq 1011; recommended prereq inorganic chemistry)
- GEOG 4411 Methods of Soil Analysis (prereq: GEOG 1001 or 1011; prereq/coreq GEOG 4401/5401)

\*\*core curriculum course

### *Geographic Information Science Concentration*

1000- and 2000-level courses in physical and human geography are prerequisites to all upper-division courses listed below.

Additional prerequisites may be listed or permission of instructor required.

- GEOG 2053 Mapping a Changing World
- GEOG 3023 Statistics for Earth Sciences
- GEOG 3053 Cartography: Visualization and Information Design (restricted to junior/senior GEOG/ENVS major)
- GEOG 3093 Geographic Interpretation of Aerial Photographs
- GEOG 4023 Introduction to Quantitative Methods in Human Geography (prereq: GEOG 3023 or equivalent)
- GEOG 4043 Cartography 2: Interactive and Multimedia Mapping (prereq: GEOG 3053)
- GEOG 4093 Remote Sensing of the Environment
- GEOG 4103 Introduction to Geographic Information Science (prereq: GEOG 2053, 3053 or equivalent and an introductory statistics course)
- GEOG 4160 Teaching Geography
- GEOG 4203 Geographic Information Science: Modeling Applications 2 (prereq: GEOG 4103/5103)
- GEOG 4173 Research Seminar\* (restricted to senior GEOG/ENVS major)
- GEOG 4303 Geographic Information Science: Programming (prereq: 4103 or 5103)
- GEOG 4383 Methods of Vegetation Analysis (prereq or coreq: GEOG 4371)
- GEOG 4983 Field Problems (restricted to junior/senior geography major)

\*core curriculum course

### *Geography Honors Program*

Students interested in participating in a special honors program should contact the departmental honors advisor during their junior year.

### *Geography Internship Program*

To complement its curriculum, the department offers geography majors internship opportunities in which students earn academic credit in GEOG 3930 Internship while working in selected positions in public agencies and firms.

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## *Residential Academic Program*

Geography students specializing in environmental issues may want to consider the Baker Residential Academic Program. Students may visit the geography department office or refer to Residential Academic Programs, [www.colorado.edu/WRAP](http://www.colorado.edu/WRAP).

Course code for this program is GEOG.

## *Graduate Degree Program(s)*

### Graduate Study in Geography

Students wishing to pursue graduate work in geography leading to candidacy for advanced degrees should read carefully the requirements for advanced degrees in the Graduate School section.

Graduate-level course work at the Boulder campus may be combined with graduate courses offered at the Denver and Colorado Springs campuses. Additional information should be obtained from the Department of Geography. The following are departmental requirements.

### Master's Degree in Geography

**Prerequisites.** For admission without deficiency and to meet the department mandatory requirements for a knowledge of basic geography, all entering graduate students are required to have the kind of knowledge presented in the department introductory courses in physical geography (GEOG 1001 Environmental Systems/Climate and Vegetation and GEOG 1011 Environmental Systems/Landscapes and Water) and human geography (GEOG 1982 World Regional Geography, GEOG 1992 Human Geographies, GEOG 2002 Geographies of Global Change, and GEOG 2412 Environment and Culture). It is the responsibility of the student to obtain this knowledge as part of his/her preliminary exam. Students may gain the required knowledge by formally taking the introductory courses, by auditing the courses, by reading the textbooks, or by other means. This knowledge will enhance the student ability to perform at the level expected in the GEOG 5152–5161 core series. In addition to knowledge of basic geography, it is desirable that the student has course work in at least two areas outside geography in cognate fields in the social and natural sciences. Students are encouraged to have some background in college math, statistics, and computer skills.

**General Requirements.** The minimum requirements for an MA in geography may be fulfilled by completing 30 semester hours of graduate work, including a thesis, which carries up to 6 credit hours (i.e., 24 hours of course work at the 5000 level or above, plus a minimum of 4 but not more than 6 hours of thesis). Master students may, with the written approval of their advisor, use a maximum of 6 hours of 3000- or 4000-level course work to reach the required 30 hours.

### Doctoral Degree in Geography

**Prerequisites.** The minimum requirements for admission to the PhD program are normally a master degree, significant published research, or equivalent standing.

**General Requirements.** The PhD degree is not conferred merely upon the satisfactory completion of a course of study. The candidate must also demonstrate proficiency in some broad subject of learning, and be able to critically evaluate work in the field, show the ability to work independently in the chosen field, and make an original contribution of significance to the advancement of knowledge.

The minimum requirements are 30 credit hours of course work numbered 5000 or above and 30 credit hours of dissertation. Ordinarily the number of course work hours and dissertation hours will be greater than 30 each. At least 20 of these hours must be taken at the University of Colorado; up to 10 credit hours from another institution may be transferred upon approval.

A 3.000 (*B*) average or higher must be maintained in all course work.

Six semesters of residence are required beyond the bachelor's degree, of which four must be at the

University of Colorado; this may include two semesters for the master degree. Students with a University of Colorado master degree in geography, with departmental approval, may apply all credit hours from 5000 or above courses (except thesis credits) to the PhD requirements.

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# Geological Sciences

The options available in the undergraduate program in geological sciences are geology, geophysics, and environmental geosciences. Each option leads to the BA degree. All of these options provide a strong basis for understanding the functioning of the Earth system and a firm foundation for graduate study and professional employment. Students who are uncertain as to which option best suits their needs should contact a departmental advisor or faculty member. In all options, the undergraduate program emphasizes course work in theoretical, laboratory, and field-oriented aspects of the geological sciences. The nearby Rocky Mountains provide a natural laboratory for many of these courses.

Students interested in the geological sciences may also wish to consider the Baker Residential Academic Program. Students who do not wish to pursue a career in the geosciences, or who would like to combine a basic knowledge of geologic sciences with that of some other field, should consider using geological sciences as one subject in a distributed studies major or as a minor. Students who intend to pursue graduate study in the geological sciences are encouraged to consider developing an honor thesis as part of their undergraduate studies.

The three options available in the undergraduate major offer different focus areas of instruction. All three options offer excellent preparation for students interested in pursuing professional careers, or graduate study, in the geological sciences.

Each option emphasizes knowledge in:

- the ways in which Earth responds to internal and external forces; the physical, chemical, and biological evolution of Earth; and the nature of the materials of which the Earth is made
- the role of physics, chemistry, mathematics, and biology in understanding geological processes
- the history of discoveries and ideas that have contributed to our current knowledge of the Earth and the planetary system

The geology option is a traditional geology degree program that emphasizes the following:

- the mineralogy and petrology of igneous, metamorphic, and sedimentary rocks
- the processes of sedimentation and the applications of stratigraphy and paleobiology in the reconstruction of Earth history
- the role of geophysics and geochemistry in understanding the nature of Earth and its history
- the study of faults, folds, and other rock structures and the tectonic processes that create those structures
- the methods used in the field to map and interpret the diverse variety of rock types and structures

The environmental geoscience option emphasizes the following:

- the function of the integrated Earth system including the atmosphere, hydrosphere, biosphere,

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and geosphere

- the fundamental controls on surface Earth processes including energy balance, hydrology, geomorphology, geochemistry, and biogeochemistry
- the role of humans in the Earth system

The geophysics option emphasizes:

- applications of fundamental mathematical formulations and physical principles to an understanding of the Earth
- methods utilized to map and characterize those portions of the planet that lie below the surface, from just beneath our feet down to the core

Course code for this program is GEOL.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Geology

#### *Required Courses and Semester Credit Hours*

- CHEM 1113 and 1133 General Chemistry 1 and 2 and CHEM 1114 and 1134 Laboratory in General Chemistry 1 and 2—10
- GEOL 1030 Introduction to Geology Lab—1
- MATH 1300 and 2300 Analytical Geometry and Calculus 1 and 2 or APPM 1350 and 1360 Calculus for Engineers 1 and 2—8-10
- PHYS 1110, 1120, and 1140 General Physics 1 and 2 and Experimental Physics 1—9

## *Geology Option*

Students electing the geology option are required to take the following additional courses:

- GEOL 1010 Introduction to Geology 1—3
- GEOL 1020 Introduction to Earth History or GEOL 1040 Geology of Colorado or GEOL 1060 Global Change—3
- GEOL 2700 Introduction to Field Geology—2
- GEOL 3010 Introduction to Mineralogy—3
- GEOL 3020 Petrology—3
- GEOL 3120 Structural Geology—4
- GEOL 3320 Introduction to Geochemistry—3
- GEOL 3430 Sedimentology and Stratigraphy—4
- GEOL 4130 Principles of Geophysics—3

Geology option students must also take courses from the following lists:

- One from the following hydrogeosciences-focused courses:  
GEOL 3030 Introduction to Hydrogeology—3  
GEOL 3820 The Fluid Earth—3  
GEOL 4060 Oceanography—4
- Two from the following advanced-field modules:  
GEOL 4711 Igneous and Metamorphic Field Geology—2  
GEOL 4712 Structural Field Geology—2  
GEOL 4714 Field Geophysics—2  
GEOL 4715 Field Techniques in Hydrogeology—2  
GEOL 4716 Environmental Field Geochemistry—2

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GEOL 4717 Field Seminar in Geology and Tectonics—2

- GEOL 4721 Field Methods and Active Tectonics—3
- One upper-division elective, any 3000-4000 GEOL course, except the following:
  - GEOL 3040 Global Change—3
  - GEOL 3070 Introduction to Oceanography—3
  - GEOL 3500 Earth Resources and the Environment—3
  - GEOL 3520 Environmental Issues in Geosciences—3
  - GEOL 3720 Evolution of Life: the Geological Records—3
  - GEOL 3950 Natural Catastrophes and Geological Hazards—3
  - GEOL 4080 Societal Problems and Earth Sciences—3
  - GEOL 4500 Critical Thinking in Earth Sciences—3

## *Environmental Geoscience Option*

Students electing the environmental geoscience option are required to take the following additional courses:

- GEOL 1010 Introduction to Geology 1 or GEOL 2100 Environmental Geology or ENVS 1000 Introduction to Environmental Studies—3
- GEOL 2001 Planet Earth—4
- GEOL 3230 Earth Materials—3
- GEOL 3320 Introduction to Geochemistry—3

Environmental geoscience option students must also take courses from the following lists:

- Two from the following water-focused courses:
  - GEOL 3030 Introduction to Hydrogeology—3
  - GEOL 3820 The Fluid Earth—3
  - GEOL 4060 Oceanography—3
- One from the following biogeochemistry-focused courses:
  - GEOL 4160 Biogeochemistry—3
  - GEOL 4270 Marine Chemistry and Geochemistry—3
- One from the following climate-focused courses:
  - GEOL 4040 Paleoclimatology—3
  - ATOC 3600 Principles of Climate—3
- One from the following advanced field courses:
  - GEOL 4711 Igneous and Metamorphic Field Geology—2
  - GEOL 4714 Field Geophysics—2
  - GEOL 4715 Field Techniques in Hydrogeology—2
  - GEOL 4716 Environmental Field Geochemistry—2
  - EBIO 4630 Field Techniques in Environmental Science—2-6
  - EVEN 4100 Environmental Sampling and Analysis—3
- Four additional courses from the following upper-division electives (electives not already used to fulfill a different major requirement). Two of the four must be geology. Courses other than those listed below may be acceptable with advisor's permission:
  - GEOL 3023 Statistics for Earth Sciences—4
  - GEOL 3030 Introduction to Hydrogeology—3
  - GEOL 3050 GIS for Geologists—2
  - GEOL 3410 Paleobiology—3
  - GEOL 3820 The Fluid Earth—3
  - GEOL 4040 Paleoclimatology—3
  - GEOL 4060 Oceanography—4
  - GEOL 4093 Remote Sensing for the Environment—4

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- 
- GEOL 4130 Principles of Geophysics—3
  - GEOL 4160 Introduction to Biogeochemistry—3
  - GEOL 4241 Principles of Geomorphology—4
  - GEOL 4270 Marine Chemistry and Geochemistry—3
  - GEOL 4670 Isotope Geology—3

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### **Water Focus**

- CVEN 3454 Water Quality—4
- CVEN 4718 Mechanics and Dynamics of Glaciers—3
- EBIO 4030 Limnology—3
- GEOG 4321 Snow Hydrology—3-4
- GEOG 4251 Fluvial Geomorphology—4
- GEOG 4260 Glaciers and Permafrost—3

### **Biogeochemistry Focus**

- EBIO 4060 Landscape Ecology—3
- EBIO 4570 Advanced Plant Physiological—3
- GEOG 4401 Soils Geography—3
- MCDB 4350 Microbial Diversity and the Biosphere—3

### **Climate Focus**

- ATOC 4720 Atmospheric Physics and Dynamics—3
- ENVS/GEOG 4201 Biometeorology—3

### **Policy Focus**

- ATOC 4800 Policy and Climate—3
- ECON 3403 International Economics and Policy—3
- ENVD 4023 Environmental Impact Assessment—3
- PSCI 4183 International Law—3

## *Geophysics Option*

Students electing the geophysics option are required to take the following additional courses:

- GEOL 1010 Introduction to Geology 1—3
- GEOL 1020 Introduction to Earth History or GEOL 1040 Geology of Colorado or GEOL 1060 Global Change—3
- GEOL 2700 Introduction to Field Geology—2
- GEOL 3010 Introduction to Mineralogy—3
- GEOL 3120 Structural Geology—4
- GEOL 3320 Introduction to Geochemistry or GEOL 3020 Petrology—3
- GEOL 4130 Principles of Geophysics—3
- GEOL 4714 Field Geophysics—2
- APPM 2360 Introduction to Linear Algebra with Differential Equations—4
- MATH 2400 Analytical Geometry and Calculus 3 or APPM 2350 Calculus 3 for Engineers—4
- PHYS 2130 Gen Physics III or PHYS 2170 Foundations of Modern Physics—3
- PHYS 2210 Classical Mechanics and Mathematical Methods 1—3

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Geophysics option students must also take courses from the following lists:

- Two from the following:  
PHYS 3210 Classical Mechanics and Mathematical Methods 2—3  
PHYS 3310 Principles of Electricity and Magnetism—3  
MATH 4470 Partial Differential Equations or APPM 4350 Methods in Applied Mathematics—3

Additional information on required courses and other departmental requirements may be obtained from the departmental office. Students should contact the department for a list of current major requirements.

Transfer students must satisfactorily complete a minimum of 12 credit hours of advanced work (3000-level or above) in the Department of Geological Sciences in Boulder if they wish to obtain a degree in geology from CU-Boulder. Before registering for the first time, or within the first week of the semester, such students must see a geological sciences department undergraduate advisor to have previous course work in geology, math, and allied sciences evaluated.

### *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in geology, students should meet all college requirements plus specific departmental requirements. These departmental requirements vary slightly between the three major options. Detailed information is available from the department office, but in general these requirements include:

- Declare a geology major and begin course work in the major during the first semester freshman year.
- Meet with a departmental advisor prior to the second and fifth semesters and during the seventh semester.
- Complete at least 33 credit hours (geology and environmental geoscience options; 44 credit hours for geophysics option) required for the major by the end of the fourth semester.
- Complete at least 47 credit hours (geology and environmental geosciences options; 63 credit hours for geophysics option) required for the major by the end of the sixth semester.
- Complete the remaining requirements for the major by the end of the eighth semester.

### *Minor Program*

The minor program in geological sciences is meant for students who would like to acquire a basic knowledge of geology in addition to their major area of study. The arts and sciences requirements for a minor include a minimum of 18 credit hours in the minor area, including a minimum of 9 upper-division hours. The departmental requirements for the minor are listed below. The department strongly urges that students interested in pursuing a minor in geology consult a departmental advisor.

1. Any 1000-level introductory sequence:

- 1010-3 Introduction to Geology 1 (physical geology) and 1020-3 Introduction to Geology 2 (earth history)
- 1010-3 Introduction to Geology 1 and 1040-3 Geology of Colorado
- 1010-3 Introduction to Geology 1 and 1060-3 Global Change: An Earth Science Perspective

Plus an introductory laboratory course: 1030-1 Introduction to Geology Laboratory

2. At least one of the following laboratory or field-oriented courses:

- 2001-4 Planet Earth
- 2700-2 Introduction to Field Geology
- 3010-3 Introduction to Mineralogy
- 3023-3 Statistics for Earth Sciences
- 3120-4 Structural Geology
- 3410-3 Paleobiology
- 3430-4 Sedimentology and Stratigraphy
- 4060-4 Oceanography
- 4093-4 Remote Sensing of the Environment
- 4130-3 Principles of Geophysics
- 4241-4 Principles of Geomorphology

3. Any additional courses at the 3000-level to bring the total hours in geology to 18.

### *Geology Honors Program*

Opportunity is provided for qualified geology majors to participate in the geology honors program and graduate with honors (cum laude, magna cum laude, or summa cum laude) in geology. Students interested in the honors program should contact the departmental honors advisor during their junior year.

### *Graduate Degree Program(s)*

## Graduate Study in Geology

Students interested in graduate work in the geological sciences should carefully read the detailed information regarding admission, registration, and degree requirements that is available from the departmental office. A brief summary follows.

All students applying for admission must take the Graduate Record Examination. Results of this examination are used both for determining admittance and for initial academic counseling.

Entering students normally have completed at least 24 semester hours of basic courses in geological science and two semesters each of chemistry, physics, and calculus. In some cases, exceptional undergraduate preparation in other fields of science, mathematics, or engineering may substitute for part of the 24 hours in geological science.

Each student acquires a primary advisor and an advisory committee which provides guidance throughout the degree program.

## Master's Degree

Candidates for the master's degree in geological sciences must complete at least 24 credit hours of graduate course work plus a thesis (Plan I), or 30 credit hours of graduate course work without a thesis (Plan II). The Plan II program requires at least 3 hours of GEOL 6960 (Plan II Master's Research) under the supervision of the advisory committee. For both plans, at least 24 credit hours must be completed at the 5000 level or above. See Graduate School specifications for more information.

## Doctoral Degree

Candidates for the doctoral degree must complete at least 30 credit hours in course work numbered 5000 or above, of which at least 20 must be taken at CU-Boulder. In addition to course work, candidates must take a total of at least 30 hours of GEOL 8990 doctoral dissertation hours, with not more than 10 of these in any one semester and not more than 10 before the comprehensive

examination is passed.

The Department of Geological Sciences participates in the interdepartmental PhD program in geophysics and hydrology. For more information about this program, see the Graduate School section.

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# Geophysics

## *Graduate Degree Program(s)*

### Doctoral Degree in Geophysics

The interdisciplinary doctoral program in geophysics encourages students with a variety of undergraduate backgrounds to pursue graduate study in the physics of the Earth, with special emphasis on the interior of the planet. Students specialize in one of the subfields of geophysics while gaining a broad, general background in the discipline and in-depth education in the relevant aspects of the parent fields of geology, physics, and engineering.

Students enter the program by applying for admission to one of the following departments:

- aerospace engineering sciences;
- astrophysical and planetary sciences;
- civil, environmental, and architectural engineering;
- electrical and computer engineering;
- geography; geological sciences;
- mechanical engineering; or
- physics

Upon satisfactory performance on the doctoral preliminary examination given by the home department, the student may formally apply for admission to the geophysics doctoral program.

The program is administered by the geophysics graduate program committee, which includes representatives from each of the participating departments. The comprehensive examination and the dissertation defense are directed by this committee, with a faculty member of the home department normally chairing these procedures.

For more information, please consult the Geophysics Studies Program website at [colorado.edu/geophysics](http://colorado.edu/geophysics).

## *Certificate Program*

### Geophysics Certificate

The geophysics graduate certificate offers a coherent curriculum in geophysics that can complement and supplement a student's regular degree program and encourages multi-disciplinary education in the area of geophysics. The geophysics certificate program allows students to obtain recognition for their accomplishments in geophysics, without having to switch into the geophysics degree program. This program was approved by the CU-Boulder Graduate School, spring 2002.

### Curriculum

All students must take at least three geophysics core courses, and the Geophysics Seminar course, listed below. At least one of the three geophysics core courses must be from the earth and planetary physics (EPP) series, and at least one of the remaining core classes taken must be from outside the

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student's home department. Most geophysics core courses are offered once every two years.

A Certificate in Geophysics will be awarded upon the student's completion of degree requirements in their home department. Upon request from a student, the program director and the student's advisor will determine whether a student has met the requirements for the certificate and will generate a letter to the appropriate department head and dean. The certificate is not intended as a substitute for a degree and will be awarded only upon completion of a graduate degree.

## Core Courses

- ASTR/GEOL/PHYS 6610 Earth and Planetary Physics 1 (Seismology)
- ASTR/GEOL/PHYS 6620 Earth and Planetary Physics 2 (Geodesy)
- ASTR/GEOL/PHYS 6630 Earth and Planetary Physics 3 (Geodynamics)
- APPM 7300 Nonlinear Waves and Integrable Equations
- ASEN 5060 Satellite Geodesy
- ASEN 5090 Introduction to the Global Navigation Satellite Systems
- ASTR/PHYS 5140 Astrophysical and Space Plasmas
- ASTR/PHYS 5150 Plasma Physics
- ASTR 5300 Magnetospheres
- ASTR 5760 Astrophysical Instrumentation
- ASTR/GEOL 5800 Planetary Surfaces and Interiors
- ASTR/ATOC/GEOL 5820 Origin and Evolution of Planetary Systems
- ASTR/GEOL/PHYS 6650 Geophysics Seminar
- CVEN 5718 Mechanics and Dynamics of Glaciers
- CVEN 5768 Introduction to Rock Mechanics
- CVEN 6595 Earthquake Engineering
- GEOG 5231 Physical Climatology: Field Methods
- GEOL 5680 Global Tectonics
- GEOL 5714 Field Geophysics
- GEOL/PHYS 6670 Geophysical Inverse Theory
- MCEN 7123 Dynamics of Continuous Media
- MCEN 7143 Advanced Theory of Elasticity

## Requirements for Certificate

- Completion with a grade of B or better of a total of three geophysics core courses (at least one from the EPP sequence) and one semester credit for the Geophysics Seminar.
- Completion of degree requirements for graduate degree within the student's home department, with a thesis on a topic that uses geophysics in some way, including the successful defense of this thesis before a committee that includes at least one of the geophysics certificate faculty members listed below.

## Admission Requirements

A student wishing to be considered for a Certificate in Geophysics must first be admitted as a graduate student into one of the participating graduate departments (ASEN, APS, CEAE, ECEN, GEOG, GEOL, MCEN, PHYS). Students from outside the participating departments can apply for entry to the geophysics certificate program by letter addressed to the Geophysics Graduate Program Committee. A student must have a course background that includes mathematics through three semesters of calculus and four undergraduate science or engineering courses.

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# Germanic and Slavic Languages and Literatures

Undergraduate students may choose to major in either German studies or Russian studies. The department also offers courses in Hebrew studies and a minor in Nordic studies.

The major in **German studies** is an interdisciplinary program focusing on study of the German language, its manifestations in history, and its usage in the current cultural and social context; the literary, artistic, and philosophical aspects of German culture in the past and the present; the major historical events and developments in Germany and its neighboring countries, and the current political institutions and dynamics in Germany within the broader European framework.

The undergraduate degree in German studies emphasizes knowledge and awareness of:

- the fundamental outlines of German history and culture;
- the history of modern German literature, 1750 to the present;
- cultural developments in modern German-speaking Central Europe, such as the arts, the cinema, and architecture; and
- central issues such as the Nazi era and the Holocaust, the roles of women, German attitudes toward non-Germans, German culture after reunification, and their reflection in German literature, arts, and media.

In addition, students completing the degree in German studies are expected to acquire the ability and skills to:

- read German at a level at which critical literary and cultural analyses can be performed;
- write and speak German sufficiently to participate in critical discussions and write critical essays; and
- speak and comprehend German sufficiently for all situations in daily life, especially the business and professional sectors of German life.

The major in **Russian studies** is an interdisciplinary program focusing on study of the current cultural and social context, and the literary, artistic, and historical aspects of Russian culture in the past and present. The aim of the language curriculum is to equip students to read, write, speak, and understand Russian on a level allowing communication with natives and other users of the language. Before registering for a course, students should consult with a departmental advisor concerning appropriate placement.

Students interested in Russian studies should consider a double major in order to increase their career opportunities. Prospective teachers might combine Russian studies with a major in another foreign language, while those preparing for a career in government, business, or social services should benefit from a combination of Russian studies and a social science or business major. Students structure their curriculum according to the departmental checklist for majors, in close consultation with a departmental advisor.

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The undergraduate degree in Russian studies emphasizes knowledge and awareness of:

- the fundamental outlines of the history of Russian literature and culture from the Middle Ages to the present day;
- the major Russian creative writers of the 19th and 20th centuries;
- the historical context of Russian literature and culture; and
- basic critical methodologies as they relate to the study of Russian literature.

In addition, students with a degree in Russian studies are expected to acquire the ability and skills to:

- comprehend contemporary Russian, written or spoken, to a degree permitting sophisticated analysis of cultural texts;
- analyze Russian literary texts and give a reasoned response to them in literate English; and
- write and converse in Russian at their own intellectual level.

Course codes for these programs are GRMN, GSLL, HEBR, NORW, RUSS, SCAN, and SWED.

### *Bachelor's Degree Program(s)*

## Undergraduate Study in Germanic and Slavic Languages and Literatures

### German Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

The major requirement in German studies is 34 hours beyond GRMN 2010 (with grades of C- or above). Students design their own major in consultation with the undergraduate advisor and a faculty mentor. Completion of the following courses is required; at least 18 hours from the department must be upper division. Students who test out of GRMN 2020 are required to complete 33 hours.

#### *Required Courses and Semester Credit Hours*

### **A. German Language Courses (13 semester hours minimum)**

Completion of the following German language courses or demonstration of third year proficiency:

- GRMN 2020 Intermediate German 2—4 or GRMN 2030 Intensive Intermediate German—5
- GRMN 3010 Advanced German 1—3
- GRMN 3020 Advanced German 2—3
- GRMN 4010 Advanced Grammar and Stylistics—3  
GRMN 4010 is required of all majors. With the exception of GRMN 4010, German languages courses may be taken either at CU-Boulder or on the CU study abroad programs in Regensburg or Berlin, Germany.

### **B. German Culture, Literature, and Other Electives (21 semester hours)**

GRMN 4550 Senior Seminar (required and must be taken at CU Boulder) and any six German literature/culture courses from I or II. At least two of the six courses must be upper-division, and at least two must be in German. With the approval of the German program faculty advisor, one course from another department may be taken in lieu of one of the six courses, provided that the course has a direct link to German studies.

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## I. Courses Taught in German

- GRMN 3030 Business German—3
- GRMN 3110 German Literature from the Avante-garde to the Postmodern—3
- GRMN 3120 German Literature from the Enlightenment to Expressionism—3
- GRMN 3130 Issues in German Philosophy and Literature—3
- GRMN 3140 Current Issues in German Literature—3
- GRMN 3150 Issues in German Politics and Literature—3
- GRMN 3520 Open Topics in the Cultural Context—3
- GRMN 3900 Independent Study—1-6
- GRMN 3930 Internship—1-6
- GRMN 4330 The Age of Goethe—3
- GRMN 4340 Seminar in German Literature—3
- GRMN 4450 Methods of Teaching German—3

Students have the option of taking the exam *Zertifikat Deutsch als Fremdsprache* in GRMN 3020 and the Goethe-Zertifikat C1 in GRMN 4010.

## II. Courses Taught in English

- GRMN 1601 Germany Today (core: contemporary societies)—3
- GRMN 1602 Metropolis and Modernity (core: literature and the arts)—3
- GRMN 1701 Nature and Environment in German Literature and Thought (core: ideals and values)—3
- GRMN 2301 Inside Nazi Germany (core: historical context)—3
- GRMN 2501 20th Century German Short Story (core: literature and the arts)—3
- GRMN 2502 Representing the Holocaust (core: ideals and values)—3
- GRMN 2503 Fairy Tales of Germany (core: literature and the arts)—3
- GRMN 2601 Kafka and the Kafkaesque (core: literature and the arts)—3
- GRMN 2603 Moral Dilemmas in Philosophy and Literature (core: ideals and values)—3
- GRMN 3501 German-Jewish Writers: From the Enlightenment to the Present (core: human diversity)—3
- GRMN 3502 Literature in the Age of Goethe (core: literature and the arts)—3
- GRMN 3503 German Film Through WWII—3
- GRMN 3504 Topics in German Film—3
- GRMN 3505 The Enlightenment (core: ideals and values) —3
- GRMN 3513 German Film and Society 1945-1989—3
- GRMN 3514 German Film and Society After 1989—3
- GRMN 3601 German Women Writers (core: human diversity)—3
- GRMN 3702 Dada and Surrealist Literature (core: literature and the arts)—3
- GRMN 4251 Marxism—3
- GRMN 4253 Philosophy of Language—3
- GRMN 4301 Gender, Race and Immigration in Germany and Europe (core: human diversity)—3
- GRMN 4501 Seminar: Literature in Cultural Context—3
- GRMN 4502 Nietzsche: Literature and Values (core: ideals and values)—3
- GRMN 4503 Issues in German Thought—3
- GRMN 4504 Goethe's *Faust* (core: literature and the arts)—3

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- GSLL 1108 Introduction to Jewish History (core: historical context)—3
- GSLL 3401 The Heart of Europe: Filmmakers and Writers in 21st Century Central Europe—3
- JWST 4544 History of Yiddish Culture—3

## C. Required for Students in the Secondary Teacher Certification Program

- GRMN 4450 Methods of Teaching German
- GRMN 4460 High School German Teaching
- Plus other requirements as stated by the School of Education.

*Note: GRMN 4450 and 4460 can be taken only after full admission to the teacher education program in the School of Education.*

## *Minor Program in German Studies*

A minor is offered in German Studies. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. The requirements for a minor in German Studies are 19 hours (with grades of C- or above).

German Language (10 hours minimum above the 2010 level)\*

- GRMN 2020 Intermediate German 2—4 or GRMN 2030 Intensive Intermediate German—5
- GRMN 3010 Advanced German 1—3
- \*\*GRMN 3020 Advanced German 2—3

### **Notes**

\* With the exception of GRMN 4010, German language courses may be taken either at CU-Boulder or on the CU study abroad programs in Regensburg or Berlin, Germany. Students who are exempt from taking any of the above courses (and are not receiving transfer credit for them) can make up the credits by taking GRMN 4010, or any GRMN courses taught in German or English. Substitutions need to be approved by the faculty advisor. (Students are strongly encouraged to take GRMN 4010 as a substitution.)

\*\* Students have the option of taking the exam *Zertifikat Deutsch als Fremdsprache* in GRMN 3020 and the *Goethe-Zertifikat C1* in GRMN 4010.

## **German Culture and Literature (9 hours)**

Three courses taught in German at the 3000- or 4000-level. One upper-division German course taught in English may replace one of these courses.

- GRMN 3030 Business German—3
- GRMN 3110 German Literature from the Avant-garde to the Postmodern—3
- GRMN 3120 German Literature from the Enlightenment to Expressionism—3
- GRMN 3130 Issues in German Philosophy and Literature—3
- GRMN 3140 Current Issues in German Literature—3
- GRMN 3150 Issues in German Politics and Literature—3
- GRMN 3520 Open Topics in the Cultural Context—3
- GRMN 4330 The Age of Goethe—3
- GRMN 4340 Seminar in German Literature—3
- GRMN 4550 Senior Seminar—3

## *Study Abroad*

The department strongly recommends that all majors take part in study abroad. The university offers study abroad programs in Regensburg (academic year or spring semester) and Berlin (academic year or summer semester). Please consult with the major advisor. For more information on study abroad programs, see [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

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## Hebrew Studies

Hebrew language instruction is offered over six semesters at the beginning, intermediate, and advanced levels. By the end of this cycle students have a sound basis in Hebrew language production (spoken and written) and comprehension (oral and written). The Jewish literature and culture courses introduce students to Jewish literature, culture, and religion, and examine Jewish identity in the modern and contemporary worlds.

## Nordic Studies (Scandinavian)

Courses are offered in English on Nordic culture and civilization. Courses are also offered in Norwegian and/or Swedish language. The language courses satisfy arts and sciences language requirements for the BA and BFA degrees. In addition, this is an exchange program with Uppsala University in Sweden and with the University of Copenhagen in Denmark (DIS).

### *Minor Program in Nordic Studies*

A minor is offered in Nordic Studies. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. A minor in Nordic Studies requires the completion of 18 credit hours. A minimum of 9 credit hours must be taken in upper-division courses. All courses used to fulfill requirements for the minor must receive a grade of C- or better; none may be taken *pass/fail*. A minimum of 9 hours must be taken on the Boulder campus, but students may earn credit for approved study abroad in the Nordic countries.

### *Required Courses and Semester Credit Hours*

#### **Language, Culture, and Society (9 hours)**

- \*SWED 2120 Second-year Swedish Reading and Conversation 2—4
- \*NORW 2120 Second-year Norwegian Reading and Conversation 2—4
- NORW/SWED/SCAN 2900 Independent Study—3
- NORW/SWED/SCAN 3900 Independent Study—3
- SCAN 2201 Intro to Modern Nordic Culture and Society (core: contemporary societies)—3
- SCAN 2202 The Vikings (core: Historical Context)—3
- SCAN 3201 Contemporary Nordic Society and Culture (core: contemporary societies)—3
- \*\*SCAN 3206 Nordic Colonialisms (core: human diversity)—3
- \*\*SCAN 3208 Women in Nordic Society (core: human diversity)—3

#### **Literature (9 hours):**

- SCAN 1202 Tolkien's Nordic Sources (core: literature and the arts)—3
- SCAN 3202 Old Norse Mythology (core: literature and the arts)—3
- SCAN 3203 19th and 20th Century Nordic Literature (core: literature and the arts)—3
- SCAN 3204 Medieval Icelandic Sagas (core: literature and the arts)—3
- SCAN 3205 Scandinavian Folk Narrative (core: literature and the arts)—3
- \*\*SCAN 3206 Nordic Colonialisms (core: human diversity)—3
- \*\*SCAN 3208 Women in Nordic Society (core: human diversity)—3
- \*\*SCAN 3209 Contemporary Nordic Literature and Film—3
- SCAN 3506 Scandinavian Drama (core: literature and the arts)—3
- SCAN 2900 Independent Study—3
- SCAN 3900 Independent Study—3

#### **Notes**

\* SWED/NORW 2120 and SWED/NORW 2900/3000 are not currently being offered by GSLL. Students interested in taking Swedish as an Individualized Instruction course with Continuing Education should contact Continuing Education.

\*\* SCAN 3206 Nordic Colonialisms, SCAN 3208 Women in Nordic Society, and SCAN 3209 Contemporary Nordic Literature and Film, may be counted either toward Language, Culture, and Society or toward Literature, but not both.

## Russian Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

- Completion of 38 hours from tracks A or B or 36 hours from Track C with grades of C- or better. (None may be taken as *pass/fail*.) At least 18 RUSS hours must be completed at the 3000 or 4000 level. Note: RUSS 1010 and 1020 will not be counted toward the 38/36 hours required for the bachelor's degree in Russian. RUSS 1010 and 1020 will not count toward the maximum of 45 hours in the major department. Students are required to structure their curriculum in close consultation with a departmental advisor. Transfer credit must be approved by the department.
- Students with advanced Russian language skills are strongly encouraged to meet with a departmental faculty advisor to discuss language placement. Students who have Russian language transfer credit and/or students who are Russian language native speakers may enter the program at the upper-division level, with faculty permission. Students with previous knowledge of Russian must take the placement exam no later than the end of the first week of classes. Students who place out of Russian language courses required for the major must replace the credits with additional course work in Russian studies. To meet this requirement the student may take available Russian courses from either major track approved by the departmental faculty advisor. Any substitutions to major course work must be pre-approved by the Russian faculty advisor.

*Note: Beginning or middle-level language course requirements may be met by transfer credit or by testing out of the course. Students who enter the program at the third-year level must complete at least 18 credit hours in residence in courses numbered 3000 or above with grades of C- or better. (None may be taken pass/fail.) Students who enter at and enroll in Russian language courses at the 3000- or 4000-level may not receive credit for lower-division Russian language courses, unless lower-division language course work was completed prior to registration for 3000- and 4000-level Russian language courses. Students may not receive credit for both 3060 and 4010 or 4020 and 4060.*

### **Required Courses and Semester Credit Hours**

#### **Track A: Russian Language and Culture (total 38 credit hours)**

- RUSS 2010 Second-Year Russian 1 (core: foreign language)—4
- RUSS 2020 Second-Year Russian 2—4
- RUSS 3010 Third-Year Russian 1—3
- RUSS 3020 Third-Year Russian 2—3
- RUSS 4811 19th Century Russian Literature (core: literature and the arts)—3
- RUSS 4821 20th Century Russian Literature and Art (core: literature and the arts)—3

Two of the following (6 credit hours):

- \*\*RUSS 3060 Advanced Russian for Heritage Speakers 1—3
- \*\*RUSS 4010 Advanced Conversation and Composition 1—3
- \*\*RUSS 4020 Advanced Conversation and Composition 2—3
- \*\*RUSS 4060 Advanced Russian for Heritage Speakers 2—3
- RUSS 4210 Open Topics: Russian Language and Culture—3

- 
- RUSS 4230 Russian Cultural Idioms—3  
OR any other upper-division Russian language class or upper-division study abroad Russian language class.

Two of the following (6 credit hours):

- RUSS 2211 Introduction to Russian Culture (core: historical context)—3
- RUSS 2221 Introduction to Modern Russian Culture (core: historical context)—3
- RUSS 3601 Russian Culture Past and Present (core: historical context)—3

Two 2000-4000 level Russian or GSLL courses or JWST 4544 (6 total credit hours)

### **Notes**

\* core course

\*\* Students may not receive credit for both 3060 and 4010 or 4020 and 4060.

*Note: Beginning or middle-level language course requirements may be met by transfer credit or by testing out of the course. Students who enter at and enroll in Russian language courses at the 3000 or 4000 level may not receive credit for lower-division Russian language courses unless lower-division language coursework was completed prior to registration for 3000 and 4000 level Russian language courses. Study abroad is recommended after the second year language study.*

## **Track B: Russian Culture and Literature (total 38 credit hours)**

- RUSS 2010 Second-Year Russian 1 (core: foreign language)—4
- RUSS 2020 Second-Year Russian 2—4
- RUSS 4811 19th Century Russian Literature (core: literature and the arts)—3
- RUSS 4821 20th Century Russian Literature and Art (core: literature and the arts)—3

Two of the following (6 credit hours):

- RUSS 2211 Introduction to Russian Culture (core: historical context)—3
- RUSS 2221 Introduction to Modern Russian Culture (core: historical context)—3
- RUSS 3601 Russian Culture Past and Present (core: historical context)—3

One of the following (3 credit hours):

- RUSS 2231 Fairy Tales of Russia (core: literature and the arts)—3
- RUSS 2471 Women in Russian Culture from Folklore to the 19th Century (core: historical context)—3
- RUSS 2501 Russia Today (core: contemporary societies)—3

Three of the following (9 credit hours):

- RUSS 3211 History of Russian Cinema (core: literature and the arts)—3
- RUSS 3701 Slavic Folk Culture: Ideals and Values in the Contemporary World (core: ideals and values)—3
- RUSS 4221 Cultural Mythologies of Russian Communism (core: ideals and values)—3
- RUSS 4301 American-Russian Cultural Relations (core: historical context or U.S. context)—3
- RUSS 4431 Dostoevsky—3
- RUSS 4441 Tolstoy—3

- RUSS 4451 Chekhov—3
- RUSS 4471 Women in 20th Century Russian Culture (core: human diversity)—3
- RUSS 4831 Contemporary Russian Literature (core: literature and the arts or contemporary societies)—3
- RUSS 4861 Absurd and Supernatural in Russian Literature—3

Two other 3000-4000 level Russian or GSSL culture/literature or language courses or JWST 4544—3

*Note: Beginning or middle-level language course requirements may be met by transfer credit or by testing out of the course. Students who enter at and enroll in Russian language courses at the 3000 or 4000 level may not receive credit for lower-division Russian language courses unless lower-division language coursework was completed prior to registration for 3000 and 4000 level Russian language courses. Study Abroad is recommended after the second year language study.*

### **Track C: Russian Major for Heritage Speakers (total 36 credit hours)**

Students who are native speakers of Russian (speak or spoke Russian at home while growing up) and/or who attended school in Russia in the former Soviet Union for one or more years when their family lived in the former Soviet Union, may be eligible for special major track for heritage speakers. Heritage speakers of Russian who wish to major in Russian should speak with the advisor for the Russian major to map out the specific plan for their major. The Heritage Speaker track requires 36 credits as follows:

- RUSS 3060 Advanced Russian for Heritage Speakers 1—3
- RUSS 4060 Advanced Russian for Heritage Speakers 2—3
- Or any other upper-division Russian language course (recommended: RUSS 4010, 4020, 4210 or 4230)

*Note: students may not receive credit for both 3060 and 4010 or 4020 and 4060.*

- RUSS 4811 19th Century Russian Literature (core: literature and the arts)—3
- RUSS 4821 20th Century Russian Literature and Art (core: literature and the arts)—3

Two of the following (6 credit hours):

- RUSS 2211 Introduction to Russian Culture (core: historical context)—3
- RUSS 2221 Introduction to Modern Russian Culture (core: historical context)—3
- RUSS 3601 Russian Culture Past and Present (core: historical context)—3

One of the following (3 credit hours):

- RUSS 2231 Fairy Tales of Russia (core: literature and the arts)—3
- RUSS 2471 Women in Russian Culture from Folklore to the 19th Century (core: historical context)—3
- RUSS 2501 Russia Today (core: contemporary societies)—3

Three of the following (9 credit hours):

- RUSS 3211 History of Russian Cinema (core: literature and the arts)—3
- RUSS 3701 Slavic Folk Culture: Ideals and Values in the Contemporary World (core: ideals and values)—3
- RUSS 4221 Cultural Mythologies of Russian Communism (core: ideals and values)—3
- RUSS 4301 American-Russian Cultural Relations (core: historical context or U.S. context)—3
- RUSS 4471 Women in 20th Century Russian Culture (core: human diversity)—3

- 
- RUSS 4831 Contemporary Russian Literature (core: literature and the arts or contemporary societies)—3

One of the following (3 credit hours):

- RUSS 4431 Dostoevsky—3
- RUSS 4441 Tolstoy— 3
- RUSS 4451 Chekhov—3
- RUSS 4861 Absurd and Supernatural in Russian Literature—3

One other 3000-4000 level Russian or GSSL culture/literature or language course, or JWST 4544—3

### *Minor Program in Russian Studies*

A minor is offered in Russian Studies. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. A minor in Russian requires the completion of 20 credit hours. All courses used to fulfill requirements for the minor must receive a grade of C- or better. (None may be taken *pass/fail*.) Students may not apply more than 9 hours of transfer credit (including 6 upper-division credits) toward the minor. Transfer courses must be approved by the department.

- RUSS 2010 Second-Year Russian 1 (core: foreign language)—4
- RUSS 2020 Second-Year Russian 2<sup>1</sup>—4
- RUSS 3010 Third-Year Russian 1 or any 3000-4000 level Russian literature, film, or culture course—3

One additional 2000-4000 level RUSS course—3

One of the following (3 credit hours):

- RUSS 2211 Introduction to Russian Culture (core: historical context)—3
- RUSS 2221 Introduction to Modern Russian Culture (core: historical context)— 3
- RUSS 3601 Russian Culture Past and Present (core: historical context)—3

One of the following (3 credit hours):

- RUSS 4811 19th Century Russian Literature (core: literature and the arts)—3
- RUSS 4821 20th Century Russian Literature (core: literature and the arts)—3

#### **Note**

<sup>1</sup> Heritage speakers should take RUSS 3060 Advanced Russian for Heritage Speakers (3 credit hours) and RUSS 4060 Advanced Russian for Heritage Speakers II (3 credit hours) as well as any other 4000-level Russian language course in lieu of RUSS 2010 and RUSS 2020. In this case, 18 credit hours will be sufficient for the minor if other requirements are fulfilled.

### *Study Abroad*

The department strongly recommends that all Russian majors take part in the university summer language program in St. Petersburg. For more information on CU Study Abroad programs, see [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

### *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in Germanic or Russian studies, students should meet the following requirements:

- Begin to study the language in the freshman year, or have received AP credit.

- In consultation with the major program advisor before the end of the drop/add period in the first semester, plan a tentative schedule of courses to be taken over eight semesters.
- Discuss progress toward the degree each semester with the major advisor.

Note: Although these requirements apply only in cases in which students are seeking to graduate under the terms of the four-year guarantee, they are good advice for all majors. Consult the program advisor about the major at any time.

### *Courses Taught in English*

A number of courses are offered in translation. These courses generally require no previous study in the language, history, or culture of the area involved, and are open to all interested students, regardless of major.

### *Concurrent Bachelor's/Master's Program*

## Concurrent BA/MA Program in German Studies

Highly motivated undergraduates majoring in German studies at CU-Boulder have the opportunity to enter a BA/MA program, thereby earning both the BA and the MA in five years. The concurrent degree program offers a unique academic credential designed to produce skilled graduates for a variety of occupations. In most cases, students must make written application no later than April 1 of the sophomore year. A minimum GPA of 3.250 for all courses is required, as well as two letters of recommendation indicating strong potential for advanced, intensive work in German. The recommended track requires a total of 58 hours of courses, with graduate courses in the fourth and fifth years only. Students should have completed most of their MAPS/core requirements (at least 30–37 hours) by the end of the sophomore year. Only CU-Boulder students may apply. For specific requirements please contact the department or see [gsll.colorado.edu](http://gsll.colorado.edu).

### *Graduate Degree Program(s)*

## Graduate Study in Germanic and Slavic Languages and Literatures

### Master's Degree in German

Students wishing to pursue the interdisciplinary master's in German should read carefully Requirements for Advanced Degrees in the Graduate School section. The following prerequisites and requirements apply: BA or equivalent in German or BA-level proficiency in German with a BA in a related field; general knowledge of the German-speaking countries' literature, history, and culture; 24 hours of approved course work and a master's thesis (6 hours), or 30 hours of course work without thesis; and reading knowledge of one modern foreign language in addition to German and English. For specific requirements please contact the department or see [gsll.colorado.edu](http://gsll.colorado.edu).

### Master's Degree in German/Master's of Business Administration

To support the university's mission of advancing knowledge across disciplines, the Leeds School of Business and the Department of Germanic and Slavic Languages and Literatures offer a dual degree, Master of Business Administration and Master of Arts in German Studies. In most cases, students should be able to complete the dual degree in three years with a total of 70 credit hours. Prospective students must apply to and meet the application and admission requirements for each program separately. See the Department of Germanic and Slavic Languages and Literatures for application to the German MA program, and the Leeds School of Business to apply to the MBA program.

### PhD in German Studies

This program has just been approved, with details forthcoming. Please contact the department with

any questions at [gsll@Colorado.edu](mailto:gsll@Colorado.edu) or see their website at [gsll.colorado.edu](http://gsll.colorado.edu).

## *Certificate Program*

### Certificate in International Engineering in German

The purpose of this certificate is to provide engineering students training in language and culture, giving them skills necessary to work effectively with engineers in multinational teams and to succeed during overseas assignments in today's global marketplace. It is an indication to prospective employers that the students have a certain degree of proficiency in German language and an understanding of the culture. Visit [ecadw.colorado.edu/engineering/academics/international-german.htm](http://ecadw.colorado.edu/engineering/academics/international-german.htm) for more information.

### Graduate Certificate Program in Critical Theory

The Graduate Certificate Program in Critical Theory offers students a background in philosophical foundations of critical theory. Drawing on disciplines such as philosophy, psychoanalysis, Marxism, literary criticism, and sociology, critical theory develops analytical tools for describing and evaluating modern society and cultural production. Students who are currently enrolled in a graduate disciplinary degree or a professional degree program are encouraged to apply for the Graduate Certificate in Critical Theory early in their graduate career. For further information, please visit our website at [gsll.colorado.edu](http://gsll.colorado.edu).

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# Graduate Degrees in Education

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## Graduate Study

Graduate study in education at the University of Colorado is administered through the Office of Student Services, School of Education, and all inquiries regarding programs should be directed to the following address: **Office of Student Services**, School of Education, University of Colorado Boulder, 249 UCB, Boulder, CO 80309-0249

Detailed program materials and *The School of Education Graduate Student Handbook* are available from the School of Education Student Services office, Education 151 and online at [www.colorado.edu/education/prospective/gradprograms.html](http://www.colorado.edu/education/prospective/gradprograms.html). The degrees available in the various areas of graduate study are listed below:

**1. Curriculum and Instruction** (K–12 humanities education; K–12 mathematics and science education; K–12 literacy education; research on teaching and teacher education)

- Master of arts
- Doctor of philosophy
- Secondary Master's Plus (MA+) Licensure Programs  
CU-Boulder offers special programs for prospective secondary teachers that combine a master of arts degree in instruction and curriculum in a content area and teacher licensure to qualified students already holding bachelor's degrees. Admission is highly competitive, and program completion requires a two-year commitment of course work and school placements. Students in the MA+ programs become eligible for a Colorado teaching license after three semesters; they complete remaining course work for the master's degree in the fourth semester. Applicants must meet all graduate requirements listed below and undergo an extensive screening process. This program admits students for fall semester only. Complete program information is available in the Office of Student Services, Education 151 or by calling **303-492-6555**.

**2. Educational-Psychological Studies** (educational psychology)

- Master of arts
- Doctor of philosophy

**3. Research and Evaluation Methodology** (methods of educational research and evaluation, including statistics, measurement, and qualitative methods)

## Colleges & Schools

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- Doctor of philosophy

**4. Social and Multicultural Bilingual Foundations** (bilingual and multi-cultural education; bilingual/special education; education and cultural diversity; English as a second language; cultural, historical, social, and philosophical foundations; educational policy)

- Master of arts
- Doctor of philosophy

CU-Boulder does not offer programs in early childhood education, physical education, art education, counseling, school administration, higher education, school psychology, or educational technology.

## Teaching Endorsements at the Graduate Level

Through the School of Education (and in conjunction with other departments), the University of Colorado Boulder offers advanced course work leading to graduate level teaching and special services training in the following areas:

- Culturally and linguistically diverse education (grades K–12)
- Culturally and linguistically diverse education specialist: bilingual education (grades K–12)
- Reading teacher (grades K–12)
- Special education generalist (grades K–12)
- Special education specialist (grades K–12)
- Special services (offered through SLHS): Audiologist (ages 0–21); Speech/language pathologist (ages 0–21)

All of the above programs have degree, licensure, or experience requirements that must be fulfilled before admission. Please check with the department before applying.

## Admission

Prospective students seeking admission to a graduate degree program should request application forms from the University of Colorado Boulder, Office of Student Services, 249 UCB, Boulder, CO, 80309-0249, or visit online at [www.colorado.edu/education/prospective/gradprograms.html](http://www.colorado.edu/education/prospective/gradprograms.html). The completed forms should be returned to that office. Prospective graduate students should also read the Graduate School section for additional admission information. If test scores are required for admission to the desired program, applicants should request that the Educational Testing Service send their scores on the verbal reasoning, quantitative reasoning, and analytical writing sections of the Graduate Record Examination (GRE) to the Office of Student Services. A doctoral applicant who has not taken the GRE should arrange to do so.

Admission to all programs and degrees in the School of Education is selective. Meeting minimal admission requirements does not guarantee admission.

Application papers and all supporting documents, including GRE or Miller's Analogy Test (MAT) scores, if these scores are required for admission to the desired program, must be in the school's Office of Student Services by the admission deadline. Master's deadlines are September 1 for spring semester and February 1 for summer session and fall semester. The PhD deadline is January 1. The PhD program only has one admission cycle each year. The international student deadline for PhD students is December 1. Students should visit the International Student Admission website for additional forms and information, [www.colorado.edu/prospective/international](http://www.colorado.edu/prospective/international). The Secondary Master's Plus (MA+) deadline is January 1. Note that some program areas (MA+ and PhD) admit

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students for fall semester only.

## Advising

Graduate students are assigned an individual faculty advisor after admission and are required to submit a formal plan of study, approved by their advisor, before the end of the first full year of study.

Graduate students may obtain program information from the School of Education, Office of Student Services, Education 151, or from their faculty advisors.

## General Information

### *Maximum Load and Part-Time Study*

A maximum of 15 semester hours in any one semester may be applied toward degree requirements.

During the summer, 9 semester hours is the maximum that will be counted toward education graduate degrees. Within this limit, students may take up to 6 semester hours in a five-week summer term, and/or 3 semester hours in a three-week term. During the academic year for financial aid purposes, students will be regarded as having a full load if they are registered for 5 or more semester hours in courses numbered 5000 or above, or are registered in a minimum of 5 thesis hours. At least four semesters of residence credit, two of which must be consecutive in one academic year, must be earned for work taken at CU-Boulder. See the Graduate School section for clarification.

### *Quality of Work*

A grade average of *B* (3.00) or better is required for all work taken for any graduate degree.

Transferred credits are not included when calculating grade averages.

A mark below *B-* will not be credited toward the PhD program; a mark below *C* is not acceptable for MA students. Any graduate course in which a mark of *D* or *F* is reported as failed and must be repeated and passed if it is required in a student's degree program. Students who do not maintain at least a *B* (3.00) average or better may be suspended by the dean of the Graduate School upon the recommendation of the associate dean of graduate studies in the School of Education. Students may also be suspended from the Graduate School for continued failure to maintain satisfactory progress toward the degree sought.

### *Opportunities for Assistantships*

The School of Education has a limited number of assistantships administered by the dean on the recommendations of faculty and the associate dean for teacher education or associate dean for graduate studies. Some assistantships involve the supervision of student teachers; others involve helping professors in their teaching or research. Taxable stipends in amounts set by the university are paid for all assistantships. Appointments are usually made in terms of one-fourth time (10 hours a week) or one-half time (20 hours a week). Inquiries should be directed to the associate dean for graduate studies.

## *Graduate Degree Program(s)*

### Master of Arts in Education

The master of arts degree is available, comprising one academic year or more of graduate work beyond the bachelor's degree.

The master's degree must be completed within four years of initial enrollment. The MA plan II (nonthesis) degree requires a minimum of 30 semester hours. *See the Graduate School section for discussion of plan I and plan II.* Students may transfer no more than 9 semester hours of work taken at another institution or as a nondegree student at CU-Boulder.

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All program areas have outlined a recommended or required program of study, and students pursuing a degree are expected to follow that program unless they have appropriate substitutions arranged in advance with their advisors and the director of graduate studies. Pamphlets outlining the programs of study in education are available in the Office of Student Services.

At the beginning of the final term of study, each student must submit a form titled, "An application for admission to candidacy for an advanced degree." These forms are available in the Office of Student Services. If a minor is included, the form must first be signed by a representative of the student's minor department or program area. The form must be signed by the student and the student's advisor, and then submitted to the school's Office of Student Services for School of Education approval and then to the Graduate School for final approval. All students are required to pass a comprehensive-final examination or its equivalent, as determined by the program's faculty committee. (For time limits and other information, see the Graduate School section under Master's Degree.)

## Education as a Minor Field

In MA programs for majors outside the School of Education, students may include education as a minor if both their major department and the associate dean for graduate studies in the School of Education approve. For master's degrees, a minor in education consists of at least 9 hours of study in related courses. Not more than 2 semester hours may be transferred from another institution. A minor in education alone will not meet Colorado licensure requirements.

Students who propose to minor in education must have had sufficient undergraduate work in education to prepare them for graduate study in the field. Appraisal of undergraduate preparation will be made by the director of graduate studies.

## Doctoral Study in Education

In addition to the information included here, prospective PhD students should see the Graduate School section, and obtain a current copy of the *School of Education Graduate Handbook*.

The School of Education offers the doctor of philosophy (PhD) in education. Most students take four to six years to complete the course work, examinations, and dissertation required for the doctoral degree.

The school requires at least two semesters of full-time study in residence (one semester must be during the first two years of doctoral study). The School of Education expects that students will not hold a full-time job during their two semesters of residence.

In addition to course work requirements, doctoral students should be immersed in ongoing research with the faculty as early in their program as possible. All doctoral students in the school will be required to complete, at a minimum, one scholarly product; other research endeavors prior to the dissertation are desirable. Each of the program committees has established a structure for implementing this requirement. For example, in some programs students work individually with their faculty advisors; in other programs students make the research product an extra course requirement attached to a professional seminar.

**Admission Requirements.** Applicants for admission to doctoral study are expected to have a strong liberal arts background. A minimum undergraduate grade point average of 2.75 is required, but applicants are judged competitively so that most admitted applicants have GPAs of 3.00 or higher. A GPA of 3.00 or above is expected on all graduate work completed. PhD applicants are not required in all cases to have a master's degree; the decision rests with the program area faculty. At least two years of professional teaching experience relevant to the applicant's proposed area of study is strongly encouraged and recommended for programs in curriculum and instruction.

The Graduate Record Examination (GRE) (verbal and quantitative reasoning) is required for admission; there is no established minimum score. Faculty consider the GRE score as one factor

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among many in making admission decisions. An interview with a faculty admissions committee may be required.

**Degree Requirements.** Incoming doctoral students are required to complete a one-year introductory sequence as a cohort. The sequence is comprised of courses in Perspectives on Classrooms, Learning, and Teaching (EDUC 8210); Introduction to Educational Research and Policy (EDUC 8220); Quantitative Research Methods (EDUC 8230/8240); and Qualitative Research Methods (EDUC 8250/8260). In the second year, students also enroll in the Doctoral Seminar in Multiculturalism and Education (EDUC 8014). All other required course work is determined by the student's program area.

Fifty-six semester hours of course work beyond the master's degree is the normal requirement for the PhD. All program areas committees have outlined a program appropriate for individuals pursuing study in their area, and students are expected to follow that program unless they have arranged appropriate substitutions in advance with their advisor and the director of graduate studies. Pamphlets outlining the recommended programs of study in education are available from faculty or the Office of Student Services.

No continuing education work is accepted for the PhD.

**Culture/Language Requirement.** The culture/language requirement consists of two components: the Multiculturalism seminar (EDUC 8014) and a language component. The Multiculturalism seminar is scheduled every fall semester, is a doctoral-level course, and should be taken in the third semester of the student's course sequence (first semester of second year). Introductory language courses (see item #1 below) are recorded on the Degree Plan form as having satisfied the language requirement but may not be listed as doctoral course work. To fulfill the language component one of three options are possible:

1. Satisfactory completion of two semesters of college-level conversational language course taken at an accredited institution within the three years preceding admission with a grade of C- or better. The conversational language requirement also can be met by:
  - a. Conversational courses offered through Continuing Education. If the courses are taken for no credit, the instructor must provide written documentation of second-semester oral proficiency. Students should inform instructors before the start of the courses that such certification is sought.
  - b. Introductory Boulder campus courses such as SPAN 1010, ITAL 1010, FREN 1010, GRMN 1010, etc. These traditional courses meet the conversational requirement because instruction is conducted in the language and substantial language labs are part of the course expectations. Courses taken at another institution must be equivalent to the above courses to count toward this requirement.
  - c. Satisfactory performance on an oral proficiency examination indicating sufficient mastery to complete a second-semester college course. (Given a specific request, arrangements can be made for such exams to be available through language department faculty or from Continuing Education instructors on a case-by-case basis.)
2. The BUENO Puebla experience or a similar alternative experience to be approved by an EECD faculty member.
3. Course on Language Issues in Educational Research.

**Comprehensive Examination.** Before taking the comprehensive examination, students must submit the "Application for Admission to Candidacy for an Advanced Degree," available in the school's Office of Student Services.

Near the end of the term when students complete their course work and if their advisor approves, they take a comprehensive examination given by program area faculty that covers foundational knowledge in the program area. Students who fail this examination may repeat it once, at a time to be

determined by the examining committee.

**Dissertation.** In addition to course work, a doctoral dissertation for 30 semester hours of credit is required. A student registers for EDUC 8994 Doctoral Dissertation for three or more terms, but not more than 10 semester hours in any term. Not more than 10 dissertation credit hours taken in semesters prior to the semester in which the comprehensive examination is passed may be counted in the required 30 dissertation hours. After satisfactory completion of the comprehensive examination, the student must continuously register for a minimum of 5 dissertation hours during fall and spring semesters until the final defense. Off-campus students may register for 3 dissertation credit hours. On- and off-campus students must be registered for 5 hours during the semester the defense is completed.

When the student and the chair of the dissertation committee agree on a dissertation subject, they work with the director of graduate studies to identify a five-person committee. Then the student prepares a detailed prospectus and arranges for a meeting with the committee. After committee approval, the student may proceed with the research. Research involving human subjects must also have the approval of the university committee on human research. During the research for and the writing of a dissertation, a grade of *IP* (in progress) is reported for the credit hours taken; if the dissertation is completed and accepted as satisfactory, a grade is reported for the student's record.

**Time Limits.** Time limits for the PhD in education are the same as time limits for all Boulder PhD programs; see the Graduate School section for PhD time limits.

When students have passed the comprehensive examination, they must register each semester until the degree is attained, and pay the standard fee as announced by the Graduate School.

**Progress toward a Degree.** Doctoral study entails a long period of scholarly endeavor, which requires a time schedule. Students are responsible for meeting the deadlines involved.

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# Graduate Teacher Program

The [Graduate Teacher Program](#) provides professional development opportunities, career consulting, videotape consultation, and teacher training for all graduate students. Because teaching skills prepare graduate students for any career, all graduate students, including those with no teaching appointments, TAs, GPTIs, and RAs are welcome at GTP workshops on teaching, research, service, and personal and professional development. Workshops are held prior to both fall and spring semesters, throughout the academic year, and during summer session. Topics range from preparing a syllabus, diversity issues, effective approaches to research, academic service, and conflict management to preparing for an academic job interview.

The Graduate Teacher Program offers three certificates: the **Certificate in College Teaching** for graduate students who actually teach; the **Professional Development Certificate for Preparing Future Faculty (PDC/PFF)**; and, in collaboration with Career Services, the **Professional Development Certificate** for graduate students who are considering nonacademic career paths in business, government, industry (PDC/BGIA), or the arts. Requirements for each are posted on the GTP website at [gtp.colorado.edu](http://gtp.colorado.edu).

The **Lead Graduate Teacher Network** offers academic leadership training to 50 graduate students each year. Leads receive the Best Should Teach Silver Award, spend one week in extensive training, and assist departmental faculty with discipline-specific TA training.

International graduate students may benefit from the pre-fall-semester **Cultural Intensive**, workshops throughout the year, individualized consultation on teaching and career planning, and referrals to ESL services.

The Graduate Teacher Program's **Collaborative Preparing Future Faculty Network (COPFFN)** provides professional development opportunities for graduate students and faculty. PFF fellows may attend site visits on partner campuses, identify a faculty mentor on a partner campus, work on technology projects, and pursue the PDC/PFF.

The Graduate Teacher Program collaborates with the University Libraries to provide **Provost's Fellowships** to graduate students who wish to explore academic librarianship as a career.

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# History

Course code for this program is HIST.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in History

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

*(Note: These requirements took effect at the beginning of the 2011 summer term. Students who became history majors prior to that term may fall under previous major requirements and should consult one of the department's undergraduate advisors to determine which requirements to follow.)*

**Total Hours.** Students must complete 42 hours in history courses with grades of C- or better. Of those 42 hours, 24 must be at the upper division. Students should complete the required 1000-level survey courses, HIST 1800, and HIST 3000 before the end of their sophomore year and before they enroll in any 4000-level history classes.

#### *Required Courses and Semester Credit Hours*

#### Lower-division Requirements

- One of following linked sequences of 1000-level survey courses—6  
HIST 1010 and 1020 Western Civilization 1 and Western Civilization 2; HIST 1015 and 1025 History of the United States to 1865 and History of the United States since 1865; HIST 1018 and 1028 Introduction to Early Latin American History to 1820 and Introduction to Modern Latin American History since 1820; HIST 1051 and 1061 World of the Ancient Greeks and The Rise and Fall of Ancient Rome; HIST 1113 and 1123 Introduction to British History to 1660 and Introduction to British History since 1660. (NOTE: The courses in your sequence do not have to be taken in chronological order.)
- One 1000-level survey course from each of the two geographic areas not covered by your sequence—6  
**United States:** HIST 1015 or 1025  
**Europe:** HIST 1010, 1020, 1051, 1061, 1113, or 1123  
**World Areas:** HIST 1018, 1028, HIST 1038 Introduction to Latin American History, HIST 1108 Introduction to Jewish History, HIST 1208 Sub-Saharan Africa to 1800, HIST 1308 Introduction to Middle Eastern History, HIST 1408 Introduction to South Asian History, HIST 1608 Introduction to Chinese History, or HIST 1708 Introduction to Japanese History
- HIST 1800 Introduction to Global History—3

#### Upper-division Requirements

- HIST 3020 Historical Thinking and Writing—3
- One 4000-level United States history course—3

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- One 4000-level Europe history course—3
- One 4000-level world areas history course—3
- One 4000-level comparative or global history class—3
- Two 4000-level HIST electives—6
- One 3000-level Senior Seminar—3

Any additional 3000-level seminars can fulfill requirements that normally are fulfilled by 4000-level courses.

### Lower- or Upper-division Elective Requirement

- Any other history course—3

### Historical Period Requirement

Included in the 42 hours earned to complete the major requirements must be 6 hours in courses whose focus falls primarily before 1800 and 6 hours in courses whose focus falls primarily after 1800. 2000-level non-major HIST courses cannot be used to fulfill this requirement. (The department maintains a list of courses broken down by geographic areas and historical periods.)

### Ancillary Written Communication Requirement

In addition to the history requirements listed above and a minimum of 42 credits in history, students must complete two writing courses with a C- or better, one course from each of the two lists of courses under the following written communication core requirements.

- **Lower-division Written Communication:** ARSC 1080 College Writing and Research, ARSC 1150 Writing in Arts and Sciences, WRTG 1100 Extended First-Year Writing and Rhetoric, WRTG 1150 First-Year Writing and Rhetoric, WRTG 1250 Advanced First-Year Writing and Rhetoric, or any course that fulfills the upper-division written communication core requirement.—3
- **Upper-division Written Communication:** WRTG/NRLN 3020 Topics in Writing or one of the following acceptable alternative upper-division writing classes: ARSC 3100 Multicultural Perspectives and Academic Discourse, ENVS 3020 Advanced Writing in Environmental Studies, HONR 3220 Advanced Honors Writing Workshop, PHIL 3480 Critical Thinking and Writing in Philosophy, RLST 3020 Advanced Writing in Religious Studies, WMST 3800 Advanced Writing in Feminist Studies, or WRTG 3007 Writing in the Visual Arts.—3

Note: Under normal circumstances, no more than 45 credit hours in history may be used toward a student's total University of Colorado graduation requirements. Students must have a grade point average of at least 2.000 in the major in order to graduate. Students may receive credit for HIST 1020 and/or HIST 1025 and/or 3 lower-division elective HIST credits by obtaining a score of four or better on the high school Advanced Placement history test(s). Some types of International Baccalaureate credit are acceptable; consult one of the major advisors to determine individual applicability. The CLEP test is not accepted for credit.

All students majoring in history must complete at least 12 credit hours of upper-division history in courses taught by the CU-Boulder faculty. In addition, HIST 1800, HIST 3020, and the 3000-level Senior Seminar must be successfully completed on the CU-Boulder campus with a C-or better.

## *Graduating in Four Years*

Students should consult the Four-Year Guarantee Requirements for further information on eligibility for the four-year guarantee. The concept of "adequate progress" as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain

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adequate progress in history, students must consult a history advisor each semester, but the following plan provides a rough outline of acceptable progress:

- Declare the major no later than the second semester of the freshman year.

#### Recommended Sequence of Courses

#### *Required Courses and Semester Credit Hours*

#### **Freshman Year: total 12**

- Any two of the required 1000-level HIST survey courses—6
- HIST 1800 Introduction to Global History—3
- The ancillary lower-division written communication course—3

#### **Sophomore Year: total 12**

- The two remaining required 1000-level HIST survey courses—6
- HIST 3020 Historical Thinking and Writing—3
- One more 1000-level HIST survey course OR one 4000-level HIST lecture course—3

#### **Junior Year: total 12**

- Three 4000-level HIST lecture courses—9
- The ancillary upper-division written communication course—3

#### **Senior Year: total 12**

- Three 4000-level HIST lecture courses—9
- One 3000-level Senior Seminar—3

#### **Grand total all terms: 48**

### *Minor Program*

The current requirements are as follows:

- A total of 21 credit hours in history, of which at least 12 hours must be upper-division. Courses intended to count for the minor **may not** be taken on a *pass/fail* basis, and students must earn a C- or better in any course to be counted toward the 21-hour minor requirement.
- At least 3 credit hours (one course each) must be taken in **each** of the three following geographical areas: the United States, Europe, and World Areas (the latter field is comprised of Latin America, Africa, the Middle East, China, Japan, and South Asia).

#### **Additional Information about the Minor Program**

2000-level HIST courses and courses taken for core curriculum credit **are** applicable to the minor.

4000-level courses may be used to fulfill both upper-division hours and geographic area hours.

HIST 1800 and all 3000-level HIST courses are restricted to history majors. 3000-level courses may occasionally be taken by minors if the course is not full as of the second week of drop-add and/or you have written permission from the instructor. See the history academic advisor at [history.colorado.edu/undergraduates/advising](http://history.colorado.edu/undergraduates/advising) to register.

For a worksheet to help you with your minor planning, go

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

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to [history.colorado.edu/sites/default/files/HIST\\_minor\\_tracking\\_sheet.pdf](http://history.colorado.edu/sites/default/files/HIST_minor_tracking_sheet.pdf). (Note: this form is not interactive and must be printed.)

If you are not a history minor and would like to become one, please make an appointment to see the history undergraduate advisor at [history.colorado.edu/undergraduates/advising](http://history.colorado.edu/undergraduates/advising).

## *Graduate Degree Program(s)*

### Graduate Study in History

Students wishing to pursue graduate work in history leading to candidacy for an advanced degree should read carefully requirements for advanced degrees in the Graduate School section. The following are special departmental requirements. Additional information should be obtained from the Department of History.

**Admission Requirements.** For purposes of admission to the graduate program, the general Graduate Record Examination is required and a score in the 85th percentile or above on the verbal component is generally expected.

### Master's Degree

**Prerequisites.** As general preparation for graduate work in history, a broad liberal arts education, as well as a major in history, are desirable, though not specifically required. Candidates for graduate degrees may be required to pursue such fundamental courses in history as the department deems necessary to provide a suitable historical background.

**Residence.** While it is possible to obtain the MA degree in two full semesters of residence, more time is generally necessary.

**Degree Requirements.** A total of 24 credit hours of course work plus 6 hours of MA thesis, or 30 credit hours of course work without a thesis, is required for the degree. A comprehensive examination must be passed in the field of study before the degree is granted.

### Doctoral Degree

**Prerequisites.** Students who wish to work toward the PhD degree in history must indicate knowledge of certain fields of history, acquaintance with the fundamental tools of historical scholarship, and the ability to do original work. The PhD program does not require the completion of a master's degree, but directly admits those qualified applicants who hold an undergraduate history degree or who have completed appropriate undergraduate history preparation and who have been recommended by the graduate admissions committee.

**Residence.** At least three years of graduate study, two of which must be spent in residence, are required for the PhD degree.

**Degree Requirements.** A total of 45 postbaccalaureate credit hours, at least 30 of which must be taken at this university, and a dissertation are required for the degree. A minimum of one foreign language is required; however, students must be able to use those languages essential to research and advanced study in their respective fields. In addition, as required by the Graduate School, those students pursuing a PhD should complete a minimum of 30 credit hours of dissertation work beyond the minimum course work requirement.

A comprehensive written and oral examination, a dissertation which is an original contribution to knowledge, and an oral -examination on the dissertation must be successfully completed.

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# Human Language Technology

## *Certificate Program*

### Human Language Technology Certificate

The recent growth of the World Wide Web and the vast improvements in computing power of the last decade have led to a greater need for education and research in human language technology. This interdisciplinary field includes key technological and scientific areas such as automatic speech recognition and synthesis, natural language understanding and generation conversational agents, augmentative and alternative communication, audio and text-based information retrieval, and grammar and spelling aids.

The curriculum for the certificate includes five core courses, consisting of a computer programming foundation course plus four courses in human language technologies (e.g., natural language processing, morphology and syntax, speech processing, and recognition). At least two of the language technologies courses must be outside the student's home department.

Students are required to major in computer science, electrical and computer engineering, linguistics, or speech, language, and hearing sciences. The program is available to master's or PhD students at CU-Boulder, including students in concurrent bachelor's/master's programs. For further information see [www.colorado.edu/linguistics/programs/grad](http://www.colorado.edu/linguistics/programs/grad), or Institute of Cognitive Science at [ics.colorado.edu](http://ics.colorado.edu).

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# Humanities

Humanities is an interdepartmental major that offers an interdisciplinary and comparative approach to the study of the arts within their historical and cultural context. As a direct result of its encouragement of interdisciplinary approaches to the analysis and interpretation of literature, music, film, art, and modern media, humanities offers an opportunity for students and faculty to pursue a wide variety of approaches to these areas.

Humanities is committed to a profoundly comparative perspective enabling students and faculty to bring together not only different arts, but works drawn from different eras and cultures, Western and non-Western alike.

The undergraduate degree in humanities emphasizes knowledge and awareness of:

- the ways cultures and traditions define both themselves and each other;
- the formal, rhetorical, and ideological properties of cultural texts in a variety of forms and media (literature, history, philosophy, film, music, visual arts, architecture, dance, theatre, performance);
- the dynamic relationships between texts and their social and historical contexts;
- the genres and modes of texts and their production, transformation, and reception; and
- the theoretical and ideological underpinnings and implications of one's own and others' interpretive approaches and assumptions.

In addition, students completing the degree in humanities are expected to acquire the ability and skills to:

- analyze and interpret texts in a variety of forms and media;
- articulate such analyses and interpretations at a sophisticated level in both written and oral forms;
- discern similarities and differences among individual works, artistic media, historical periods, and cultural traditions;
- reason critically; and
- explore the connections between contemporary issues and academic work.

Course code for this program is HUMN.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Humanities

#### *Required Courses and Semester Credit Hours*

- HUMN 1010 and 1020 Introduction to Humanities 1 and 2—12
- HUMN 2000 Methods and Approaches to the Humanities—3
- Upper-division HUMN courses—15

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- Area of concentration: either a single language/literature (English or a foreign language, ancient or modern; first-year language courses may not be counted) or a field related to the humanities, such as history, art history, anthropology, etc.—18  
(At least 12 of these 18 hours must be taken at the upper-division level.)
- Secondary field: courses chosen from one other humanities-related discipline such as fine arts, music, dance, theatre, film, philosophy, foreign language literature (first-year language courses may not be counted), or other discipline—12

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. Because the humanities major is unique in requiring courses from a number of different departments in addition to its own courses, it is imperative that students wishing to graduate in four years declare the major early and meet regularly with a major advisor. The concept of “adequate progress” as it is used here refers only to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in humanities, students should meet the following requirements:

- Complete the lower-division sequence HUMN 1010–1020 by the end of the fourth semester.
- Complete at least two lower-division courses in the secondary field and/or area of concentration by the end of the fourth semester.
- Complete 15 of the remaining 42 credit hours at the upper-division level by the end of the sixth semester—at least two of these must be upper-division humanities courses.
- Complete all remaining required courses (no more than 27 credits) by the end of the eighth semester.

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# INVST Community Studies

Consistent with their vision for a just and sustainable world, INVST Community Studies programs develop engaged citizens and leaders who work for the benefit of humanity and the environment. INVST Community Studies innovatively operates as a community-based organization, practicing service learning and participatory education. In order to fulfill this mission, the program offers:

- a comprehensive two-year Community Leadership Program (CLP) focused on developing community leaders who engage in compassionate action as a lifetime commitment;
- Community Studies electives that foster civic responsibility and leadership potential;
- a Public Achievement Program for local primary and secondary school students; and
- a Youth Council for Public Policy that empowers young people to use the democratic process as a tool for positive social change.

The INVST CLP is the flagship program that offers a unique and transformational educational experience to all majors. Each year the INVST CLP admits a small group of students who are committed to making a positive difference with their lives. The two-year program is designed to cultivate deep understanding about issues facing people and the planet, and to provide skills and experiences for community leaders to fulfill progressive visions for change. Specifically, students participate in theory classes, skills-training classes, and two summer service-learning experiences, one domestic and one international. In addition, students intern six hours each week with community-based organizations during their first academic year, and collectively design, implement, and evaluate community leadership projects during their second academic year. Students learn and serve together in a small group environment throughout the program. Applications for the INVST CLP are due every year in March. For more information, call **303-492-7719**.

Course code for this program is INVS.

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# Integrative Physiology

Physiology is the field of biology that deals with function in living organisms. The academic foundation of the department is the knowledge of how humans and animals function at the level of genes, cells, organs, and systems. Our multidisciplinary curriculum requires students to take foundational courses in anatomy, biochemistry, mathematics, physics, physiology, and statistics. With this basic knowledge, students can undertake a flexible curriculum that includes the study of biomechanics, cell physiology, comparative physiology, endocrinology, immunology, exercise physiology, and neurophysiology. The department also encourages student participation in research.

Students completing a degree in integrative physiology are expected to acquire the ability and skills to:

- Read, evaluate, and synthesize information from the research literature on integrative physiology;
- Observe living organisms and be able to understand the physiological principles underlying function;
- Be able to interpret movement and performance data from laboratory measurements; and
- Communicate the outcome of an investigation and its contribution to the body of knowledge on integrative physiology.

These goals are achieved by providing a curriculum that comprises required courses and elective experiences. The required courses establish the foundation of knowledge for the discipline, whereas the elective courses provide opportunities to extend this knowledge on selected topics. The elective courses include seminars, critical thinking classes, independent study, and research projects on such topics as applied exercise science, biochemical basis of performance, cellular and systemic cardiovascular physiology, comparative physiology, developmental neurobiology, ecophysiology, environmental and comparative endocrinology, genetics of substance abuse, mechanics and neural control of locomotion, molecular behavioral genetics, molecular neurogenetics, motor behavior, neurophysiology of movement, neuroimmunophysiology, reproductive endocrinology, sleep and chronobiology, and vascular biology. More detailed information is available at [www.colorado.edu/intphys](http://www.colorado.edu/intphys).

Course code for this program is IPHY.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Integrative Physiology

Students must complete the general requirements of the College of Arts and Sciences and the required courses below.

A grade must be earned of C- or better.

#### *Required Courses and Semester Credit Hours*

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IPHY 2800 Introduction to Statistics—4

- IPHY 3410 Introduction to Human Anatomy with IPHY 3415 Introduction to Human Anatomy Lab and IPHY 3470 Human Physiology 1 and IPHY 3480 Human Physiology 2 and IPHY 3435 Physiology Lab. NOTE: IPHY 3450 Comparative Animal Physiology can be substituted for IPHY 3480—13
- EBIO 1210-1240 General Biology 1 and 2 with labs or MCDB 1150 and 1151 Introduction to Molecular Biology with lab and MCDB 2150 and 2151 Principles of Genetics with lab—8
- CHEM 1113/1114 and 1133/1134 General Chemistry 1 and 2 with labs—10
- PHYS 2010 and 2020 General Physics 1 and 2—10
- One of the following courses: MATH 1300 Analytic Geometry and Calculus 1, MATH 1310 Calculus 1 with Computer Applications, or APPM 1350 Calculus 1 for Engineers—4-5
- Three of the following six courses: IPHY 3060 Cell Physiology, IPHY 4600 Immunology, IPHY 4440 Endocrinology, IPHY 4540 Biomechanics IPHY 4650 Exercise Physiology, and IPHY 4720 Neurophysiology—12-14

The number of major elective hours needed to reach the 30 hour major requirement will vary based on what major courses are taken. Students cannot apply more than 45 major hours toward the degree. Contact department for current elective choices.

## *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in integrative physiology, students should meet the following requirements:

- Declare the major by the first semester.
- Complete the biology and chemistry requirements before the beginning of the fifth semester.
- Complete the anatomy and physiology requirements by the end of the sixth semester.
- Students must consult with a major advisor to determine adequate progress toward completion of major requirements.

## *Concurrent Bachelor's/Master's Program*

### Concurrent BA/MS in Integrative Physiology

The Department of Integrative Physiology has developed a curriculum that results in simultaneously conferring BA and MS degrees following a five-year course of study. The program has been designed to provide qualified undergraduate students with an opportunity to enhance their knowledge base in the discipline, engage in research, increase their opportunities for employment, and make their applications to medical/allied health professional schools more competitive. Candidates for the program are recruited from the undergraduate population of declared integrative physiology majors during the beginning of their junior year. All interested candidates must apply by the fall of their junior year. To apply, students must have a minimum GPA of 3.30 and one letter of recommendation. Approximately 3–5 of the applicants will be selected on a competitive basis to begin the program.

Once accepted into the program, a student must maintain a GPA of 3.00 in all course work undertaken. By the completion of their senior year, students must have completed the 114 undergraduate credits as outlined in the concurrent degree plan options. Continuing students must register for at least 5 graduate course credits per semester, beginning with the fall semester of their senior year. Students deciding to discontinue the program may do so at any time during their course of study. All credits completed toward the concurrent degree program will be counted toward the completion of the requirements for a BA degree in integrative physiology.

The curriculum for all students in the first year of the program is the same and is designed for

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students to complete their undergraduate requirements (114 credit hours) and 8 of their graduate credits. To complete the program in 5 years, students will be allowed to count 6 credits of their graduate work as electives for the undergraduate degree and 6 prespecified credits of undergraduate work toward the master's degree. See the section on Master of Science Degree for more information.

## Graduate Degree Program(s)

### Graduate Study in Integrative Physiology

To obtain materials for application and for any additional information, visit the departmental website at [www.colorado.edu/intphys/grad](http://www.colorado.edu/intphys/grad).

Entering graduate students must have an undergraduate preparation equivalent to the basic core curriculum requirements in integrative physiology at the University of Colorado or departmental approval of their academic preparation for graduate study.

All graduate applicants must have an introductory course in statistics or research design. In addition, students should have the knowledge base that would be obtained by completing three of the following six courses:

#### Required Courses and Semester Credit Hours

- IPHY 3060 Cell Physiology—4
- IPHY 4440 Endocrinology—4
- IPHY 4540 Biomechanics—5
- IPHY 4600 Immunology—3
- IPHY 4650 Exercise Physiology—5
- IPHY 4720 Neurophysiology—4

Satisfactory scores on the Graduate Record Examination tests are also required for admission to the department. These scores should be submitted at the time of application.

**Deficiencies.** If the undergraduate preparation of a prospective graduate student is not adequate, the student may be allowed to pursue graduate study with the understanding that identified deficiencies will be completed. The graduate admissions committee will determine the nature and extent of these deficiencies.

Deficiencies in any area of the undergraduate major may be met by completing approved course work in the subject at CU-Boulder or at other institutions. All entering graduate students with deficiencies must satisfy at least one deficiency per semester until all deficiencies are satisfied. Graduate courses taken before removing deficiencies may be accepted for graduate degree credit only if prior approval of the graduate coordinator has been granted.

## Master of Science Degree

Master's candidates entering the graduate program may select Plan I (thesis—30 credit hours, including 4-6 thesis hours), Plan II (nonthesis—30 credit hours including a 3-credit hour research project), or Plan III (course work only) for the degree program. Prior to or during their first academic year in the program, students should identify a graduate faculty member who will serve as their scholarly mentor for the development of a thesis or research project (Plan I or II). The scholarly mentor assists the student in deciding upon the thesis and nonthesis options based upon a careful examination of the candidate's academic record, the goals of the candidate, and the availability of departmental resources.

**Basic Requirements.** The following are required of all students for the master's of science degree: IPHY 5100 Colloquium in Integrative Physiology and IPHY 5800 Advanced Statistics and Research

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

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in Integrative Physiology, a minimum cumulative GPA of 3.00 in all graduate work undertaken, satisfactory performance on the comprehensive exam, and completion of the requirements for advanced degrees as stipulated by the Graduate School. For students enrolled in Plan I, IPHY 6950 Master's Thesis is required; for students enrolled in Plan II, IPHY 6840 Research Project is required.

**Comprehensive Examination.** Candidates are required to complete an oral examination covering the thesis (Plan I) or a written summary of the research project (Plan II).

## Doctoral Degree

**Basic Requirements.** Doctoral students must complete 30 credit hours of course work at or above the 5000 level and 30 semester hours of dissertation research (IPHY 8990). The following are required of all doctoral degree students: IPHY 5100 Colloquium in Integrative Physiology (2 academic year semesters); IPHY 5800 Advanced Statistics and Research in Integrative Physiology; IPHY 6830 Professional Skills for the Research Scientist; satisfactory completion of the department preliminary review; and satisfactory completion of both the comprehensive and final examinations.

**Advisory Committee.** The advisory committee consists of the student's mentor, a faculty member in the student's interest area, and either the department graduate coordinator or the department chair. The committee assists the student in planning a program of study.

**Preliminary Review.** After the first academic year, usually consisting of 18–20 hours of course work, the student completes a preliminary review by the student's advisory committee. The committee will evaluate the student's academic status (GPA of at least 3.00 required), a detailed proposal of the student's curriculum, written input from the student's mentor, and other pertinent materials deemed necessary by the committee.

The outcome of the preliminary review process can be one of three judgments: pass, fail, or probation. A student who passes may continue to pursue the doctoral degree. A student who fails may not continue in the doctoral program. A student on probation must complete any deficiencies determined by his or her committee before continuing to pursue the doctoral degree.

**Comprehensive Examination.** The comprehensive exam will be administered to the student within four semesters of entry into the doctoral program. The format of the exam, and the composition of the comprehensive exam committee, will be determined by the mentor in consultation with the student. The examination will be based on a document that is about 20 pages in length and designed to demonstrate the student's comprehensive knowledge on a topic. The membership of the committee (a minimum of five members) is submitted to the dean of the Graduate School for approval. Students are given two opportunities to pass the comprehensive exam. The written portion of the exam is based upon the student's course work and requires demonstration of broad-based knowledge in integrative physiology. Specific areas to be evaluated are determined by the mentor and the student.

**Dissertation.** Successful completion of the comprehensive exam advances the student to doctoral candidate status, and the student may then begin a dissertation. All students must complete a formal written dissertation that conforms to the requirements established by the Graduate School at the University of Colorado Boulder.

**Final Examination.** After completion of the dissertation, a final examination is scheduled. The exam consists of a written submission of the dissertation work and an oral defense. The final examination committee consists of at least five members, one of whom must be from outside the department. Three of the members must be Boulder campus resident faculty.

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# International Affairs

With the increasing importance of world issues to the United States, employment opportunities in government, international organizations, and business continue to expand. Today there is an urgent need for college graduates with a strong background in international affairs. To meet this need, the University of Colorado offers a comprehensive and flexible interdisciplinary program in international affairs leading to the BA degree.

The undergraduate degree in international affairs emphasizes knowledge and awareness of:

- major political, economic, social, and cultural problems facing the international community, including international economic relations, world population, and resource utilization
- the international political system in the broadest global context, international organizations and alliances, and foreign political systems and processes
- ethical issues involved in international relations
- patterns of conflict and cooperation among nations and peoples
- chief historical factors that give rise to existing international institutions and processes
- problems and issues in United States foreign policy

In addition, students completing the degree in international affairs are expected to acquire the ability and skills to:

- analyze an international problem from a political, economic, historical, and cultural perspective
- read, critically evaluate, and synthesize information obtained from international affairs literature
- analyze international phenomena critically
- communicate, orally and in writing, findings to other students of international affairs and to a broader audience

Course code for this program is IAFS.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in International Affairs

Students must complete the general requirements of the College of Arts and Sciences and a minimum of 51 hours of specified courses with a grade of C- or better (none may be taken *pass/fail*), distributed as follows

#### *Required Courses and Semester Credit Hours*

#### Lower-division (18 hours)

- ECON 2010 Principles of Microeconomics—4
- ECON 2020 Principles of Macroeconomics—4
- IAFS 1000 Global Issues and International Affairs—4

## Colleges & Schools

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- PSCI 2012 Introduction to Comparative Politics—3
- PSCI 2223 Introduction to International Relations—3

## Upper-division

Complete the requirements listed below for **functional area**, **geographic concentration**, **major elective**, **foreign language**, and **senior seminar**. IAFS 3000 can be repeated up to 9 credits for different topics.

- **Functional Area (18 hours)**

Students must complete one class in each of the four functional areas and complete two additional classes in any functional area. Students cannot apply more than four functional area classes from any one department.

### **Development and Culture (Functional Area I)**

ANTH 4020 Explorations in Anthropology (approved sections only); ANTH 4500 Cross-cultural Aspects of Socioeconomic Development; ANTH 4510 Applied Cultural Anthropology; ECON 3784 Economic Development; ECON 4774 Economic Reform in the Developing Countries; ECON 4784 Economic Development; ECON 4794 Economic Growth; GEOG 3682 Geography of International Development; GEOG/ECON 4292 Migration, Urbanization, & Development; JOUR 4201 International Mass Communication (International Media Certificate students only); LING 3545 World Language Policies; PSCI 4012 Global Development; PSCI 4732 Critical Thinking in Development; SOCY 3002 Population and Society; SOCY 3012 Women & Development; SOCY 4007 Global Human Ecology; SOCY 4052 Social Inequalities of Health; WMST 3500 Global Gender Issues; WMST 4300 Sex, Power, and Politics: International Perspectives

### **International Economics, Business, and Political Economy (Functional Area II)**

ECON 3403 International Economics and Policy; ECON 3545 Environmental Economics; ECON 4413 International Trade; ECON 4423 International Finance; ECON 4504 The New Institutional Economics: Institutions, Contracts and Economic Outcomes; ECON 4545 Environmental Economics; ECON 4999 Economics in Action (approved sections only); FNCE 4060 London Summer in International Finance; INBU 4200 International Financial Management; INBU 4300 International Business and Management; MKTG 3450 International Business and Marketing; PSCI 4193 International Political Economy; PSCI 4272 The Political Economy of Advanced Industrial Democracies

### **Political Geography, International Security, Foreign Policy (Functional Area III)**

ANTH 4580 The Holocaust; GEOG 4712 Political Geography; GEOG 4742 Environments and Peoples (approved sections only); HIST 4050 The World War II Era; HIST 4126 US Diplomatic History since 1940; HIST 4146 Military History; HIST 4166 The War in Vietnam and its Legacy; PHIL 3190 War & Morality; PSCI 3123 War, Peace and Strategic Defense; PSCI 3143 Problems in International Relations; PSCI 3163 American Foreign Policy; PSCI 3191 National Security Organization and Policy Making; PSCI 3193 International Behavior

### **International Institutions, Rights, and Norms (Functional Area IV)**

HIST 4820 Human Rights: Historical Perspectives; JOUR 4341 Global Media (International Media Certificate students only); PHIL 3260 Philosophy and International Order; PRLC 3810 Global Issues in Leadership; PSCI 3062 Revolution and Political Violence; PSCI 4173 International Organization; PSCI 4183 International Law; PSCI 4783 Global Issues; SOCY/ENVS 4027 Inequality, Democracy, and the Environment; SOCY 4111/INVS 4402 Nonviolent Social Movements; SOCY 4121 Sociology of Religion; WMST 3700 Contemporary Topics in Women, Gender, and Sexuality Studies (approved sections only)

- **Geographic Concentration (9 hours)**

Students are required to complete three classes concentrating on one of the four following global regions: Africa/Middle East, Asia, Europe/Eurasia, or Latin America. Students should choose a geographic concentration and a language appropriate to that geographic

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concentration no later than the beginning of their junior year.

Geographic concentration course work should be mainly in the social sciences, must include one course in contemporary history, and can include a maximum of three credits of contemporary literature (taught in the foreign language). See [iafs.colorado.edu](https://iafs.colorado.edu) for geographic concentration courses.

- **Major Elective (3 hours)**

Students must complete one additional class from any functional area or the student's geographic concentration.

- **Language Requirement**

A third-year university-level proficiency in a foreign language appropriate to the geographic concentration is required. This requirement may be met by completion of one or two semester-long, third year, university-level grammar courses (depending on the language) with a grade of C- or better, while also satisfying language department requirements for advancement through the sequence, or by certification from the appropriate department of such competence.

- **Senior Seminar (3 hours)**

IAFS 4500 Post-Cold War World or IAFS 4800 Honors Seminar in International Affairs is required.

## Recommendations

- All international affairs majors should have a good command of the English language.
- Students should choose electives with a view to their relevance to this program or usefulness as prerequisites for upper-division work.
- During the semester prior to graduation, students must complete a statement of major status obtained from their advisor.
- Students in the international affairs program are encouraged to consider the possibility of participating in one of the Study Abroad programs affiliated with the University of Colorado. Students wishing to participate in such a program should contact their advisor to work out an appropriate program.
- Internships are a useful experience for students seeking a career in international affairs. The Internship in International Affairs (IAFS 4930) provides the opportunity to earn academic credit for appropriate internships in the field. This course is generally offered during the spring and summer sessions; enrollments are limited. Interested sophomores, juniors, or seniors should consult with the director of the Internship Program. An application is required for admission to the Internship Program; see [iafs.colorado.edu](https://iafs.colorado.edu) for more details. IAFS 4930 could count for upper-division functional area or geographic concentration credit with approval from the internship director.
- The IAFS Honors Program offers the opportunity to learn and apply research skills for a select number of IAFS majors. Entry into the IAFS Honors Program is limited to seniors with a 3.400 major GPA and a 3.300 overall GPA. The Honors Seminar in International Affairs (IAFS 4800—offered each fall semester) provides instruction in research methods and facilitates the development of a sound research project. Research continues into the spring semester under the guidance of individual faculty members and through the continuation course, Honors in International Affairs (IAFS 4810). Interested and eligible students should consult with their academic advisor and the director of the Honors Program before spring break of their junior year. An application is required for admission to the Honors Program; see [iafs.colorado.edu](https://iafs.colorado.edu) for more details. IAFS 4810 could count for either an upper-division functional area or a geographic concentration class with approval from the honors director.
- Students interested in international affairs may want to consider the Global Studies Residential Academic Program offered through the residence halls. See Residential Academic Programs

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> [Museum and Field Studies](#)

> [Neuroscience](#)

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for information.

The specific courses that may be counted to meet the requirements in this program are determined by the committee on international affairs and the dean of the College of Arts and Sciences.

## *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in international affairs, students should meet the following requirements:

- Declare the major by the beginning of the second semester.
- Begin language study by the third semester.
- Complete the lower-division requirements by the end of the sophomore year.
- Begin area of geographic concentration courses in first semester of the junior year.
- Begin upper-division general international affairs requirements in the first semester of the junior year.
- Successfully complete any remaining major requirements by the end of the eighth semester.

## *Certificate Program*

### International Media Certificate

An International Media Certificate is available to students of international affairs or journalism. This certificate allows students majoring in international affairs to explore careers in international reporting, advertising, and entertainment, while journalism majors will acquire the context and perspective necessary to work in global and international jobs.

The certificate requires 24–25 credit hours (depending on the lower-division courses chosen). Fifteen of the credit hours must be upper-division courses. Students majoring in international affairs are eligible to apply for admission to the certificate program if they have completed 30 credit hours and 6 credits of courses in their major with a GPA of 2.750 or better. For more information consult [iafs.colorado.edu](http://iafs.colorado.edu).

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# Jewish Studies

The Program in Jewish Studies explores Jewish culture, history, society, and thought from a broad, interdisciplinary perspective. The program's faculty are cutting-edge, engaged scholars and teachers from a variety of fields in the humanities and social sciences. Jewish Studies faculty members seek to inspire students and the larger community, both on and off campus, to connect Jewish thought and text to action and people's lives. As Jews have spread across the world over the last two millennia, they have influenced and been influenced by the cultures in which they have resided. The study of Jewish culture, society, history, and religion is, by its nature, comparative. Within the liberal arts, the Jewish Studies curriculum is related to many different areas.

The purpose of this program is to familiarize students with the different facets of Jewish civilization and to see how these facets relate to the larger world. The interdisciplinary program in Jewish studies now offers an undergraduate major and two minors. This program of study provides students with an opportunity to learn more about this new and growing field of scholarship. For current information, contact Jamie Polliard, either by e-mail at [Jamie.Polliard@colorado.edu](mailto:Jamie.Polliard@colorado.edu) or by phone at 303-492-7143.

In addition to the general requirements of the College of Arts and Sciences, students must complete 36 credit hours of Jewish studies requirements. A grade of C- or better must be received in all Jewish studies courses used to satisfy the major requirements, with an overall average of 2.00 in the major. No more than 6 credit hours may be taken in independent study. No *pass/fail* graded courses may satisfy the 36-semester-hour minimum requirement. Many courses also satisfy university core curriculum requirements. For more information on the core curriculum visit [colorado.edu/ArtsSciences/students/undergraduates/core\\_curriculum.html](http://colorado.edu/ArtsSciences/students/undergraduates/core_curriculum.html).

Course code for this program is JWST.

## Required Courses (6 credit hours)

- JWST/HEBR 2350 Introduction to Jewish Culture—3
- JWST 4000 Methods in Jewish Studies (Senior Capstone)—3

## Language Requirement

Three years of university level language training or demonstrated equivalent proficiency in Hebrew (modern or Biblical) or another language that is to be used in the Jewish Studies capstone project (JWST4000). Examples include Russian, French, German Arabic, or Spanish. **Language must be approved by major advisor.**

**Completion of at least two (6 credit hours) of the following courses, all courses are highly recommended:**

- JWST/HEBR 1818 Introduction to Pre-Modern Jewish History—3
- JWST/HEBR 1828 Introduction to Modern Jewish History—3

## Colleges & Schools

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- JWST/HEBR 2551 World Jewish Literature—3
- JWST/RLST 3100 Judaism—3
- JWST/IAFS 3600 Global Secular Jewish Societies—3

**Optional but highly recommended:**

- JWST 3930 Internship in Jewish Studies—3
- 12–24 remaining credit hours, of which at least eight must be upper division (3000-4000 level), taken from among the following list or additional course by approval of major advisor:

**Lower Division**

- JWST/RLST 2600 Judaism, Christianity, Islam—3
- JWST/GRMN 2502 Representing the Holocaust—3
- JWST/GRMN 2601 Kafkaesque—3
- HEBR 1030 Biblical Hebrew—3
- HEBR 1040 Biblical Hebrew—3
- HEBR 2121 Intermediate Hebrew—4
- *Note:* The first three semesters of modern Hebrew (or any equivalent language being used in the required capstone course JWST4000) do not count as credits toward the major.

**Upper Division**

- JWST/ANTH 4050 Topics in Jewish Anthropology: Cultures of Israel and Palestine—3
- JWST/ANTH 4050 Topics in Jewish Anthropology: World of Hidden Jews—3
- JWST/ANTH 4580 The Holocaust—3
- JWST/ENGL 3312 The Bible as Literature—3
- JWST/ENGL 3677 American Jewish Writers—3
- JWST/GRMN 3501 German Jewish Writers—3
- HEBR 3010 Third Year Hebrew, First Semester—3
- HEBR 3020 Third Year Hebrew, Second Semester—3
- JWST/HEBR 3202 Women, Gender, and Sexuality in Jewish Texts and Traditions—3
- JWST/HEBR 4101 Topics in Hebrew Literature—3
- JWST/HIST 4338 History of Modern Israel—3
- JWST/HIST 4348 Topics: World Areas in Jewish History—3
- JWST/HIST 4349 History of Jews under Islam—3
- JWST/HIST 4544 History of Yiddish Culture—3
- JWST/HIST 4803 Topics: European Jewish History—3
- JWST/HIST 4804 Modern European Jewish History—3
- JWST/HIST 4827 Modern American Jewish History—3
- JWST/IAFS 3610 Topics in International Affairs and Jewish Studies—3
- JWST/IAFS 3650 Arab–Israeli Conflict—3
- JWST/RLST 4500 Topics in Judaism—3
- WRTG 3020 After the Holocaust—3

**Minor Programs**

Minors are offered in Jewish Studies and Hebrew & Israel Studies. Declaration of a minor is open to

- > [Classics](#)
- > [Cognitive Science Studies](#)
- > [Communication](#)
- > [Comparative Literature Graduate Program](#)
- > [Distributed Studies Program](#)
- > [Ecology and Evolutionary Biology](#)
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- > **Jewish Studies**
- > [Lesbian, Gay, Bisexual, Transgender, and Queer Studies](#)
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any student enrolled at CU-Boulder, regardless of college or school. A grade of C- or better must be received in all courses used to satisfy the minor requirements. For more information visit [colorado.edu/artsciences/students/undergraduate/academics/minors.html](http://colorado.edu/artsciences/students/undergraduate/academics/minors.html).

## *Minor in Jewish Studies (18 credit hours)*

- Complete JWST/HIST 1818 Introduction to Pre-Modern Jewish History or JWST/HIST 1828 Introduction to Modern Jewish History—3
- JWST/HEBR 2350 Introduction to Jewish Culture—3
- Four upper-division (12 credit hours at 3000-4000 level) Jewish Studies courses from the following list or by approval of advisor:
  - JWST/ANTH 4050 Topics in Jewish Anthropology: Cultures of Israel and Palestine
  - JWST/ANTH 4050 Topics in Jewish Anthropology: World of Hidden Jews
  - JWST/ANTH 4580 The Holocaust
  - JWST/ENGL 3312 The Bible as Literature
  - JWST/ENGL 3677 American Jewish Writers
  - JWST/GRMN 3501 German Jewish Writers
  - JWST/HEBR 3202 Women, Gender and Sexuality in Jewish Texts and Traditions
  - JWST/HEBR 4101 Topics in Hebrew Literature
  - JWST/HIST 4338 History of Modern Israel
  - JWST/HIST 4348 Topics: World Areas in Jewish History
  - JWST/HIST 4349 History of Jews Under Islam
  - JWST/HIST 4544 History of Yiddish Culture
  - JWST/HIST 4803 Topics: European Jewish History
  - JWST/HIST 4804 Modern European Jewish History
  - JWST/HIST 4827 Modern American Jewish History
  - JWST/IAFS 3600 Global Secular Jewish Societies
  - JWST/IAFS 3610 Topics in International Affairs and Jewish Studies
  - JWST/IAFS 3650 Arab-Israeli Conflict
  - JWST 3930 Internship in Jewish Studies (not repeatable for minor)
  - JWST/RLST 3100 Judaism
  - JWST/RLST 4500 Topics in Judaism
  - WRTG 3020 After the Holocaust

## **Minor in Hebrew and Israel Studies (19 credit hours)**

- Modern Hebrew Language (10 credit hours minimum above the 2010 Intermediate Hebrew level)
  - HEBR 2120 Intermediate Hebrew, 2<sup>nd</sup> semester—4
  - HEBR 3010 Advanced Hebrew, 1<sup>st</sup> semester—3
  - HEBR 3020 Advance Hebrew, 2<sup>nd</sup> semester—3
- JWST/HEBR 2350 Introduction to Jewish Culture—3
- Two of the following (or course approved by advisor) Hebrew/Israel Studies courses (6 credit hours):
  - JWST/ANTH 4050 Topics in Jewish Anthropology: Cultures of Israel and Palestine
  - JWST/IAFS 3650 Arab-Israeli Conflict
  - JWST/HEBR 4101 Topics in Hebrew Studies: Israeli Literature
  - JWST/HIST 4338 History of Modern Israel

The Program in Jewish Studies is growing rapidly and new courses are continually being added. Visit [jewishstudies.colorado.edu](http://jewishstudies.colorado.edu) for the most current course information.

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# Journalism and Mass Communication

Course code for this program is JOUR.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Journalism and Mass Communication

The Journalism and Mass Communication Program (JMC) enrolls 650 students in five sequences. Students begin with a broad education in the liberal arts through the College of Arts and Sciences core requirements and finish with a robust additional field of study and superior professional preparation and media studies instruction. The field of study will be a concentration in content area outside of JMC such as political science, philosophy, history, economics, and so forth. It will consist of a minimum of 30-36 semester hours, depending on the field selected. Students should start their additional field of study during their freshman year.

In addition to the required courses, JMC offers all students a wide range of classes in many aspects of media practice including photojournalism, electronic and digital journalism, advertising creative development, consumer behavior, publication design, magazine article writing, public relations principles and projects, and communication law.

Media criticism and analysis are also broadly represented in the curriculum through courses such as media institutions and economics, media ethics, mass communication history, media culture and globalization, and special-topics offerings.

Students who intend to apply to JMC complete their freshman year of undergraduate work (a minimum of 30 semester hours) typically in JMC as prejournalism and mass communication majors.

Upon completion of their studies, students receive a bachelor of science degree in journalism from one of five sequences:

- Advertising
- Broadcast News
- Broadcast Production
- Media Studies
- News-Editorial

and an emphasis in an additional field of study.

## Sequences

### *Advertising*

The advertising major prepares students through a holistic approach that is rooted in theory and grounded in practice. Students examine approaches to creative thinking, branding, and consumer engagement and explore the rapidly evolving digital landscape and its impact on business and

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### **Program in Journalism and Mass Communication**

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culture. Then they draw on that base of knowledge to solve real-world problems for both commercial clients and non-profit organizations.

The major offers courses in such areas as creative concepts, art direction, branding, media, and consumer insight, and students regularly intern at Colorado agencies and global agencies such as Ogilvy & Mather, JWT, and BBDO. The program's focus, however, is not on technical skills but on ideas and creative problem solving in the broadest sense. That is why graduates have been able to launch successful careers in everything from advertising and arts management to health policy and law. Those choosing to pursue advertising careers have taken positions at a variety of Colorado firms and at such national agencies as Goodby, Silverstein & Partners, Wieden & Kennedy, BBH, Crispin, Porter + Bogusky, Leo Burnett, and BBDO.

The advertising program was named one of the country's "renowned advertising programs" by the American Association of Advertising Agencies. Students in the creative track have also consistently taken home more awards than those at any other four-year university in the international One Show College Competition, the premier creative competition sponsored by New York's One Club.

### **Course Requirements for Advertising Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

#### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2403 Principles of Advertising—3
- JOUR 4651 Mass Communication Law (junior standing prerequisite)—3
- One upper-division conceptual course—3

#### **Advertising Requirements (16 hours)**

- JOUR 3403 Branding and Positioning (JOUR 2403 prerequisite)—3
- JOUR 3453 Introduction to Creative Concepts (JOUR 2403 prerequisite)—3
- JOUR 3463 Advertising Media (JOUR 3403 and 3453 prerequisites) or JOUR 3503 Intermediate Creative (JOUR 3403 and 3453 prerequisites)—3
- JOUR 4403 Campaigns (JOUR 3463 or 3503 prerequisites)—4
- JOUR 4931 Internship (JOUR 3453 or 3463 prerequisite)—3

#### **Journalism Electives (maximum of 12 hours)**

#### **Additional Requirements (10 hours)**

- ECON 1000 Introduction to Economics or ECON 2010 Principles of Microeconomics—4
- BCOR 2400 Fundamentals of Marketing—3
- MKTG 3250 Buyer Behavior—3

#### **Additional Field of Study (30-36)**

### *Broadcast News*

The broadcast news sequence prepares students for careers as news producers, reporters, photographers, editors, and writers for radio and television news organizations and cable TV

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systems. The curriculum covers several aspects of broadcast journalism, including broadcast news writing, videography and editing, television reporting, and producing and mass communication law. Students produce and anchor live newscasts twice a week and have won regional Emmys for their work. Many students intern at major market network affiliates. Students regularly win nationally competitive internships, and some have recently interned at ABC, CBS, CNBC, CNN, Fox Sports, MTV, NBC, MSNBC, PBS, and for *Inside Edition* and Bloomberg.

### **Course Requirements for Broadcast News Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

#### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2601 Principles of Journalism—3
- JOUR 4651 Mass Communication Law (junior standing prerequisite)—3
- One upper-division conceptual course—3

#### **Broadcast News Requirements (12 hours)**

- JOUR 3604 Radio and Television News (JOUR 2601 prerequisite)—3
- JOUR 3644 Principles of Production (JOUR 2601 prerequisite)—3
- JOUR 4354 TV Reporting (JOUR 3604, JOUR 3644 prerequisites)—3
- JOUR 4624 NewsTeam (JOUR 4354 prerequisite)—3

#### **Electives and Internships (4–16 hours)**

- JOUR 4931 Internship (JOUR 3604, JOUR 3644 prerequisites)—1-3

#### **Additional Field of Study (30-36)**

### *Broadcast Production*

The broadcast production sequence prepares students for production careers in radio, television, cable, private industry, and independent firms, including positions in programming, advertising, promotion, and management. The curriculum includes broadcast news writing, broadcast production principles, mass communication law, and advanced television production. Students direct and handle production duties for a live newscast twice a week and broadcast a weekly sports magazine. Many intern at Denver network affiliates and production facilities, including those of local professional sports teams. Students cover many collegiate sporting events on campus, where they produce, direct, and host programs, for which they have won numerous local and regional Emmy awards. Students intern at national news and entertainment organizations including Warren Miller Entertainment in Boulder, High Noon Entertainment in Denver, ESPN, Fox Sports, MTV, Sony Pictures Television, and *Entertainment Tonight*.

### **Course Requirements for Broadcast Production Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### **Journalism Core Requirements (12 hours)**

- JOUR 1001-3 Contemporary Mass Media—3
- JOUR 2601-3 Principles of Journalism—3
- JOUR 4651-3 Mass Communication Law (junior standing)—3
- One upper-division conceptual course—3

### **Broadcast Production Requirements (12 hours)**

- JOUR 3604 Radio and Television News (JOUR 2601, junior standing prerequisites)—3
- JOUR 3644 Principles of Production (JOUR 2601, junior standing prerequisites)—3
- JOUR 3674 TV Production 2 (JOUR 3644 prerequisite)—3
- Plus an additional upper-division conceptual course—3

### **Journalism Electives and Internships (4–16 hours)**

- JOUR 4931 Internship (JOUR 3644 prerequisite)—1-3

### **Additional Field of Study (30-36)**

## *Media Studies*

The media studies major prepares students for careers as analysts, evaluators, and producers of media messages and policies in government and private industry and for graduate education in the social sciences, humanities, and law. The curriculum covers courses in media, history, law, policy, institutions, industries, and culture. Students may gain practical experience by taking media practice courses and at campus media such as KVCU-AM, the *CU Sports Magazine* weekly television broadcast, as well as through internships. In recent years, media studies majors have interned at the Discovery Channel, Bravo, *Late Night with Conan O'Brien*, *The Financial Times*, Rocky Mountain Planned Parenthood, Kenney Marketing and Advertising, Ogilvy Public Relations Worldwide, *Aspen Magazine*, Boulder County AIDS Project, and KCNC-TV Community Affairs.

### **Course Requirements for Media Studies**

A total of 120 credit hours with a minimum of 30 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2403 Principles of Advertising or 2601 Principles of Journalism—3
- JOUR 4651 Media Communication Law—3
- One upper-division conceptual course—3

### **Media Studies Core Requirements (6 hours)**

- JOUR 4301 Media Ethics—3
- JOUR 4321 Media Institutions and Economics—3
- Media Theory Requirements (6–9 hours)
- JOUR 2403 Principles of Advertising—3
- JOUR 3771 Mass Media History—3

- JOUR 4201 International Mass Communication—3
- JOUR 4331 Women and Popular Culture—3
- JOUR 4453 Advertising and Society—3
- JOUR 4711 Mass Communication and Culture—3
- JOUR 4874 The Meaning of IT (Information Technology)—3
- JOUR 4871 Special Topics (conceptual only)—3

### **Media Practice (0–3 hours)**

Students are strongly encouraged to take ONE of the following:

- JOUR 3102 Press Photography—3
- JOUR 3453-3 Advertising Copy and Layout (JOUR 2403 prerequisite and instructor permission)—3
- JOUR 3473 Advertising Research (JOUR 2403 prerequisite and instructor permission)—3
- JOUR 3614 Radio Programming and Production—3
- JOUR 4102 Advanced Photography (JOUR 3102 prerequisite)—3
- JOUR 4272 Public Relations—3
- JOUR 4282 Public Relations Programs (JOUR 4272 prerequisite)—3
- JOUR 4562 Electronic Journalism—3
- JOUR 4802 Editorial and Opinion Writing (instructor permission prerequisite)—3
- JOUR 4802 Magazine Writing (instructor permission prerequisite)—3
- JOUR 4831 Publication Design and Production—3
- JOUR 4872 Digital Newsroom—3
- JOUR 4873 Motion Design (instructor permission prerequisite)—3
- JOUR 4873 Experience Design Workshop (instructor permission prerequisite)—3

### **Journalism Electives and Internships (1–13 hours)**

Any JOUR course, including those listed above under Media Theory and Media Practice will fulfill the elective category. Media Studies majors who wish to gain practical experience are also strongly encouraged to do an internship (JOUR 4931, 1-3 hours) and/or to work for a semester or more for one of the campus media: *CUIdependent* (instructor permission prerequisite); KVCU radio; *Sports Mag*; or *Cultural Currents*. For internships offered through news-editorial, broadcast, or advertising, students will need to take additional prerequisites (see major sheet for each sequence's requirements).

### **Additional Field of Study (30-36)**

#### *News-Editorial*

The news-editorial major prepares students for careers as reporters, editors, and photographers for newspapers, websites, news services, magazines, trade and technical publications, company publications, the government, and public relations firms. Beyond required courses in the principles of journalism, reporting, editing, and media law, students may choose electives ranging from photography and magazine writing to the digital newsroom and legislative reporting. Photo students have repeatedly placed nationally in the Hearst Journalism Awards Program. News-editorial students regularly obtain internships through national programs including the Dow Jones Newspaper Fund, the Politics & Journalism Semester in Washington, D.C., the Scripps Howard Foundation, and the Chips Quinn Scholars minority internship program. Others recently interned at The Associated Press, *USA TODAY*, *Huffington Post*, *Smithsonian Magazine*, *MLB.com*, *People* magazine, *Rolling Stone*, *The New York Times*, *The Wall Street Journal*, *National Geographic*, and *Sports Illustrated*. Students

intern year-round at Boulder outdoor recreation and healthy lifestyle magazines including *SKI*, *Skiing*, *Freeskier*, *Backpacker*, *VeloNews*, *Climbing*, and *Women's Adventure*.

## Course Requirements for News-Editorial Majors

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### Journalism Core Requirements (12 hours)

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2601 Principles of Journalism—3
- JOUR 4651 Mass Communication Law (junior standing)—3
- One upper-division conceptual course—3

### News-Editorial Requirements (12 hours)

- JOUR 3001 Public Affairs Reporting (JOUR 2601 prerequisite)—3
- JOUR 3552 News Editing (JOUR 3001 prerequisite)—3
- JOUR 4002 Reporting 2 (JOUR 3001 prerequisite)—3
- JOUR 4502 Reporting 3 (JOUR 3552, JOUR 4002 prerequisites)—3

### Journalism Electives and Internships (4–16 hours)

- JOUR 4931 Internship (JOUR 3001, JOUR 3552 prerequisites)—1-3

### Additional Field of Study (30-36)

## Graduate Degree Program(s)

### Master's Degrees in Journalism

More than 70 students are earning master of arts degrees with the Journalism and Mass Communication Program in two degree programs: newsgathering and mass communication research.

### Master's Degree in Newsgathering

The newsgathering option is designed for students with limited academic or professional experience in news reporting and writing. It prepares students to work in a wide variety of professional settings including newspapers and magazines, broadcast and cable media outlets, online publishing, and corporate communications. Students in the newsgathering program select an emphasis in print, broadcast, or a combination. Newsgathering students complete internships at radio, television, and award-winning daily newspapers along Colorado's Front Range. The program culminates with a professional project. Students complete a minimum of 36 graduate semester hours and should be able to finish the degree in two years

### Master's Degree in Mass Communication Research

The mass communication research option offers an opportunity for critical reflection on contemporary media structures, performance, policy, and practice. It provides graduate-level study in communication theory, research methods and relevant realms of culture, law, history, politics, and ethics. The research track is designed for students interested in an in-depth study of media or for those who wish to enhance an undergraduate or professional media background. The program is

especially recommended for students desiring to continue their studies toward a PhD and for professionals seeking to teach at the college level or develop an area of reporting specialization.

Total required hours: 33.

**Prerequisites:** None, unless students wish to update their knowledge in specific areas or lack background in the course of study they choose to pursue.

**Deadlines for Master's Programs:** The domestic application deadline is February 1. International applications must be submitted by December 1. Applications received after February 1 will be considered on a space-available basis.

## Doctoral Degree in Communication

The PhD in communication offered by the Journalism and Mass Communication Program is dedicated to interdisciplinary inquiry into the social, political, economic, and cultural dimensions of media, nationally and internationally, historically and in contemporary societies.

Because of the centrality of communication and media in social and individual life, media theory and research draw from a wide range of fields and disciplines, including political science, sociology, cultural studies, philosophy, history, linguistics, economics, anthropology, business, psychology, literature, law and public policy. The interdisciplinary nature of media studies is reflected in the research interests of the graduate faculty and in the curriculum, in which students take a significant portion of their course work outside JMC and receive training in both qualitative and quantitative research methods. In general, the curriculum within JMC focuses on the following areas: the range of theories, disciplines, and methodological approaches that have contributed centrally to the field of media studies; the institutional and cultural sources of meaning; the history and development of media industries and systems; and the relationship of media to other social institutions.

Doctoral students in the media studies program must take 42 hours of course work, pass the written and oral comprehensive examinations at the conclusion of course work, and prepare and defend a dissertation. The course work includes a two-semester Proseminar (6 hours), which is required of all first-year doctoral students in the program; 15–18 hours of electives within JMC; 12–15 hours of electives taken outside JMC; and 6 hours of methods (the qualitative and quantitative methods courses offered within JMC).

Applicants to the PhD program in media studies are expected to hold the master's degree or equivalent graduate work. In exceptional cases, applicants without a master's degree may be considered for admittance.

**Deadlines for Doctoral Programs:** The domestic application deadline is January 1. International applications must be submitted by December 1. Applications received by JMC after January 1 will not be considered.

## Financial Support for Graduate Study

**Master's Degree:** A few graduate assistantships are available. Applicants who wish to be considered should submit a resume and letter that includes detailed professional or academic qualifications by February 1 to the director of graduate studies at the School of Journalism and Mass Communication. Applicants are chosen based on experience and the specific skills needed for available assistantships each semester.

**Doctoral Degree:** Admitted PhD students are awarded graduate assistantships including a tuition waiver and stipend.

### *Certificate Program*

## The International Media Certificate

The International Media Certificate is designed for high-achieving majors in international affairs (IAFS) and journalism and mass communication (JOUR) at CU-Boulder. This certificate will open doors to international and world-area specializations for students in the Journalism and Mass Communication Program and will introduce international affairs students to careers in communication media. For more information, visit [www.colorado.edu/Journalism/globalmedia/imc/index.htm](http://www.colorado.edu/Journalism/globalmedia/imc/index.htm).

## Interdisciplinary Graduate Certificate Program in Environmental Policy

In collaboration with the university's Interdisciplinary Graduate Certificate Program in Environmental Policy, JMC offers students the opportunity to earn both the master's degree in journalism, with an emphasis in environmental journalism, and the Certificate in Environmental Policy. The time to complete the degree and the certificate is estimated to be about two years.

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# Law

The course code for this school is LAWS.

## Graduate Degree Program(s)

### Master of Laws (LLM)

Colorado Law offers one-year, full-time LLM degrees in three specialty areas:

- Entrepreneurial Law
- Information Technology and Intellectual Property Law
- Natural Resources Law

### Juris Doctor of Laws (JD)

#### First Year

First-year courses lay the foundation and all JD candidates take these courses to learn to “think like a lawyer.” Common law courses taught in the Socratic Method allow students to develop legal reasoning and critical thinking skills. All first-year students are assigned to a small cohort to help build strong relationships and study groups with classmates.

#### Fall Semester

- **Civil Procedure:** Rules governing pleading, joinder of parties, discovery, jurisdiction of courts, right to jury trial, appeals, and res judicata and collateral estoppel, with emphasis on the Federal and State Rules of Civil Procedure
- **Contracts:** Contract liability, offer and acceptance, consideration, frauds statute, contract remedies, the parol evidence rule, contract performance, conditions, changed circumstances
- **Legal Writing:** Legal analysis and document preparation, objective legal analysis techniques, legal rule synthesis, authority use to explain rules, and rule application to case facts
- **Legislation and Regulation:** Statutory interpretation, architecture of the administrative state, and interpretation and review of regulation.
- **Torts:** Nonconsensual allocation of losses for civil wrongs, focusing on negligence and strict liability

#### Spring Semester

- **Appellate Court Advocacy:** Appellate brief and document preparation, oral arguments before a three-judge mock court, techniques of persuading a court to accept a client’s view of the law and facts, professional judgments within ethical boundaries, and lawyer credibility
- **Constitutional Law:** Constitutional structure, including judicial review, federalism, separation of powers, and constitutional rights of due process and equal protection
- **Criminal Law:** Statutory and common law of crimes and defenses, the procedures by which the law makes judgments as to criminality of conduct, constitutional limits
- **Property:** Personal property, estates and interests in land, landlord–tenant, basic land conveyancing, and private land use controls

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- Academic Support

## *Second and Third Years*

The elective program in the second and third years builds upon the foundation laid in the first-year curriculum. Students must take Evidence and Legal Ethics and Professionalism courses and a seminar course. Colorado Law encourages a balance between experiential learning and classroom studies, graded courses and non-graded courses, and study within and outside the law school.

### **Elective Courses**

#### ***Business***

- Accounting Issues for Lawyers
- Advanced Contracts: Commercial Transactions
- Agency, Partnership, and the LLC
- Antitrust
- Bankruptcy
- Business Planning
- Business Transactions
- Corporate Finance
- Corporations
- Creditors' Remedies and Debtors' Protection
- Deals
- Humanizing Contracts
- Government Regulation of Business
- Law Practice Management
- Mergers, Acquisitions, and Reorganizations
- Payment Systems
- Secured Transactions
- Securities Regulation
- Sports Law
- Venture Capital and Private Equity

#### ***Criminal***

- Capital Punishment in America
- Comparative Criminal Procedure
- Criminal Procedure: Investigative Phase
- Criminal Procedure: Adjudicative Process
- White Collar Crime

#### ***Family, Gender, and Health***

- Domestic Relations
- Domestic Violence
- Family Law
- Gender, Law, and Public Policy
- Health Law I: Finance, Administration and Organization of Health Care
- Health Law II: Medical Malpractice Litigation
- Juvenile Justice

- 
- Legal Rights of Children
  - Parent, Child, and State
  - Sexuality and the Law

### ***Government and Public Interest***

- Administrative Law
- Advanced Torts
- Civil Liberties Legislation
- Civil Rights Legislation
- Conflict of Laws
- Education Law
- Election Law
- Employment Discrimination
- Employment Law
- Federal Courts
- First Amendment
- Labor Law
- Lawyers for Social Change
- Legislation
- Local Government
- Poverty Law
- Race and American Law
- Remedies
- Supreme Court Decision Making

### ***Intellectual Property, Technology, and Telecommunications***

- Computer Crimes
- Copyright
- Introduction to Intellectual Property Law
- IP and Technology Contracting
- Patent Law
- Patent Litigation
- Privacy and Security in the Digital Age
- Quantitative Methods
- Standards and Standardization Wars
- Telecommunications Law and Policy
- Trademark and Unfair Competition

### ***International***

- Comparative Employment Law
- Comparative Law
- Immigration and Citizenship Law
- International Business Transactions
- International Criminal Law: Theory and Practice
- International Dispute Settlement

- 
- International Environmental Law
  - International Human Rights
  - International Law
  - International Legal Order: History and Foundations
  - Introduction to Islamic Law
  - Introduction to Jewish/Israeli Law
  - Refugee and Asylum Law

#### ***Jurisprudence and Perspective***

- Economic Analysis of Law
- Jurisprudence
- Law and the Biology of Human Nature

#### ***Litigation***

- Advanced Appellate Advocacy
- Complex Civil Litigation
- Jury Selection and History
- Litigation Drafting

#### ***Natural Resources and the Environment***

- American Indian Law I
- American Indian Law II
- Climate Change Law and Policy
- Energy Insecurity and Sustainable Law
- Energy Law and Regulation
- Environmental Enforcement
- Environmental Law
- Environmental Litigation
- Foundations of Natural Resources Law and Policy
- Jurisdiction in Indian Country
- Land Conservation Law
- Mining and Energy Law
- Oil and Gas
- Public Land Law
- Toxic and Hazardous Waste
- Water Law
- Wildlife and the Law

#### ***Practice—Clinical***

- American Indian Law Clinic
- Appellate Advocacy Clinic
- Civil Practice Clinic
- Criminal Defense Clinic
- Entrepreneurial Law Clinic
- Extern Program

- 
- Family Law Clinic
  - Juvenile Law Clinic
  - Natural Resources Litigation Clinic
  - Technology Law and Policy Clinic

***Practice—Simulation***

- Advanced Trial Advocacy
- Alternative Dispute Resolution
- Appellate Advocacy Competition
- Arbitration
- International Moot Court Competition
- Legal Negotiation
- Mediation
- Motions Advocacy
- Rothgerber Moot Court Competition
- Trial Advocacy
- Trial Competition

***Property***

- Construction Law
- Land Conservation Law
- Land Use Planning
- Real Estate Planning
- Real Estate Transactions
- Real Property Security
- Wills and Trusts

***Research and Writing***

- Advanced Legal Research
- Advanced Legal Writing
- Creative Writing for Lawyers
- Independent Legal Research: Journal of International Environmental Law and Policy
- Independent Legal Research: Journal on Telecommunications & High Technology Law
- Independent Legal Research: Law Review
- Judicial Opinion Writing

***Taxation***

- Corporate Taxation
- Estate Planning
- Federal Estate and Gift Tax
- Federal Tax Politics
- Income Taxation
- International Taxation
- Taxation of Conduit Entities

***Seminars***

- 
- Advanced American Indian Law
  - Advanced Constitutional Law Equality and Privacy
  - Advanced Constitutional Law, Theory, and Practice of Free Speech in the United States
  - Advanced Criminal Procedure
  - Advanced Natural Resources Law
  - Advanced Topics in Federalism
  - Advanced Topics in Health Law and Policy
  - Advanced Torts
  - Affordable Housing
  - Antidiscrimination and First Amendment
  - Bioethics and Law
  - Cities, Suburbs, and the Law
  - Civil Liberties Litigation
  - Class and Law
  - Comparative Constitutional Law
  - Comparative Public Health Law and Ethics
  - Computers and the Law
  - Constitutional Foundations: Core Ideas
  - Constitutional Theory
  - Consumer Empowerment
  - Counseling Families in Business
  - Gender Law
  - Higher Education and the Law
  - Information Privacy
  - International Crimes and Punishment
  - Jurisprudence
  - Law and Economics of Utility Regulation
  - Law and Literature
  - Media, Popular Culture, and Law
  - Modern Legal Theory
  - Oil and International Relations
  - Power, Ethics, and Professionalism
  - Public Health Law and Ethics
  - Securities Litigation and Enforcement
  - Separation of Powers
  - Tax Policy
  - Theory of Punishment

*Note: Not all courses are offered each semester. This is a composite list of the last three years of course offerings.*

## *Dual Degree Programs*

### Dual Degree Programs in Law

Colorado Law students take advantage of an array of rich opportunities for interdisciplinary study through other CU schools and colleges, in addition to the University of Alberta. The schools work in

cooperation to select courses for the programs that allow students to earn the dual degrees in less time than it takes to earn each degree separately. Students apply separately to and are admitted by the two schools under their respective admissions requirements. Only credits earned after law school enrollment count toward the JD degree, and the first year of the JD curriculum must be taken exclusively at Colorado Law.

- **Juris Doctor/Master of Business Administration (JD/MBA)** with CU-Boulder's Leeds School of Business
- **Juris Doctor/Master in Environmental Studies (JD/ENVS)** with CU-Boulder's Environmental Studies Program
- **Juris Doctor/Doctorate in Environmental Studies (JD/PhD)** with CU-Boulder's Environmental Studies Program
- **Juris Doctor/Doctor of Medicine (JD/MD)** with UC Denver's School of Medicine on the Anschutz Medical Campus in Aurora
- **Juris Doctor/Master of Public Administration (JD/MPA)** with UC Denver's School of Public Affairs
- **Juris Doctor/Master of Science, Telecommunications (JD/MST)** with CU-Boulder's Interdisciplinary Telecommunications Program
- **Juris Doctor/Master of Urban and Regional Planning (JD/MURP)** with CU-Boulder's College of Architecture and Planning
- **Juris Doctor/Bachelor of Laws (JD/LLB)** with the University of Alberta Faculty of Law, Canada

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# Leadership, Certificate in the Study and Practice of

The certificate program in leadership development seeks to expand a students' capacity to be effective in leadership roles and opportunities during their time at CU and in their future professions. The program enhances a student's self-awareness, systemic thinking, creativity, and problem-solving skills. This development unfolds over a student's undergraduate career and is maximized by a variety of courses and experiences that challenge, support, and provide students with increased understanding of what they are learning and how it fits into the larger world. The Certificate in the Study and Practice of Leadership integrates the variety of experiences into a context that is likely to be useful when undertaking new leadership roles and responsibilities. Faculty and staff skilled at weaving those experiences and courses in connected and meaningful ways facilitate this developmental process.

A leadership certificate can enhance the undergraduate experience and better prepare students both as citizens and leaders in whatever profession they might seek to enter. The program recognizes the need for individuals to take leadership roles in all professions and sectors of society. It is the belief of the program that leadership can be learned in formal classes, community-based leadership opportunities, mentoring and internship settings, as well as through a range of collaborative leadership activities.

For more information about the Certificate in the Study and Practice of Leadership, see [leadershipRAP.colorado.edu/certificate-study-and-practice-leadership](http://leadershipRAP.colorado.edu/certificate-study-and-practice-leadership).

## Program Requirements

This certificate program has an 18-credit-hour requirement comprised of lower- and upper-division courses. Undergraduate students working toward this certificate are usually affiliated with one of the following academic programs:

- Leadership Residential Academic Program at Williams Village
- Presidents Leadership Class (PLC)
- INVST Community Studies (INVST)
- ROTC programs

Each of these programs has defined particular academic courses within their programs to be certificate requirements. Students may also apply elective courses from other disciplines on campus toward the total credits required for the certificate. Students in the leadership programs at PLC, INVST, and the Leadership RAP programs are required to do an internship that is overseen by one of the program directors. Students in all four programs participate in either a 4-credit-hour capstone course during their senior year or a capstone project mentored by their academic program director. To qualify for the certificate, students must maintain a 3.000 GPA in the required course work.

## *Leadership Residential Academic Program at Williams Village*

For certificate requirements, see [The Leadership RAP Program at Williams Village](#).

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## *Presidents Leadership Class*

PLC certificate requirements are listed under the [Presidents Leadership Class](#).

## *INVST Community Studies*

- Selection criteria govern admissions.
- Four required theory courses plus community based service-learning experiences (18–24 credits).
- Minimum of 15 hours of upper-division courses.
- INVS 4932 Senior Capstone Course and/or Project.
- Minimum total credit hours: 18 with a 3.000 GPA

## *Reserve Officer Training Corps Programs*

- Admission to CU-Boulder and ROTC required. (Some courses are open to all CU-Boulder students.)
- Required summer field training program(s).
- 4–8 required courses in ROTC (12–22 hours).
- Minimum of 15 hours of upper-division courses.
- Additional courses from Recommended Leadership Courses to complete the 18-hour requirement.
- Senior Capstone Course and/or Project (4 hours).
- Minimum total credit hours: 18 with a 3.000 GPA.

## *The Capstone Course and Project*

The capstone project is designed to synthesize the leadership work students have completed during their undergraduate studies. Together with the program's faculty, students design a format that demonstrates their cumulative learning and development and reflects their leadership abilities. Like oral examinations at the graduate level, these projects are an opportunity for students to present a body of work that demonstrates what they have learned as they address some of the critical questions associated with leadership development and their role as a leader in the 21st century.

In the capstone course, Critical Issues in Leadership, LDSP 4010 or PRLC 4010, students explore leadership issues across disciplines. Leadership education is multi-disciplinary and students need to know how to assess research and writing from different perspectives. Students read, discuss, and write critical evaluations of contemporary leadership theory from ethical, military, community building, and business perspectives.

## *Internships*

Internships are an agreed-upon experience in a work setting that is driven by intentional learning goals and accompanied by sustained reflection. The internship provides students with an opportunity to apply the skills and knowledge gained through their leadership studies. During the semester students use the concepts and theories learned in the classroom to analyze and understand the host organization. In addition, students are asked to reflect on the complexities of leadership and the personal challenges that they face in practicing and refining their own leadership skills.



# Lesbian, Gay, Bisexual, Transgender, and Queer Studies

The Lesbian, Gay, Bisexual, Transgender, and Queer Studies certificate program encourages students to think critically about the function of sexuality and gender in the world around them. By exploring the historical and contemporary experiences of lesbians, gay men, bisexuals, and transgendered people, the courses seek to critically analyze queer and normative sexualities and gender identities.

Open to any student in the university, this interdisciplinary program consists of two required lower-division courses and a series of relevant courses in a number of different departments. Requiring 24 credit hours, the certificate is awarded upon completion of its requirements in addition to a bachelor's degree in another field.

By developing an understanding of diverse sexual and gender identities, and the processes individuals move through in developing these identities, certificate program students apply the meaning and function of sexuality to a broad range of historical and contemporary institutions and societies.

For more information about the Lesbian, Gay, Bisexual, Transgender, and Queer Studies certificate program, contact the program director, Bud Coleman, at **303-492-5809**.

Course code for this program is LGBT.

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# Linguistics

Linguistics is the study of all aspects of human language: how languages make it possible to transmit ideas and feelings; how and why languages are similar and different; how we develop different styles and dialects; what will be required for computers to understand and produce spoken language; and how languages are used in everyday communication as well as in formal settings. Linguists try to figure out what it is that speakers know and do by observing the structure of languages, the way children learn language, slips of the tongue, conversations, storytelling, the acoustics of sound waves, and the way people's brains react when they hear speech or read. Linguists also reconstruct prehistoric languages, and try to deduce the principles behind their evolution into the thousands of languages of the world today.

The major in linguistics is useful for careers involving cognitive science, computer science, psychology, international business, language teaching, advertising, publishing, law, and documentation. Double majors and minors are encouraged with language, computer science, psychology, communication, sociology, anthropology, international affairs, philosophy, and education.

The core of the major is a set of courses, taught in the Department of Linguistics, on the nature of language. In addition, the major requires language courses offered by other departments (except for fluent speakers of languages other than English).

The undergraduate degree in linguistics emphasizes knowledge and awareness of:

- the fundamental architecture of language in the domains of phonetics and phonology, morphology and syntax, and semantics and pragmatics;
- the diversity of languages structures;
- the main interactions between language, culture, and society, including the role of language as a cultural institution and the social functions of language diversity; and
- the approaches to the study of language that are used by a discipline other than linguistics.

In addition, students completing the degree in linguistics are expected to acquire the ability and skills to:

- demonstrate proficiency in a second language equivalent to the third-year university level;
- infer language structures from the analysis of data from unfamiliar languages; and
- give coherent general interpretations of common language phenomena in terms of language structure and language use.

Course codes for this program are LING and ESLG.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Linguistics

Majors in linguistics must complete a total of 33 hours of study in general linguistics, including 9 in a

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natural language (for exceptions, see below). Language study is taken in other departments.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

### **Required Courses and Semester Credit Hours**

Complete the following courses in general linguistics with grades of C- or better:

- LING 2000 Introduction to Linguistics 3
- LING 3100 Language Sound Structures 3
- LING 3430 Semantics 3
- LING 4420 Morphology and Syntax 3

**Natural Language.** Students must complete with a grade of C- (2.000) or better a minimum of 9 credit hours of study of a natural language other than English (including signed languages used by deaf communities). At least 5 credit hours offered in satisfaction of this requirement must be at the 3000 level or above. The natural language requirement may be satisfied by examination or waived for foreign students whose native language is not English; in these cases, students must still meet the college minimum major requirement of 18 credit hours of upper-division course work and 30 credit hours overall in the major. Students who wish to have their language requirement waived must obtain the consent of an undergraduate advisor before registering for the fall term of the junior year.

**Electives.** A minimum of 9 elective hours must be completed with a grade of C- (2.000) or better. Courses may be chosen from the following:

- LING 1000 Language in U.S. Society 3
- LING 1010 Study of Words 3
- LING 2400 Language and Gender 3
- LING 3005 Cognitive Science 3
- LING 3220 American Indian Languages 3
- LING 3500 Language/Public Interest 3
- LING 3545 World Language Policies 3
- LING 3810 Undergraduate Seminar (may be repeated once for credit) 1
- LING 4100 Perspectives on Language 3
- LING 4220 Language and Mind 3
- LING 4560 Language Development 3
- LING 4610 English Structure for TESOL 3
- LING 4800 Language and Culture 3

Other upper-division linguistics courses may also be chosen if available; graduate courses may be taken with permission of the department.

The department recommends that prospective majors complete LING 2000 and at least two 1000-level foreign language courses (in the same language) by the end of the sophomore year, unless the student's foreign language proficiency is already advanced.

The fall semester of the junior year should include LING 3430, a 2000-level foreign language course, and a linguistics elective or LING 4420. It must also include LING 2000 if that was not taken earlier. The spring semester of the junior year should include LING 3100, a linguistics elective, and a further 2000-level foreign language course (if needed to prepare the student for the required upper-division foreign language hours).

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## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here refers only to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in linguistics, students should meet the following requirements:

- Declare linguistics as a major by the beginning of the second semester.
- Complete two semesters of study of a natural (spoken or signed) language other than -English by the end of the sophomore year (fourth semester) at the latest, continue study at the 2000 level during the junior year at the latest, and take 5 credit hours at the 3000 level during the senior year (seventh and eighth semesters) at the latest. The language requirement is waived for native speakers of a language other than English, but if it is waived, 6 additional upper-division credit hours in linguistics must be taken.
- Take LING 2000 (required) and LING 1000 or LING 2400 (electives) during the freshman or sophomore years and one or both of LING 3430 or 4420
  - during the fall of the junior year.
- Take LING 3100 and an upper-division linguistics elective in the spring of the junior year. Take the remaining courses as needed during the junior or senior year.

*Note: A linguistics major who has been excluded from any upper-division linguistics course due to enrollment limitations will be given first preference for a seat in that course the following year if the exclusion is made known to the department staff within two weeks after it occurs. No declared linguistics major who still needs LING 2000 for fall of the junior year and attempts to register for it during the regular registration period for continuing students (spring of the sophomore year) will be excluded from the course.*

## Minor Program

A minor is offered in linguistics. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

Students minoring in linguistics must complete a total of 18 credit hours in linguistics, 9 of which must be at the upper-division level. They must maintain an overall and a linguistics GPA of at least 2.000 (C), and complete all LING courses with a C- or better.

### Required Course and Semester Credit Hours

- LING 2000 Introduction to Linguistics—3

Complete 2 of the following:

- LING 3100 Sound Structure—3
- LING 3430 Semantics—3
- LING 4420 Morphology and Syntax—3

Take the remaining one of the three courses listed above and/or choose from the following electives to bring the total credit hours to 18:

- LING 1000 Language in U.S. Society—3
- LING 1010 The Study of Words—3
- LING 2400 Language and Gender—3
- LING 3005 Cognitive Science—3

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- LING 3220 American Indian Languages—3
- LING 3500 Language and the Public Interest—3
- LING 3545 World Language Rights and Policies—3
- LING 4100 Perspectives on Language—3
- LING 4220 Language and Mind—3
- LING 4560 Language Development—3
- LING 4610 English Structure for TESOL—3
- LING 4800 Language and Culture—3

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*Note: At least 3 credit hours of the electives must be an upper-division course.*

### *Study Abroad*

Language study and some courses in the major may be completed in university or university-affiliated study abroad programs, and such study is recommended. Students interested in doing part of their major work in a study abroad program should discuss the matter with their advisor before going abroad. For information on study abroad programs, consult the Office of International Education.

### *Graduation with Honors*

The honors program in linguistics offers the opportunity for highly motivated undergraduates to undertake a deeper and more individualized study of linguistics than is provided by the regular BA curriculum. Linguistics majors with an overall grade point average of 3.30 or higher are eligible to participate in the program. Honors that may be earned are cum laude (with honors), magna cum laude (with high honors), and summa cum laude (with highest honors).

Students interested in pursuing departmental honors are encouraged to consult with the departmental honors advisor by the beginning of their junior year to ensure that they will be able to meet the requirements for departmental honors before graduation.

### *Concurrent Bachelor's/Master's Program*

#### Concurrent BA/MA in Linguistics

The department has a five-year concurrent bachelor's and master's degree program, which is recommended only for the most serious and able graduate students. For further information, see the graduate advisor in the spring of the sophomore year or during the first week of the fall semester of the junior year.

### *Graduate Degree Program(s)*

#### Graduate Study in Linguistics

Students wishing to pursue graduate work in linguistics should carefully read Requirements for Advanced Degrees in the Graduate School section of this catalog and the detailed degree requirements available from the department office. A brief summary of MA and PhD requirements follow.

**Prerequisites.** Applicants should hold a recognized baccalaureate degree. They should have considerable knowledge of a language other than their native language. This knowledge may have been gained by formal study or by use of the language in a country, community, or institution where it is the usual means of communication. The department may require formal study of a foreign language by graduate students whose proficiency in this area is less than the equivalent of the college junior level. GRE scores are required from United States residents; scores are also required from native speakers of English who wish to be considered for fellowship aid. TOEFL scores are normally

required from foreign applicants.

## Master's Degree

The master's degree calls for a minimum of three semesters of study, though four semesters is usual. Students must complete LING 5030 Linguistic Phonetics, LING 5410 Phonology, LING 5420 Morphology and Syntax, LING 5430 Semantics and Pragmatics, and LING 5570 Introduction to Diachronic Linguistics.

The remaining courses are normally taken at the 5000-level or above. Students in Plan I (thesis) must complete a total of 30 semester hours, including 4–6 thesis hours. Students in Plan II (nonthesis) must complete a total of 30 semester hours of course work. All students must pass a comprehensive written examination covering general topics in linguistics plus the thesis topic if any.

The MA in linguistics for TESOL professionals is a graduate program in linguistics. The MA will provide a cohesive, professionally oriented program addressing the increased demand for professionalization in the field of teaching English as a second language. The program requires completion of 30 credit hours: 12 in graduate linguistics course, 12 in required TESOL courses, a 3-credit practicum, and a 3-credit elective course. A comprehensive examination and teaching portfolio are required.

## Doctoral Degree

To be admitted to the PhD program, students must have completed course work equivalent to LING 5030 Linguistic Phonetics, LING 5410 Phonology, LING 5420 Morphology and Syntax, LING 5430 Semantics and Pragmatics, LING 5570 Introduction to Diachronic Linguistics, and LING 6450 Syntactic Analysis. Students who do not have this preparation may be admitted to the MA program. They may apply for admission to the PhD program when these requirements are close to completion. Students may be admitted to the PhD program before finishing the MA.

In addition to phonology, syntax, semantics, and pragmatics, the department offers specializations in sociolinguistics, conversation analysis, historical linguistics, typological comparison, Amerindian linguistics, African linguistics, linguistic anthropology, psycholinguistics, neurolinguistics, language development, cognitive linguistics, and computational modeling of language knowledge. Students should select a specialization and begin their own research as early as possible.

- Thirty-six hours of course work are normally required for the PhD.
- Four linguistics courses are required at the 6000 level or above: LING 6450 Syntactic Analysis, LING 7100 Field Methods 1, and any two of LING 7410 Phonological Theory, LING 7420 Syntactic Theory, LING 7430 Semantic Theory, or LING 7570 Diachronic Theory.
- The remaining eight courses may include up to four courses in other departments appropriate to the specialization.
- All PhD students must demonstrate the ability to read linguistic literature in a language other than English.

As a PhD preliminary examination, students submit a data-based research paper at the beginning of the second year in the PhD program. The University comprehensive examination requirement is completed in two steps: the completion of a synthesis paper followed by the defense of a dissertation prospectus.



# Mathematics

The undergraduate degree in mathematics emphasizes knowledge and awareness of:

- basic real analysis of one variable;
- calculus of several variables and vector analysis;
- basic linear algebra and theory of vector spaces;
- the structure of mathematical proofs and definitions; and
- at least one additional specialized area of mathematics.

In addition, students completing a degree in mathematics are expected to acquire the ability and skills to:

- use techniques of differentiation and integration of one and several variables;
- solve problems using differentiation and integration;
- solve systems of linear equations;
- give direct proofs, proofs by contradiction, and proofs by induction;
- formulate definitions;
- read mathematics without supervision; and
- utilize mathematics.

Course code for this program is MATH.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Mathematics

The Department of Mathematics offers three tracks leading to a BA in mathematics. To earn a BA in mathematics, a student must complete the general requirements of the College of Arts and Sciences as well as the five mathematics core courses and the six additional courses for one of the three tracks (described below). Students must earn a grade of C- or better in each of the mathematics core courses and the six additional courses, and have at least a C average for all attempted work in mathematics.

**Mathematics Core** (required of all mathematics majors)

#### *Required Courses and Semester Credit Hours*

- Calculus 1 (e.g., MATH 1300 or APPM 1350)—5
- Calculus 2 (e.g., MATH 2300 or APPM 1360)—5
- Calculus 3 (e.g., MATH 2400 or APPM 2350)—5
- MATH 2001 An Introduction to Discrete Mathematics—3
- MATH 3001 Analysis I—3

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## Comprehensive Track

Aimed at students seeking a general background in mathematics or intending to pursue graduate work in mathematics.

### Additional Courses Required

#### Required Courses and Semester Credit Hours

- MATH 3140 Abstract Algebra I—3
- One of MATH 4140 Abstract Algebra II or MATH 4001 Analysis II—3
- Plus 3 upper-division MATH or approved APPM courses (at least one at the 4000-level)—9

## Applicable Track

Aimed at students seeking a background in applied or applicable mathematics.

### Additional Courses Required

#### Required Courses and Semester Credit Hours

- MATH 4510 Introduction to Probability—3
- MATH 4430 Introduction to Ordinary Differential Equations—3
- One of MATH 4520 Mathematical Statistics or MATH 4470 Partial Differential Equations 1—3
- Plus 2 upper-division MATH or approved APPM courses—6

## Secondary Education Track

Aimed at students intending to teach mathematics at the secondary level.

### Additional Courses Required

#### Required Courses and Semester Credit Hours

- MATH 3110 Introduction to the Theory of Numbers or MATH 3140 Abstract Algebra I—3
- MATH 3120 Functions and Modeling—3
- MATH 3210 Euclidean and Non-Euclidean Geometry I—3
- MATH 3510 Introduction to Probability and Statistics—3
- MATH 4820 History of Mathematical Ideas—3

*NOTE: Completion of the Secondary Education Track does not provide the student a teaching license. For information about the secondary education teaching licensure program, see the School of Education section.*

### Computational Track

Aimed at students interested in both mathematics and computation.

### Additional Courses Required

- CSCI 1300 Computer Science 1: Programming—3
- CSCI 2270 Computer Science 2: Programming—3

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### CSCI 3104 Algorithms—3

- MATH/APPM 4650 Intermediate Numerical Analysis I—3
- Plus three MATH or approved APPM or approved CSCI courses, at least one of which must be at the 4000-level. At most one of these courses may be a computer science course—9

### Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress,” as it is used here, refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major.

### Comprehensive Track

- Declare major by the beginning of the second semester.
- Complete Calculus 1, Calculus 2, Calculus 3, MATH 2001, 3001, and 3130 by the end of the fourth semester.
- Complete MATH 3140, 4140, or 4001, and one additional approved MATH or APPM course by the end of the sixth semester.
- Complete the major by the end of the eighth semester.

### Applicable Track

- Declare major by the beginning of the second semester.
- Complete Calculus 1, Calculus 2, Calculus 3, MATH 2001, 3001, and 3130 by the end of the fourth semester.
- Complete MATH 4510 and 4430, and either MATH 4520 or 4470 by the end of the sixth semester.
- Complete the major by the end of the eighth semester.

### Secondary Education Track

- Declare major by the beginning of the second semester.
- Complete Calculus 1, Calculus 2, MATH 2001, 3001, 3120, and 3130 by the end of the fourth semester.
- Complete MATH 3510 and 3210, and either MATH 3110 or 3140 by the end of the sixth semester.
- Complete the major by taking MATH 4210 and the remaining of MATH 3110 or 3140 the end of the eighth semester.

### Computational Track

- Declare major by beginning of the second semester.
- Complete Computer Science 1, Computer Science 2, Calculus 1, Calculus 2, Calculus 3, MATH 2001, 3001, and 3130 by the end of the fourth semester.
- Complete CSCI 3104 Algorithms, MATH 4650, or APPM 4650, and one of the additionally required upper-division MATH classes by the end of the sixth semester.
- Complete the major by the end of the eighth semester.

### *Residency Requirement*

For the BA degree in mathematics, all students must have completed at least 12 credit hours of upper-division mathematics courses, with grades of C (2.00) or better, taken in the College of Arts and Sciences on the Boulder campus. Additional courses transferred from other universities or from

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other campuses of the University of Colorado that are used to meet the minimum 24-hour upper-division requirement must be approved by the Department of Mathematics. Courses accepted as mathematics credit but excluded from the minimum 24-hour upper-division requirement still count in the 45 maximum hours allowed in mathematics.

Undergraduate students planning to do graduate work in mathematics should follow the Comprehensive Track, as well as fulfill the arts and sciences language requirement with German, French, or Russian.

### *Minor Program*

A minor is offered in mathematics. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

#### **Required Courses and Semester Credit Hours**

- Calculus 1 (e.g., MATH 1300 or APPM 1350)—5
- Calculus 2 (e.g., MATH 2300 or APPM 1360)—5
- Calculus 3 (e.g., MATH 2400 or APPM 2350)—4
- MATH 2001 Discrete Mathematics—3
- MATH 3130 Linear Algebra—3
- Plus two upper-division MATH courses (at least one at the 4000-level)—6

### *Graduate Degree Program(s)*

## Graduate Study in Mathematics

The Department of Mathematics offers programs leading to the degrees MA or PhD in mathematics and MS in applied mathematics. Students interested in any of these programs should read carefully the materials describing the university requirements in the Graduate School section. The student is responsible for satisfying these requirements at the proper time.

Applicants must have demonstrated mathematical maturity and accomplishment roughly at the level of a successful mathematics major at CU-Boulder. Applicants must also demonstrate mathematical potential: success in courses in advanced calculus and abstract algebra help demonstrate this potential. General and Mathematics GRE subject scores are required.

The basic requirements for the various degrees are summarized here, and full details are available in the department office or online at [www.colorado.edu/math](http://www.colorado.edu/math). For fulfillment of all course requirements, mathematics courses must be numbered 5000 or higher excluding MATH 5800.

## Master's Degree in Mathematics

- All master's degree students must complete 30 hours of approved graduate credit. No more than 6 credit hours of seminars or independent study may be included for this requirement.
- All master's degree students must take two 2-semester sequences. No language is required of master's degree students.
- To earn an MA or MS degree, a student must pass a master's examination based on the particular program of the student.
- For the MA degree in mathematics, students can pursue a "thesis option," which requires 4–6 credit hours of thesis work, and a thesis defense.
- For the MS degree in applied mathematics, 6–12 credit hours must be in an approved minor program outside the mathematics department.

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# Doctoral Degree in Mathematics

Before being admitted to candidacy for the PhD degree in mathematics, a student must pass two out of the three preliminary exams in algebra, real analysis, and geometry/topology; take courses in topology and complex analysis; and pass a comprehensive exam. The basic requirements for a PhD degree in mathematics are as follows:

- Demonstrate reading knowledge of French, German, Italian, or Russian.
- Complete at least 30 credit hours of graduate course work and 30 credit hours of thesis work
- Prepare a written thesis that contains substantial original contributions to mathematics
- Successfully complete a final examination.

For more current and precise details, contact the mathematics office or go to the department website at [www.colorado.edu/math](http://www.colorado.edu/math).

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# Mechanical Engineering

The educational objective of the undergraduate program in mechanical engineering is to prepare graduates so that, within three years of graduation, they will have successfully established themselves in professional careers and/or obtained a graduate degree, and will have begun to generate new knowledge or exercise leadership in their positions to the benefit of society.

Each graduate of the mechanical engineering program is expected to:

- apply knowledge of mathematics, science, and engineering;
- identify, formulate, and solve engineering problems;
- use computers to solve engineering problems;
- use modern instrumentation;
- design and conduct experiments, including the use of probability and statistics;
- understand contemporary issues in mechanical engineering;
- analyze and interpret data;
- design thermal systems, components, or processes to meet desired needs;
- design mechanical systems, components, or processes to meet desired needs;
- understand the processes used to manufacture products;
- understand contemporary issues in mechanical engineering;
- make effective oral presentations;
- write effectively;
- function effectively on multi-disciplinary teams;
- understand professional and ethical responsibility;
- understand the impact of engineering in a global and societal context; and
- engage in lifelong learning.

Course code for this program is MCEN.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Mechanical Engineering

The undergraduate curriculum in mechanical engineering incorporates engineering science, physical science, mathematics, and the humanities and social sciences. The engineering science component provides basic theoretical and practical concepts in solid mechanics, materials, thermodynamics, fluid mechanics, design, and manufacturing. Required courses in engineering science, physical science, and mathematics are interwoven throughout the curriculum to provide a balanced education in the fundamentals of the profession and comprise three-fourths of the minimum curriculum requirement of 128 semester hours; they are complemented by four technical electives, five electives in the humanities and social sciences, a junior-level writing course, and a free elective.

Options in environmental and biomedical engineering are available for students interested in these

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interdisciplinary areas.

## *Curriculum for BS (ME)*

### **Required Courses and Semester Credit Hours**

#### **Freshman Year**

##### ***Fall Semester***

- APPM 1350 Calculus 1 for Engineers —4
- CHEM 1221 General Chemistry Laboratory for Engineers—2
- CHEN 1211 General Chemistry for Engineers—3
- GEEN 1500 Introduction to Engineering—2
- MCEN 1025 Computer-Aided Design and Fabrication—4
- Freshman Seminar—1

##### ***Spring Semester***

- APPM 1360 Calculus 2 for Engineers—4
- GEEN 1300 Introduction to Engineering Computing—3
- GEEN 1400 First-year Engineering Projects—3
- PHYS 1110 General Physics 1—4
- Humanities or social science elective—3

#### **Sophomore Year**

##### ***Fall Semester***

- APPM 2350 Calculus 3 for Engineers—4
- MCEN 2023 Statics and Structures—3
- MCEN 2024 Materials Science—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1

##### ***Spring Semester***

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- MCEN 2043 Dynamics—3
- MCEN 2063 Mechanics of Solids—3
- PHYS 2130 General Physics 3—3
- Humanities or social science—3
- Free elective—1

#### **Junior Year**

##### ***Fall Semester***

- ECEN 3010 Circuits and Electronics—3
- MCEN 3012 Thermodynamics—3
- MCEN 3021 Fluid Mechanics —3
- MCEN 3030 Computational Methods—3
- WRTG 3030 Writing on Science and Society—3

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### ***Spring Semester***

- MCEN 3022 Heat Transfer—3
- MCEN 3025 Component Design—3
- MCEN 3032 Thermodynamics 2—3
- MCEN 3037 Experimental Design and Data Analysis—2
- Humanities or social science elective—3

### **Senior Year**

#### ***Fall Semester***

- MCEN 4026 Manufacturing Processes and Systems—3
- MCEN 4037 Measurements Laboratory—2
- MCEN 4043 System Dynamics—3
- MCEN 4045 Mechanical Engineering Design Project 1—3
- MCEN technical elective—3
- Humanities or social science elective—3

#### ***Spring Semester***

- MCEN 4047 Mechanical Engineering (Senior) Laboratory—2
- MCEN 4085 Mechanical Engineering Design Project 2—3
- MCEN technical elective—3
- Humanities or social science elective—3
- General technical electives—6
- Humanities or social science elective—3
- **Minimum total hours for degree—128**

## ***Graduate Degree Program(s)***

### **Graduate Study in Mechanical Engineering**

The department offers master of science (MS), master of engineering (ME), and doctor of philosophy (PhD) degree programs to students whose career plans include advanced practice, research and development, and/or teaching at the college or university level.

### **Master's Degree**

Students pursuing the degree of master of science or master of engineering in mechanical engineering may follow either **Plan I**, which requires the writing of a thesis, or **Plan II**, which involves only course work. A student following Plan I must complete a minimum of 24 semester hours of course work and 6 semester hours of thesis work; at least 15 semester hours of the course work must be in the mechanical engineering department. A student following Plan II must complete a minimum of 30 semester hours of course work, of which at least 18 semester hours must be in the mechanical engineering department. Up to 9 semester hours of graduate course work may be transferred from another accredited institution as long as those hours were not used to satisfy another degree requirement. Students should consult with an academic advisor to decide what course of study best meets their academic objectives.

### **Doctoral Degree**

A student pursuing the PhD in mechanical engineering must complete a minimum of 30-36 semester credit hours in courses numbered 5000 or above (9 of these credits must include MCEN 5020, 5040, and 5208), as well as 30 semester hours of dissertation credit. Up to 21 semester hours of graduate

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course work may be transferred from another accredited institution; there is no credit limit for appropriate courses taken at the University of Colorado, such as those taken for the master of science degree.

Every student desiring to pursue the PhD degree must first pass a preliminary examination. As a part of this evaluation, students must pass two written examinations designed to test research and fundamental mechanical engineering competency. They must also pass a research presentation given to a committee of at least three faculty members. Overall performance in the required examinations will determine *pass/fail* status.

After passing the preliminary examination, students continue their course work and prepare a written thesis prospectus. When ready, they take an oral comprehensive examination covering the graduate course work and the thesis prospectus. After passing the comprehensive examination, students are admitted into the PhD program and conduct original research required to satisfy the thesis requirement. This research culminates in the writing of the thesis, which students defend in a final examination.

PhD students are assigned an academic advisor to review their progress toward the degree. Students are expected to meet with the advisor at least once each semester prior to registration. Once students have selected a research topic for the thesis, academic advising is done by their thesis advisor. Additional information on graduate study may be found in the Graduate School section.

## Graduate Research

Research activities are concentrated in three contemporary themes: **micro/nano scale engineering**, **energy/environment**, and **bioengineering**. Faculty engage in these theme areas through three disciplinary areas of mechanical engineering: fluid mechanics/thermal sciences, solid mechanics/material sciences, and design/manufacturing. Faculty and students collaborate with universities and laboratories across the United States and throughout the world.

Example research efforts in **micro/nano systems** include: design and reliability of MicroElectroMechanical Systems (MEMS), nanosystems, carbon nanotubes, mechanical properties of nanowires, nanomaterial processing, nanocomposites, disk drive shock analysis, microporous membranes, polymer derived ceramics, active materials and structures, multi-scale computational fluids modeling, and MEMS/electronics packaging.

Example research efforts in **energy/environment** include: flame treatment of polymer films, microgravity combustion of metals, urban air quality modeling, indoor air pollution, aerosol particle characterization and health effects, energy policies and climate impacts, and theoretical/computational fluid dynamics.

Example research efforts in **bioengineering** include: optical biopsy of prostate cancer, shape memory polymers/alloys, cardiovascular fluid/bio mechanics, MEMS-based biosensing, ultrasound imaging, device design, nanoparticle diagnostics, and metallic/polymer biomaterials. These efforts are facilitated by collaborations with the Anschutz Medical Campus of the University of Colorado Denver, the Children's Hospital, and the Colorado State Veterinary College.

Department research activities are supported by a wide range of industrial and federal agencies such as the National Science Foundation (NSF), Department of Energy (DOE), National Aeronautics and Space Administration (NASA), National Institute of Health (NIH), Air Force Office of Scientific Research (AFOSR), and Defense Agency Research Project Association (DARPA). Some research activities are carried out through interdisciplinary department research centers including the Joint Center for Combustion and Environmental Research (JCCER), Membrane Applied Science and Technology (MAST) Center, and Integrated Micro/Nanoelectro-mechanical Transducers (iMINT).



# Molecular Biophysics

## *Certificate Program*

The goal of the molecular biophysics certificate program is to introduce graduate students to the field of biophysics, its methodologies, and the state-of-the-art biophysical research efforts being carried out in diverse laboratories and departments on the CU-Boulder campus. The program creates interdepartmental connections that provide the breadth of training needed to develop biophysical scholars.

Students must be admitted through the regular admissions process to a PhD program in one of the following departments: chemical and biological engineering; chemistry and biochemistry; molecular, cellular, and developmental biology; or physics. They must satisfy all of their home department's requirements to receive a PhD.

The first requirement of the molecular biophysics certificate is participation in one to three laboratory rotations outside the thesis lab, which provide experience with a range of biophysical methods. Subsequently the student joins one of the member laboratories of the training program for thesis work.

The second component of the program is the completion of two courses chosen from a list of approved courses. Currently this list includes 15 courses in areas ranging from theoretical physics to molecular and cellular biophysics.

The third component of the program is an annual meeting with a faculty advisory committee that provides helpful feedback on the thesis research.

Students are expected to take part in a seminar series, which presents internationally renowned speakers and their research. They also are required to participate in supergroup meetings and symposia, which provide forums for them to present their own research in front of their colleagues and advisory committee.

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# Molecular, Cellular, and Developmental Biology

The undergraduate degree in molecular, cellular, and developmental biology emphasizes knowledge and awareness of:

- the biological sciences in general and detailed understanding of currently important aspects of cellular biology, molecular biology, biochemistry, genetics, and developmental biology; and
- the relationship of the specialty area to broader areas of science and to society in general, including ethical issues raised by current biological research and by the rapid growth of biotechnology as an important shaping force for the future.

In addition, students completing the degree in molecular, cellular, and developmental biology are expected to acquire the ability and skills to:

- learn detailed laboratory procedures rapidly when the need arises;
- demonstrate a scientific vocabulary and an understanding of research methods that permits the comprehension of articles from current journals, extraction of pertinent information, and judgment of the quality of the work described;
- evaluate a biological problem, determine which aspects are understood, and apply basic research methods and techniques to the unknown aspects; and
- communicate scientific concepts and analytical arguments clearly and concisely, both orally and in writing.

Course code for this program is MCDB.

## *Bachelor's Degree Program(s)* Bachelor's Degree in MCDB

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

### *Required Courses and Semester Credit Hours*

- MCDB 1150 Introduction to Molecular Biology and 1151 Introduction to Molecular Biology Laboratory or MCDB 1111 Biofundamentals: The Evolutionary, Molecular, and Cellular Basis of Life (Note 1)—4
- MCDB 2150 Principles of Genetics and MCDB 2151 Principles of Genetics Laboratory—4
- MCDB 3135 Molecular Cell Biology I—3
- MCDB 3140 Cell Biology Laboratory—2
- MCDB 3145 Molecular Cell Biology II—3
- MCDB 4650 Developmental Biology or MCDB 4300 Immunology or MCDB 4777 Molecular Neurobiology (spring 2010)—3

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  - > [Chemistry and Biochemistry](#)

- Upper-division electives in MCDB. Two courses must be lecture courses. One of these must be a 4000-level MCDB course (see department for approved courses.)—11-12
- CHEM 1113/1114; CHEM 1133/1134; CHEM 1251/1271, General Chemistry 1 and 2 lecture and lab, or CHEM 1351 and 1371 Honors General Chemistry 1 and 2 10
- CHEM 3311 Organic Chemistry 1 and CHEM 3321 Laboratory in Organic Chemistry 1 or CHEM 3351 Organic Chemistry 1 and CHEM 3361 Laboratory in Organic Chemistry 1 for Chemistry Majors—5-6
- CHEM 4611 Survey of Biochemistry or CHEM 4711 General Biochemistry 1—3
- PHYS 1110 and 1120 General Physics 1 and 2 and PHYS 1140 Experimental Physics or PHYS 2010 and 2020 General Physics 1 and 2, or PHYS 1110 and PHYS 2020 9-10
- MATH 1300 Analytic Geometry and Calculus 1 (Note 2)—5
- It is strongly recommended that MCDB majors consult with a departmental advisor before applying AP, IB, or CLEP credit. Students majoring in MCDB who transfer biology credit from other institutions also must consult a departmental advisor.

### Curriculum Notes

1. EBIO 1210 and 1230 are acceptable alternatives.
2. APPM 1350 or MATH 1310 are acceptable alternatives.

### MCDB Prerequisites Statement

It is MCDB policy to enforce the course prerequisites listed in the course catalog. If you have not either taken *and passed* (C- or better) the prerequisites for a course, or obtained permission from the instructor or a departmental advisor to take the course based on equivalent preparatory course work or experience here or elsewhere, *you may be administratively dropped from the course.*

### Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in molecular, cellular, and developmental biology, students should meet the following requirements:

- The MCDB major must be started in the first semester for a student to be eligible for guaranteed four-year graduation. Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. Adequate progress is defined as cumulative completion of at least one-fourth of the required course work for the major during each academic year, including the following specific requirements:
- Either general chemistry or the introductory MCDB sequence must be completed during the first year.
- General chemistry and the introductory MCDB sequence must both be completed by the end of the second year.
- Organic chemistry and the second-level sequence in MCDB (Molecular Cell Biology I and II) must be completed by the end of the third year.

### Animal Use Policy

Biology is the science of life, and a major in it must include some hands-on experience with living organisms to be complete. Exercises involving the use of living animals or animal tissues are included, therefore, in MCDB laboratory courses. Majors with objections on moral grounds may arrange to limit their participation in these exercises, although their educational experience is compromised by doing so.

Nonmajors may take MCD biology lecture courses without the accompanying laboratories. Laboratory

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courses in which living vertebrate animals or tissues are used are identified in the course description section of this catalog. For additional information, please contact the department.

## Graduate Degree Program(s)

### Graduate Study in MCDB

Opportunities for graduate study and original research, leading to the PhD degree, are available in a variety of areas.

**Molecular Biology.** Includes gene regulation, virology, nucleic acid-protein interactions, chromosome structure and function, chromosome replication, microbial diversity, human genome structure, RNA structure, and catalysis.

**Cell Biology.** Includes cytoskeleton, biophysical cytology, vacuole assembly, analysis of yeast spindle pole bodies and vertebrate centrosomes, synthesis and secretion of glycoproteins and polysaccharides, defense responses in plants, and 3-D high resolution reconstruction, biogenesis of mitochondria and chloroplasts, energy metabolism, assembly of membrane protein complexes, cell cycle regulation and checkpoints, and signal transduction.

**Developmental Biology.** Covers mechanisms and regulation of morphogenesis and cell growth, genetic control of development, molecular genetics of embryogenesis, sex determination, ras proteins and vulval development, and programmed cell death in nematodes, molecular genetics of *Drosophila* neurobiology, developmental genetics of *Drosophila* and *Caenorhabditis*, neural development in mice, transgenic mice, and muscle development and function.

**Genetics.** Includes genetics of human disease, complex traits, mouse development, and invertebrate development.

**Entrance Requirements and Prerequisites.** The graduate program of the Department of Molecular, Cellular, and Developmental Biology is sufficiently flexible to accommodate students with a wide range of training. Students with bachelor's degrees in any of the biological, biochemical, or physical sciences are encouraged to apply. Background necessary for the program includes the equivalent of undergraduate courses in cell biology, developmental biology, genetics, organic chemistry, biochemistry, chemical thermodynamics, differential and integral calculus, and general physics. Students accepted with deficiencies may demonstrate mastery of the required areas by taking appropriate undergraduate courses, by passing advanced-standing examinations, or by successfully completing graduate-level courses that require the undergraduate courses as prerequisites. Students admitted generally have independent research experience.

**Areas of Study.** All students are expected to develop competence in five areas: biochemistry, genetics, cell structure and function, developmental systems and mechanisms, and current research techniques of experimental biology. Students also are expected to develop their abilities as independent investigators who identify important questions in biology and design experiments to address those questions.

## Master's Program

In view of the strong research orientation of the fields involved, the department does not accept applications from students seeking the MA as a terminal degree. The master's of arts degree, either with a thesis (Plan I) or without (Plan II), is awarded under special circumstances. Candidates must pass the preliminary examination and a comprehensive final examination. For Plan I a thesis based on original research must be submitted. Final determination of whether a student follows Plan I or Plan II is made by the department.

## Doctoral Degree

### Molecular, Cellular, and Developmental Biology

> Museum and Field Studies

> Neuroscience

> Nordic Studies (Scandinavian)

> Peace and Conflict Studies

> Philosophy

> Physics

> Political Science

> Psychology and Neuroscience

> Religious Studies

> Scandinavian (now Nordic Studies)

> Sociology

> Spanish and Portuguese

> Speech, Language, and Hearing Sciences

> Theatre and Dance

> Western American Studies

> Western Civilization Studies

> Women and Gender Studies

> Writing and Rhetoric, Program for

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**Course of Study.** The faculty of the department offers a variety of courses to help graduate students acquire knowledge in the various areas of study. Further, students are required to work in at least three different laboratories to broaden their education and to help them identify the field of greatest interest for their thesis work.

**Examination Sequence.** An advisory committee, appointed upon entrance, develops an appropriate curriculum based in part on the student's background. A written preliminary exam consists of a series of courses and exams administered during the first year. A comprehensive qualifying exam administered at the beginning of the spring semester of the second year includes a written research proposal and an oral defense of the proposal that emphasizes breadth and depth of knowledge as well as an ability to communicate and synthesize facts into a coherent scientific argument.

**Language.** The department does not have a language requirement.

**Thesis.** The principal elements in graduate training are defining a thesis problem, investigating this problem with a coherent piece of research that constitutes a substantial contribution to knowledge, and writing a report on this work in the form of peer-reviewed journal articles and a thesis submitted to a departmental committee for approval. After completion of the thesis, each candidate for the PhD degree is required to take a final oral examination on the thesis and related topics, and to present a public seminar.

**Teaching.** Generally, each candidate for the PhD degree does two semesters of apprentice teaching. This obligation is usually met during the student's first year of graduate study.

**Course Requirements.** A minimum of 30 credit hours of courses numbered 5000 and above, plus 30 hours of doctoral thesis, are required. Specific courses depend on the student background and field of specialization.

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# Music

## *Bachelor's Degree Program(s)*

### Bachelor of Arts in Music (BA)

The bachelor of arts in music degree has as its goal a broad education in music within a liberal arts context. Although students may elect to pursue special interests, the primary emphasis is on the development of basic musicianship, an ability to perform music, and a broad knowledge of the foundations and principles of music as an art. The bachelor of arts in music may be completed with or without an emphasis in musicology and world musics.

Students may elect to pursue a degree in a nonmusic field in addition to a music degree. This is most often done with a BA in music; double degrees typically require more than four years to complete.

A minimum of 120 semester hours with an overall GPA of 2.000 must be earned for the BA in music degree. Of these hours, at least 68 (66 for musicology emphasis) must be in nonmusic courses. Thirty must be at the 3000 or 4000 level. A minimum of 44 hours (50 for musicology emphasis) is required in music courses.

The normal pattern for private applied instruction in this degree is one half-hour lesson per week for 2 semester hours of credit. Not more than 16 semester hours (12 for musicology emphasis) of credit in private instruction may be used toward the degree.

Students registered for applied music must participate in an ensemble as recommended by their applied faculty. A maximum of 4 credit hours (6 for musicology emphasis) in ensemble can apply to the BA in music degree.

A recital may be given with permission of the chair of the applied faculty area and the student's advisor.

### *Minimum Requirements*

In addition to the general requirements listed above, the following specific requirements must be met:

- Three credits of English composition.
- Basic proficiency in one foreign language equal to three semesters at the university level. This requirement also may be fulfilled by three years of study in high school in one language or by passing a university proficiency examination.
- Nonmusic electives to fulfill the minimum requirement of 68 semester hours of credit. Of the nonmusic electives, 37 semester hours of credit must be fulfilled through the College of Arts and Sciences core curriculum. The arts and sciences core curriculum for the BA degree includes:
  - 3 credit hours of written communication
  - 3 credit hours of historical context
  - 3 credit hours of human diversity
  - 3 credit hours of United States context

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- 
- 3 credit hours of contemporary societies
  - 3 credit hours of ideas and values
  - 6 credit hours of literature and the arts
  - 13 credit hours of natural science

## *Courses and Curricula*

For the BA in music degree, students must complete the courses listed below. More detail is given on the degree sheet available from the associate dean of undergraduate studies.

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- MUSC 1XXX applied instruction (lessons and literature class)—4
- Ensemble—2
- Foreign language—3
- Written communication—3
- Non-music electives—9

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2988 Introduction to Music Research—1
- MUSC 2997 Sophomore Proficiency—0
- MUS 2XXX applied instruction (lessons and literature class)—4
- Ensemble—2
- Non-music electives—18

#### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—6
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—2
- Non-music electives—22

#### **Senior Year**

- Elective in music history, 4000 level—3
- Non-Western music, 2000/4000 level—3
- Non-music electives—21

## *Bachelor of Arts in Music with an Emphasis in Musicology and*

# *World Musics*

## **Required Courses and Semester Credit Hours**

### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- MUSC 1XXX applied instruction (lessons and literature class)—4
- Written communication—3
- Ensemble—2
- Foreign language—3
- Non-music electives—9

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2772 World Musics—3
- MUSC 2782 World Musics—3
- MUSC 2988 Introduction to Musical Research—1
- MUSC 2997 Sophomore Proficiency—0
- MUSC 2XXX applied instruction (lessons and literature class)—2
- Ensemble—2
- Non-music electives—15

### **Junior Year**

- CONV 1990 Convocation Recitals (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—6
- 4000-level theory elective—2
- Ensemble—2
- Non-music electives—20

### **Senior Year**

- MUSC 4112 Ethnomusicology—3
- 4000-level music history elective—3
- Non-music electives—20

## **Bachelor of Music (BM)**

The four-year professional curriculum leading to the bachelor of music degree emphasizes creative skill, academic achievement, and artistic performance in music. Concentration areas are offered in **performance, composition, musicology, and jazz studies**. Performance areas include **voice, piano, jazz piano, organ, harpsichord, string instruments, classical guitar, woodwinds, brass, and percussion**.

A half recital in the junior year and a full recital in the senior year are required of students in the performance concentration areas, except voice theatre. Students should check with their advisor about preview policies.

A thesis is required of students in the composition and musicology areas. For composition students, the thesis should be an original composition; for musicology students, a major paper. Students should check with their advisor for details.

A senior project is required of students in the voice theatre area. This project may be a senior recital, major role, or direction or design of a major show.

Specific performance group requirements are controlled by the degree plan in each concentration area and are subject to the advisor's judgment in the best interest of the student.

The bachelor of music degrees include requirements in theory, history, and literature of music. Elective study in most degrees requires 30 nonmusic credits, including 3 in English composition, and 12 free electives that may be music or non-music courses. A suggested course sequence is shown below. (More detail is given on the degree sheets available on the undergraduate studies website at [music.colorado.edu/students/undergraduate-advising](http://music.colorado.edu/students/undergraduate-advising).)

## Written Communication

Students pursuing the bachelor of music degree will be required to take one 3-hour course in English composition through the Program for Writing and Rhetoric or the English department. Courses such as First-Year Writing and Rhetoric, Freshman Writing Seminar, or Introduction to Creative Writing fulfill the requirement. The credit hours are applied in the liberal arts electives category. Students are strongly encouraged to complete this requirement by the end of their freshman year.

## *Courses and Curricula*

All degrees require 120 credit hours.

## Brass and Percussion Performance Concentration Area

### *Required Courses and Semester Credit Hours*

#### Freshman Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied brass/percussion instruction (lessons and literature class)—6
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- Ensemble—2
- Written communication—3
- Non-music electives—6

#### Sophomore Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2

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### MUSC 2997 Sophomore Proficiency—0

- PMUS 2XXX Applied brass/percussion instruction (lessons and literature class)—6
- Chamber Music —2
- Ensemble—2
- Non-music electives—13

### Junior Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 2071 Instrumentation—2
- MUSC 3176 Conducting 1—2
- MUSC 3997 Junior Recital—1
- MUSC 4918 Building Your Music Career—2
- PMUS 3XXX Applied brass/percussion instruction (lessons and literature class)—6
- Chamber Music—2
- Ensemble—2
- Upper-division Theory Elective (3000 or 4000 level theory classes, except MUSC 4101)—2
- Non-music electives—9

### Senior Year

- MUSC 4081 Introduction to Music Technology—3
- MUSC 4997 Senior Recital—1
- PMUS 4XXX Applied brass/percussion instruction (lessons and literature class)—6
- Chamber Music—2
- Ensemble—2
- Non-Western Music 2000/4000 level—3
- Music electives—3
- Non-music electives—9

## Composition Concentration Area

### *Required Courses and Semester Credit Hours*

### Freshman Year

- CONV 1990 Convocation (two semesters)—0
- PMUS 1526 Composition (and Composition Seminar)—6
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- Applied lessons—4
- Written communication—3
- Ensemble—2
- Non-music electives—6

### Sophomore Year

- 
- CONV 1990 Convocation (two semesters)—0
  - MUSC 2071 Instrumentation —2
  - MUSC 2101, 2111 Theory 3 and 4—4
  - MUSC 2121, 2131 Aural Skills 3 and 4—2
  - MUSC 2997 Sophomore Proficiency—0
  - PMUS 2526 Composition (and Composition Seminar)—6
  - Applied lessons—4
  - Ensemble—2
  - Non-music electives—14

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1 —2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 4001 New Music Styles and Practices —2
- MUSC 4011 16th Century Counterpoint—2
- MUSC 4041 Orchestration —2
- PMUS 3526 Composition (and Composition Seminar)—6
- Ensemble—2
- Non-music electives—10

### **Senior Year**

- MUSC 4021 18th Century Counterpoint—2
- MUSC 4061, 4071 Tonal Analysis and Post-tonal Theory and Analysis—4
- PMUS 4526 Composition (and Composition Seminar)—6
- Ensemble—2
- Non-Western music, 2000/4000 level—3
- Non-music electives—7

## **Classical Guitar Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1326 Guitar Musicianship—1
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- MUSC 2366 Introduction to Accompanying—2
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- PMUS 1566 Applied guitar instruction (lessons and literature classes)—8
- Written communication—3
- Non-music electives—6

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 2566 Applied guitar instruction (lessons and literature classes)—8
- Ensemble—2
- Music electives—3
- Non-music electives—15

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1—2
- MUSC 3802, 3812 History of Music 1 and 2 —6
- MUSC 3997 Junior Recital—1
- MUSC 4061 Tonal Analysis —2
- PMUS 3566 Applied guitar instruction (lessons and literature classes)—7
- Ensemble—2
- Upper-division theory or history elective (3000 or 4000 level theory classes, except MUSC 4101)—2/3
- Non-music electives—8

### **Senior Year**

- MUSC 4106 Guitar Literature—2
- MUSC 4997 Senior Recital—1
- PMUS 4566 Applied guitar instruction (lessons and literature classes)—7
- Ensemble—2
- Non-Western music, 2000/4000 level—3
- Non-music electives—10

## **Harp Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2 —2
- PMUS 1576 Applied harp instruction (lessons and literature class)—8
- Written communication—3
- Ensemble—2
- Non-music electives—9

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 2105, 2205 Keyboard Musicianship 1 and 2—2
- PMUS 2576 Applied harp instruction (lessons and literature class)—8
- Ensemble—2
- Non-music electives—12

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 3176 Conducting 1—2
- MUSC 2071 Instrumentation—.2
- PMUS 3576 Applied harp instruction (lessons and literature class)—7
- Chamber Music—1
- Ensemble—2
- Non-music electives—10

### **Senior Year**

- MUSC 4997 Senior Recital—1
- PMUS 4576 Applied harp instruction (lessons and literature class)—7
- Chamber Music—2
- Ensemble—2
- Non-Western Music 2000/4000—3
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—  
2
- Non-music electives—9

## **Organ Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1616 Applied organ instruction (lessons and literature class)—6
- Ensemble—2
- Performance minor—2
- Written communication—3
- Non-music electives—6

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0

- 
- MUSC 2101, 2111 Theory 3 and 4—4
  - MUSC 2121, 2131 Aural Skills 3 and 4—2
  - MUSC 2265 Service Playing Techniques—2
  - MUSC 2997 Sophomore Proficiency—0
  - MUSC 3176 Conducting 1—2
  - PMUS 2616 Applied organ instruction (lessons and literature class)—8
  - Ensemble—2
  - Performance minor—2
  - Non-music electives—8

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—.6
- MUSC 3997 Junior Recital—1
- MUSC 4011 or 4021 16th/18th Century Counterpoint—.2
- MUSC 4285, 4295 Organ Survey—6
- PMUS 3616 Applied organ instruction (lessons and literature class)—7
- Ensemble—2
- Non-music electives—8

### **Senior Year**

- MUSC 4011 or 4021 16th/18th Century Counterpoint—2
- MUSC 4997 Senior Recital—1
- PMUS 4616 Applied organ instruction (lessons and literature class)—7
- Non-Western music, 2000/4000 level—3
- Ensemble—1
- Non-music electives—14

## **Harpichord Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1586 Applied Harpsichord Instruction (lessons and literature classes)—6
- University Ensemble—2
- Written communication—3
- Non-music electives—12

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 4405 Basso-Continuo Accompaniment (fall)—2
- PMUS 2586 Applied Harpsichord Instruction (lessons and literature classes)—6
- University Ensemble—2
- Non-Western music history—3
- Performance minor—4
- Non-music electives—9

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1 (fall)—2
- MUSC 4011 16th Century Counterpoint—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- PMUS 3586 Applied Harpsichord Instruction (lessons and literature classes)—6
- University Ensemble—2
- Non-music electives—9
- Music Electives (special studies focusing on harpsichord literature and pedagogy recommended)—2

### **Senior Year**

- MUSC 4061 Tonal Analysis (fall)—2
- MUSC 4852 17th Century and Early 18th Century Music—3
- MUSC 4021 18th Century Counterpoint (fall)—2
- PMUS 3586 Applied Harpsichord Instruction (lessons and literature classes)—6
- MUSC 4997 Senior Recital—1
- Upper-division music history elective—3
- University Ensemble—2
- Non-music electives—7

## **Piano Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1325 Sight Reading for Piano—1
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- MUSC 2365 Introduction to Accompanying—2
- PMUS 1636 Applied piano instruction (lessons and literature classes)—6
- Written communication—3
- Non-music electives—11

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## **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2325 Applied Harmony for the Keyboard—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 2636 Applied piano instruction (lessons and literature classes)—6
- PMUS 4105 Supervised Accompanying—2
- Non-music electives—15

## **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1 (fall)—2
- MUSC 3345/3355 Piano Pedagogy 1 and 2—4
- MUSC 3802/3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4061 Tonal Analysis or MUSC 4071 Post-tonal Theory and Analysis—2
- PMUS 3636 Applied piano instruction (lessons and literature classes)—6
- Band, orchestra, or choir—2
- Performance minor—4
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—2
- Non-music electives—6

## **Senior Year**

- MUSC 4325, 4335 Piano Literature 1 and 2—4
- MUSC 4997 Senior Recital—1
- PMUS 4636 Applied piano instruction (lessons and literature classes)—6
- PMUS 4105 Supervised Accompanying—2
- Non-Western music, 2000/4000 level—3
- Non-music electives—6

## **Jazz Piano Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

## **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 1427 Jazz Ensemble—2
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1325 Sight Reading for Piano—1
- MUSC 2365 Introduction to Accompanying—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1636 Applied Piano Instruction (lessons and literature classes)—4

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- PMUS 1806 Applied Jazz Piano Instruction (lessons and literature classes)—6
  - Written communication—3
  - Non-music electives—6

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 1427 Jazz Ensemble—2
- EMUS 1437 Jazz Combo—1
- HIST 2437 African American History—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4 —2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3081 Jazz Theory and Aural Foundations —3
- MUSC 3997 Classical Recital—1
- PMUS 2636 Applied Piano Instruction (lessons and literature classes)—4
- PMUS 2806 Applied Jazz Piano Instruction (lessons and literature classes)—5
- Non-music electives—6

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 3427 Jazz Ensemble—1
- EMUS 3437 Jazz Combo—2
- MUSC 3176 Conducting 1—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3061, 3071 Jazz Improvisation 1 and 2—4
- PMUS 3806 Applied Jazz Piano Instruction (lessons and literature classes)—6
- Non-music electives—8

### **Senior Year**

- EMUS 3642 History of Jazz—3
- EMUS 3437 Jazz Combo—2
- MUSC 4997 Jazz Senior Recital—1
- MUSC 4031 Jazz Scoring and Arranging —2
- PMUS 4806 Applied Jazz Piano Instruction (lessons and literature classes)—5
- Two credits selected from MUSC 3345, 3355 (Piano Pedagogy 1 and 2), MUSC 4325, 4335 (Piano Literature 1 and 2), or one seminar of piano pedagogy or literature and MUSC 3253 Jazz Techniques for the Music Educator—2
- Non-music electives—11

## **Performance with Secondary Emphasis in Jazz (Available for Trumpet, Trombone, and Saxophone)**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0

- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2 —2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship—2
- Applied Instruction (lessons and literature class)—6
- University Ensemble—2
- Written communication—3
- Non-music electives—6

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4 —4
- MUSC 2121, 2131 Aural Skills 3 and 4 —2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 1515 Jazz Piano Class—2
- MUSC 3081 Jazz Theory/Aural Foundations—3
- Applied Instruction (lessons and literature class)—6
- University Ensemble—2
- EMUS 1507 Chamber Music—2
- Music electives (Performance minor for saxophone students)—4
- Non-music electives—6

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3061 or 3017 Jazz Improvisation 1 or 2—2
- MUSC 3176 Conducting 1—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- Applied Instruction (lessons and literature class)—6
- University Ensemble—1
- EMUS 3507 Chamber Music—1
- EMUS 3427 Jazz Ensemble—1
- EMUS 3437 Jazz Combo—1
- Non-music electives—10

### **Senior Year**

- MUSC 4997 Senior Recital—1
- MUSC 3273 Jazz Techniques for the Music Educator—2
- MUSC 4031 Jazz Arranging 1—2
- EMUS 3427 Jazz Ensemble—2
- EMUS 3437 Jazz Combo—2
- Applied Instruction (lessons and literature class)—6
- Non-Western Music or History of Jazz—3
- Non-music electives—12

## **Jazz Studies Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—.0
- ETHN 2001 Foundations of Ethnic Studies—3
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- MUSC 3061 Jazz Improvisation 1—2
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- PMUS 1XXX Applied Instruction—8
- Ensemble—2
- Written communication—3
- Non-music electives—3

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters) —0
- HIST 2437 African American History—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 3081 Jazz Theory/Aural Foundations—3
- MUSC 3642 History of Jazz—3
- MUSC 2997 Sophomore Proficiency—0
- PMUS 1515 Jazz Piano Class—2
- PMUS 2XXX Applied Instruction—.8
- Ensemble—4
- Non-music electives—3

#### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3071 Jazz Improvisation 2—2
- MUSC 4031, 4091 Jazz Arranging 1 and 2—4
- MUSC 3997 Junior Recital—1
- PMUS 3XXX Applied Instruction—5
- Ensemble—2
- Non-music electives—11

#### **Senior Year**

- MUSC 4997 Senior Recital—1
- PMUS 4XXX Applied Instruction—5
- Non-Western Music, 2000/4000 level—3
- Ensemble—3

- 
- Music electives—2
  - Non-music electives—11

## **String Performance Concentration Area: Double Bass, Harp, Viola, Violin, and Violoncello**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 1327 Orchestra—2
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied string instruction (lessons and literature classes)—8
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- Written communication—3
- Non-music electives—6

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 1327 Orchestra—2
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3273 String Pedagogy—2
- PMUS 2XXX Applied string instruction (lessons and literature classes)—8
- PMUS 2105, 2205 Keyboard Musicianship 3 and 4—2
- Non-music electives—10

#### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EMUS 3327 Orchestra—2
- MUSC 2071 Instrumentation —2
- MUSC 3176 Conducting 1 —2
- MUSC 3802, 3812 History of Music 1 and 2 —6
- MUSC 3997 Junior Recital—1
- PMUS 3XXX Applied string instruction (lessons and literature classes)—7
- PMUS 4517 Orchestral Repertoire—2
- Chamber music—1
- Non-music electives—10

#### **Senior Year**

- EMUS 3327 Orchestra—2
- MUSC 4997 Senior Recital—1
- PMUS 4XXX Applied string instruction (lessons and literature classes)—7

- Chamber music—2
- Non-Western music, 2000/4000 level—3
- Upper-division theory or musicology elective (not MUSC 4101)—2-3
- Non-music electives—10

## **Voice Performance Concentration Area**

One year of study at the university level of each of two foreign languages is required of vocal performance majors.

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1544, 1554 Italian/English Diction—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- PMUS 1726 Applied Voice Instruction (lessons and literature classes)—6
- Ensemble—2
- Written communication—3
- Non-music electives—6

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 2105, 2205 Keyboard Musicianship 3 and 4—2
- PMUS 2726 Applied Voice Instruction (lessons and literature classes)—6
- Ensemble—2
- Non-music electives (including foreign language)—13

#### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1—2
- MUSC 3193 Pedagogy for Young Voices—2
- MUSC 3464, 3444 German/French Diction—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- PMUS 3726 Applied Voice Instruction (lessons and literature classes)—7
- Ensemble—2
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—2
- Non-music electives (including foreign language)—14

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## Senior Year

- MUSC 4997 Senior Recital—1
- PMUS 4726 Applied Voice Instruction (lessons and literature classes)—7
- PMUS 4137, 4147 Opera Theatre 1 and 2—2
- Ensemble—1
- Non-Western music, 2000/4000 level—3
- Non-music electives—9

## Voice Performance with Elective Studies in Music Theatre

### *Required Courses and Semester Credit Hours*

## Freshman Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1544, 1554 Italian/English Diction—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- PMUS 1726 Applied Voice Instruction (lessons and literature classes)—6
- Ensemble—2
- Theatre/dance elective—1
- Written communication—3
- Non-music electives (including foreign language)—6

## Sophomore Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 2105, 2205 Keyboard Musicianship 3 and 4 —2
- PMUS 2726 Applied Voice Instruction (lessons and literature classes)—6
- THTR 1019 and 1029 Foundations of Theatre 1 and 2—6
- Beginning ballet—1
- Ensemble—1
- Non-music electives (including foreign language)—10

## Junior Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1 —2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3193 Pedagogy for Young Voices —2
- PMUS 3167 Opera Theatre Stagecraft—3
- PMUS 3726 Applied Voice Instruction (lessons and literature classes)—6
- PMUS 4137 Opera Theatre 1—1

PMUS 4147 Opera Theatre 2—1

- PMUS 4167 Opera Theatre Lab—1
- THTR 2003 Acting 1—3
- THTR 3053 Acting 2—3
- Ensemble—1
- Non-music electives—3

### **Senior Year**

- MUSC 4101—2
- PMUS 4157 Opera Practicum—2
- PMUS 4167 Opera Theatre Lab—1
- PMUS 4726 Applied Voice Instruction (lessons and literature classes)—6
- Non-Western music, 2000/4000-level—3
- Senior project (or major role, or design or direction of a major production)—0
- Theatre and dance elective—3
- Upper-division theory elective (3000 or 4000 level theory classes except MUSC 4101)—2
- Non-music electives—9

## **Woodwind Performance Concentration Area**

### *Required Courses and Semester Credit Hours*

#### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2 —4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied wind instruction (lessons and literature classes)—6
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2—2
- Ensemble—2
- Written communication—3
- Non-music electives—6

#### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- PMUS 1XXX Applied wind instruction (lessons and literature classes)—8
- Chamber music—2
- Ensemble—2
- Music electives—4
- Non-music electives —12

#### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 2071 Instrumentation —2
- MUSC 3176 Conducting 1—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- PMUS 1XXX Applied wind instruction (lessons and literature classes)—7
- Chamber music—2
- Ensemble—2
- Upper-division theory elective (3000 or 4000 level theory classes except MUSC 4101)—2
- Non-music electives—7

### **Senior Year**

- MUSC 4997 Senior Recital—1
- PMUS 1XXX Applied wind instruction (lessons and literature classes)—7
- Chamber music—2
- Ensemble—2
- Non-Western music, 2000/4000 level—3
- Non-music electives—12

### **Musicology Concentration Area**

In addition to the requirements applying to all bachelor of music curricula, a second year proficiency is required in one foreign language.

#### *Required Courses and Semester Credit Hours*

### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- HIST 1010, 1020 History of Western Civilization—6
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship 1 and 2 —2
- Applied instruction (lessons and literature classes)—4
- Ensemble—2
- Written communication—3
- Non-music electives—3

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- HIST 1010, 1020—6
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—.2
- MUSC 2997 Sophomore Proficiency—0
- Applied instruction (lessons and literature classes)—4
- Ensemble—2

- 
- Non-music electives—18

### Junior Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 3176 Conducting 1—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- Applied instruction (lessons and literature classes)—4
- Ensemble—2
- Non-Western music 2000/4000 level—3
- Music history (4000 level)—3
- Non-music electives—12

### Senior Year

- MUSC 4011 16th Century Counterpoint and MUSC 4021 18th Century Counterpoint or MUSC 4081 Music Technology—4
- MUSC 4061 Tonal Analysis and MUSC 4071 Post Tonal Analysis —4
- MUSC 4957 Senior Thesis —4
- TMUS 4403 Special Studies —2
- Music history (4000 level)—12

## *Graduate Degree Program(s)*

### Master of Music (MM)

The major fields for this degree are **composition, conducting, music theory, performance, and the combined major of performance/pedagogy**. Conducting students may concentrate in choral, orchestral, or wind symphony/band. Performance and performance/pedagogy majors may concentrate in brass instruments, early keyboard, jazz, piano, percussion, organ, harpsichord, string instruments (including harp and guitar), voice, or woodwind instruments.

Major work in the conducting degrees includes advanced conducting, analytical studies, score reading, orchestration, arranging, conducting practica, and research and writing. In music theory, course work and two thesis papers are required. In pedagogy, courses in the psychology of music learning, the pedagogy and literature of one's performing area, and a written thesis are required. In performance, students complete applied study, recitals, and courses that investigate the repertoire of their performance areas. All master's degree students are required to take a course in bibliographic research and 6 credits outside their major area.

Brass, conducting, percussion, string, voice, and woodwind majors are required to participate in a music ensemble. Committee chairs advise students concerning the appropriate choice of ensemble.

**Prerequisites.** As noted in the Graduate School section, students should have completed undergraduate preparation equivalent to that expected for the bachelor's degree at this university. Normally this is a bachelor of music degree in the proposed area of concentration.

Before admission, composition majors should submit representative scores and recordings (CD format), and a list of completed compositions. Theory majors should submit two scholarly writing samples that demonstrate ability in critical analysis, appropriate research techniques, and skill in the cogent use of English. For further details, see the Application Process section of the website. Performance majors must submit a repertoire list and arrange for an audition, or submit a non-returnable recording of their performance. Conducting majors must submit a videotape or DVD of their performance. Refer to "Graduate Auditions" above for further details.

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**Program of Study.** The master of music (MM) degree, which the Graduate School considers a Plan II program, requires a minimum of 30–32 semester hours of graduate course work, including thesis projects. Many students find it necessary to exceed this minimum in order to meet the musical and academic standards demanded by the MM qualifying examination. Outlines of specific programs may be obtained online at [music.colorado.edu/students/graduate/degrees](http://music.colorado.edu/students/graduate/degrees).

Each student's program is directed by a three-member advisory committee headed by the major advisor (the student's major professor). A second member is chosen from the major area, and a third from outside the major area. (The major areas are music education, music theory, composition, and performance.) By the second semester of residence, the student should complete a tentative degree plan and obtain the approval of the advisory committee and the associate dean for graduate studies. Students must complete the master's degree within four years of matriculation into the program.

**Examinations.** In addition to preliminary examinations, master's degree students in music must take the master's qualifying examination. The procedures, guidelines for registration, and deadlines for taking these examinations are announced by the Music Graduate Office.

**Recital/Thesis Requirements.** The recital/thesis requirement for the MM in composition is the composition (during the period of graduate study) of several works of major proportion, at least one of which must receive public performance. For the major in conducting, the requirement is a public practicum and a performance-related or other scholarly document. For the major in music theory, it is two thesis papers. For the major in performance, presentation of two public recitals constitute the requirement. For the major in performance and pedagogy, a full-length recital and a research document in pedagogy are required.

## Doctor of Philosophy (PhD)

The doctor of philosophy (PhD) in music degree is offered through the Graduate School for students who seek a terminal degree with an emphasis on research. The two principal areas of study are music education and musicology (including ethnomusicology).

**Prerequisites.** Students applying to the PhD program should have a bachelor's degree or equivalent in a music field related to their intended area of study. Applicants for the PhD with an emphasis in music education should hold an MME degree. Letters of recommendation, representative research papers, and satisfactory scores on the GRE (the general test) are required elements of the student's application for the degree. Upon entrance to the degree program, students must pass the prelimi

## Doctor of Philosophy: Musicology (PhD)

For the musicology student, the doctor of philosophy in music degree is intended to emphasize research in music history, music theory, ethnomusicology, or some other aspect of music in culture. The musicology faculty encourages students entering the graduate program, whether from the bachelor's or master's level, to pursue the PhD, the benchmark of professional education within the field. A minimum of 30 semester hours in courses numbered at 5000 or above is required (although the minimum number is almost always exceeded). At least 4 doctoral seminars (7000 level) in musicology and music theory (3 plus 1, 1 plus 3, or 2 plus 2) must be taken at the University of Colorado Boulder as part of this course work. Up to 21 semester hours of graduate work taken at another institution may be considered for transfer. The College of Music requires proficiency in two foreign languages appropriate to the student's program of study. Normally the language requirement is met by a translation examination scheduled twice a semester through the graduate music office.

**Dissertation Requirements.** A student must complete a total of at least 30 credit hours of dissertation credit (beyond course work), with not more than 10 of these hours in any one semester. Furthermore, not more than 10 hours of dissertation credit earned prior to a student's advancement to candidacy may be applied toward the required 30 credit hours. The dissertation itself should be an original and worthwhile contribution to knowledge in the field of musicology. It is expected that the

student work closely with a major professor who will serve as the first reader and critic before it is submitted to the other dissertation committee members.

## *Dual Degree Programs*

### Double Degrees in Music

Students may complete requirements in two fields and receive two degrees from the university. Such double-degree programs are available combining music with business, engineering, journalism and mass communication, or disciplines in the College of Arts and Sciences. Students must make application for a double-degree program in both the College of Music and the Leeds School of Business, the College of Engineering and Applied Science, the School of Journalism and Mass Communication, or the College of Arts and Sciences. Any other combined program must be arranged by consulting both schools or colleges.

### Dual Master's Degree in Music

Students may apply for a dual master's degree that combines any two master's programs in the College of Music. The student must apply separately and be admitted by the faculty in each of the degree programs under their respective admissions procedures and standards. The student must be accepted to both degree programs at the time of the initial application. With the exception of thesis credits, courses that fulfill requirements in both degree programs need only be taken once to be counted for both. A minimum of 45 credit hours must be earned. For most students, it is far preferable to pursue the DMA or PhD degree after completing a master's degree, rather than to pursue a dual master's degree.

## *Certificate Program*

### Certificate in Jazz Studies

The Jazz Program offers a Certificate in Jazz Studies for undergraduate music majors. The certificate program consists of an intense 18-hour curriculum in both academic and performance areas, concluding with a jazz recital. Courses include jazz theory and aural foundations, improvisation, history of jazz, scoring and arranging, jazz piano, jazz techniques for the music educator, jazz combo, and jazz ensemble.

### Certificate in Music Technology

The certificate in music technology provides students with an opportunity to study music technology in greater depth than music degrees currently allow. This certificate program requires 18 credit hours, including five music technology courses, an interdisciplinary performance course, and an independent project (a composition, performance, or research project) under the supervision of a member of the Music Technology faculty. For more information, contact John Drumheller at [drumhell@colorado.edu](mailto:drumhell@colorado.edu).

### Professional Certificate in String Quartet Performance

The Professional Certificate in String Quartet Performance is designed to provide instruction and experiences for young artists who have already completed a master's degree or its equivalent in performance. Students are generally accepted into the certificate program as part of a pre-formed string quartet, which will apply for admission into the College of Music graduate program as a unit.

### Professional Certificate in Opera and Solo Vocal Performance

This program provides instruction and experiences for a select number of young artists, most of whom have already completed a master's degree in performance. Participants in the certificate program will concentrate significantly on the performance aspect of their work. This program is considered a path to a specialized career in solo vocal performance.

## Professional Certificate in Woodwind Performance

This program is designed to emphasize performance experiences for truly outstanding young artists who have already completed a master's degree or its equivalent in woodwind performance. The professional certificate is intended for students who plan on careers in performance and admission and is highly selective.

## Professional Certificate in String Quartet Performance

The Professional Certificate in String Quartet Performance is designed to provide instruction and experiences for young artists who have already completed a master's degree or its equivalent in performance. Students are generally accepted into the certificate program as part of a pre-formed string quartet, which will apply for admission into the College of Music graduate program as a unit.

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# Neuroscience

## *Graduate Degree Program(s)*

### Interdepartmental PhD Program in Neuroscience

The graduate PhD program in neuroscience is an interdepartmental program currently consisting of eight tracks to a PhD: behavioral genetics (psychology); behavioral neuroscience (psychology); clinical neuroscience (psychology), cognitive neuroscience (psychology); social neuroscience (psychology); integrative physiological neuroscience (integrative physiology); molecular, cellular, and developmental neuroscience (MCD-biology); or speech, language, and hearing neurosciences (SLHS). Students apply for admission to one of the participating departments and their admission to CU-Boulder and financial support are determined by that department. Once in residence, students enter the neuroscience PhD program while still maintaining their “home” in the department to which they were admitted. They receive a PhD that lists both their home department and neuroscience.

The neuroscience curriculum includes a year-long intensive core course, graduate seminar courses linked to an invited speaker series, and wide-ranging neurosciences courses offered by many departments and institutes across campus.

Potential applicants are encouraged to visit the neuroscience website, which provides detailed information on the program, application process, courses, faculty, and current trainees: [www.colorado.edu/neuroscienceprogram](http://www.colorado.edu/neuroscienceprogram).

## *Certificate Program*

### Neuroscience and Behavior Graduate Certificate

The Graduate Certificate in Neuroscience and Behavior focuses on understanding the nervous system and its relationship to disease and behavior. This understanding encompasses the molecular, cellular, and behavioral aspects of neuroscience.

Students come from such graduate programs as ecology and evolutionary biology; behavioral genetics; molecular, cellular, and developmental biology; psychology; and integrative physiology. They receive a PhD in their department and a certificate in neuroscience.

The neuroscience core curriculum includes courses in the following areas: neuroscience methods laboratory, neuroanatomy (PSYC 5263), neurochemistry or neuropharmacology (e.g., PSYC 5062, PSYC 5132), neurophysiology or systems neuroscience (e.g., PSYC 5042, EPOB 5190), behavioral neuroscience or animal behavior (e.g., EPOB 5240, KINE 5610, PSYC—to be developed), molecular neuroscience or molecular genetics or developmental neuroscience (e.g., PSYC 5232, EPOB 5200, MCDB—to be developed).

Students are required to attend a weekly journal club or discussion group and neuroscience colloquia.

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# Norlin Scholars Program

Norlin Scholars is an interdisciplinary intellectual community in which students receive an education personally tailored to fit their interests and goals in any of CU-Boulder's undergraduate colleges or schools. Geared toward students seeking a liberal education or preparing for graduate or professional schools, the program offers academic challenge, breadth of experience, and close work with faculty.

Benefits of being a Norlin Scholar include:

- \$4,000 scholarship per academic year
- additional funding for enrichment activities like research or study abroad
- small, invigorating core and elective courses
- research or creative projects with faculty
- access to top scholarship advising and guidance
- opportunities for professional training and development
- a stimulating, interdisciplinary peer group

## Financial Information

Each Norlin Scholar receives a merit-based award of \$4,000 per year with the possibility of additional funds for enrichment projects. Students who enter the program as freshmen receive a four-year award, contingent upon academic progress; students who enter as rising juniors receive a two-year award, contingent upon academic progress. Students who need additional financial assistance should complete the FAFSA (Free Application for Federal Student Aid).

## Applying to the Program

A flexible selection system ensures that students with many different interests and talents are accepted as Norlin Scholars. Students may apply either as high school seniors (to enter the program as incoming first-year students) or as second-semester sophomores in college (to enter the program as juniors). Colorado residents as well as out-of-state and international students are eligible. Applicants should demonstrate excellent academic and/or creative ability and must have already applied to the university for admission in order to apply for the scholarship. More information and application details can be found at [enrichment.colorado.edu/norlinscholars](http://enrichment.colorado.edu/norlinscholars) or call 303-735-6802.

The course code for this program is NRLN.

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# Peace Corps

## Peace Corps Master's International Programs

The Graduate School is pleased to announce the initiation of four new Master's International (MI) programs developed in cooperation with the Peace Corps and with four academic units on the Boulder campus (geography, education, environmental studies, and the master of business administration). Students accepted into the graduate programs of these four units may choose to also apply for one of the MI programs that entail both graduate training and Peace Corps service to combine theory with practice while working overseas.

Interested students should begin by consulting the following websites:

- Peace Corps national headquarters: [www.peacecorps.gov](http://www.peacecorps.gov)
- CU-Boulder Peace Corps Recruiting Office: [www.colorado.edu/iece/peacecorps/masters.html](http://www.colorado.edu/iece/peacecorps/masters.html)

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# Peace and Conflict Studies

The Certificate Program in Peace and Conflict Studies (PACS) is designed to help students explore why conflict and violence occur and learn how conflict can be managed and transformed to accomplish constructive ends. The certificate is granted by the dean of the College of Arts and Sciences, but students in any school or major at the University of Colorado may earn it.

The program takes an interdisciplinary perspective to the study of conflict, cooperation, war, and peace. Course work from various departments focuses on personal and social change, intra- and international conflicts, processes of conflict resolution, creative nonviolent activism, and the analysis of violence of various forms. The program encourages hands-on, "in the field" learning of peace and conflict issues through volunteer and internship placements with a wide variety of peace, justice, and development agencies.

Completion of the certification requires 24 credit hours (15 upper division) of study including:

- PACS 2500 Introduction to Peace and Conflict Studies
- PACS 4500 Senior Seminar in Peace and Conflict Studies
- 9 credit hours of relevant course work in the student's major
- 9 credit hours of relevant course work outside the major.

For information or application go to the program's website: [3cg.colorado.edu/drupal\\_pacs](http://3cg.colorado.edu/drupal_pacs).

Course code for this program is PACS.

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# Philosophy

The undergraduate degree in philosophy emphasizes knowledge and awareness of:

- some of the principal philosophical texts in the history of western philosophy, from its beginnings in Greece to the late 19th century;
- some of the main currents in 20th century philosophy, including some acquaintance with contemporary philosophical issues and modes of inquiry;
- a single major author or a single philosophical movement; and
- elementary formal logic.

In addition, students completing the degree in philosophy are expected to acquire the ability and skills to:

- form reasoned opinions about the issues—moral, religious, political, etc.—that educated people debate;
- understand, analyze, and evaluate complex arguments and theories;
- distinguish between the main thrust of an argument or position and what is ancillary to it;
- discover and critically examine the underlying presuppositions of major systems of ideas or programs for action;
- see important connections between different systems of ideas or programs for action;
- explain difficult ideas and concepts in an informed, effective, and coherent manner;
- develop a thesis and present a coherent argument for it;
- write a clear and coherent essay; and
- engage in rational and productive discussion of issues and arguments.

Course code for this program is PHIL.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Philosophy

For the undergraduate degree in philosophy, students must take 33 to 45 credit hours in philosophy, earning 33 hours with a grade of C- or better in each course in philosophy and 2.00 (C) average for all work attempted in philosophy. Also, students must take 18 hours of upper-division work in philosophy with a grade of C- or better, with at least 12 of those 18 credit hours completed on the CU-Boulder campus. No more than 8 credit hours of independent study may count toward the minimum requirement.

Students are advised to consult the online Schedule Planner for the most accurate information on prerequisites, since these sometimes vary with instructors.

Courses may be taken in any order providing prerequisites, if any, are met. However, the department strongly recommends completion of PHIL 2440, 3000, 3010, and 3480 in the first year of the major

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program.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

### ***Required Courses and Semester Credit Hours***

#### **History (three courses)—9**

- PHIL 3000 History of Ancient Philosophy, Ancient and Medieval
- PHIL 3010 History of Modern Philosophy, Modern
- One course of the following:
  - PHIL 4010 Single Philosopher
  - PHIL 4020 Topics in the History of Philosophy
  - PHIL 4030 Medieval Philosophy
  - PHIL 4040 20th Century Philosophy
  - PHIL 4070 Existentialist Philosophy
  - PHIL 4080 Introduction to Phenomenology
  - PHIL 4250 Marxism

#### **Logic (one of the following courses)—3**

- PHIL 2440 Symbolic Logic
- PHIL 4440 Topics in Logic

#### **Philosophical Writing (one course)—3**

- PHIL 3480 Critical Thinking and Writing in Philosophy (prereq. or coreq., PHIL 2440 Symbolic Logic)

#### **Values (two courses)**

- The following required course: PHIL 3100 Ethical Theory (prereq. or coreq., PHIL 3480 Critical Thinking and Writing in Philosophy)—3
- One of the following additional courses—3
  - PHIL 2140 Environmental Justice
  - PHIL 2200 Major Social Theories
  - PHIL 2220 Philosophy and Law
  - PHIL 2290 Philosophy and Women
  - PHIL 3110 Feminist Practical Ethics
  - PHIL 3140 Environmental Ethics
  - PHIL 3160 Bioethics
  - PHIL 3190 War and Morality
  - PHIL 3200 Social and Political Philosophy
  - PHIL 3260 Philosophy and the International Order
  - PHIL 4110 Contemporary Moral Theory
  - PHIL 4200 Contemporary Political Philosophy
  - PHIL 4250 Marxism

#### **Metaphysics and Epistemology (two courses)**

- The following required course: PHIL 4340 Epistemology (prereqs. PHIL 2440 Symbolic Logic and PHIL 3010 History of Modern Philosophy; prereq. or coreq. PHIL 3480 Critical Thinking and Writing in Philosophy)—3

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One of the following additional courses—3

PHIL 3600 Philosophy of Religion

PHIL 4300 Philosophy of Mind

PHIL 4360 Metaphysics

PHIL 4400 Philosophy of Science

PHIL 4490 Philosophy of Language

**Electives** (two courses) (includes all courses that are at the 2000 level or above, and are not taken to satisfy any of the above requirements)—6

*Note: The department offers topically oriented majors that are interdisciplinary in nature, including law and society, and values and social policy. These majors require two semesters in the history of philosophy, as well as a series of core courses that vary according to the topic. A student intending to complete a topical major in philosophy should see the departmental undergraduate advisor as soon as possible.*

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in philosophy, students should meet the following requirements:

- Declare major by the beginning of the second semester.
- Complete an average of 6.7 credit hours of required philosophy courses in each of the next five semesters.
- Meet with the undergraduate advisor at the time the major is declared.
- Complete PHIL 2440, PHIL 3480, PHIL 3000, and PHIL 3010 by the end of the fifth semester of study.

## Minor Program

A minor is offered in philosophy. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

For the minor in philosophy, students must take 18 credit hours in philosophy, earning 18 hours with a grade of C- or better and a 2.000 (C) average for all work attempted in philosophy. Also, students must take 9 hours of upper-division work in philosophy with grades of C- or better. Minor students may apply no more than 9 credit hours, including 6 upper-division credit hours of transfer work, toward a minor.

### Required Courses and Semester Credit Hours

#### Logic (one course)—3

- PHIL 1440 Introduction to Logic
- PHIL 2440 Symbolic Logic
- PHIL 4440 Topics in Logic (prereq., 12 hours PHIL course work, including PHIL 2440 or equivalent)

#### History of Philosophy—6

One course from the following:

- PHIL 1010 Introduction to Western Thought: Ancient
- PHIL 1020 Introduction to Western Thought: Modern

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- PHIL 3000 History of Ancient Philosophy (prereq., 6 hours PHIL course work)
- PHIL 3010 History of Modern Philosophy (prereq., 6 hours PHIL course work)

And one course from the following:

- PHIL 1100 Ethics
- PHIL 1200 Philosophy and Society
- PHIL 3100 Ethical Theory (prereq., 6 hours PHIL course work, prereq. or coreq., PHIL 3480)
- PHIL 3200 Social and Political Philosophy (prereq. 6 hours PHIL course work)

## *Graduate Degree Program(s)*

### Graduate Study in Philosophy

Applicants for admission to the Graduate School for work toward a master's or doctoral degree with a major in philosophy are expected to have had 18 or more credit hours in undergraduate courses in the subject.

Through its MA and PhD programs, the department offers three areas of concentration in graduate study: **history of philosophy**, **contemporary metaphysics**, and **moral theory and practical ethics**.

Beyond the required course work and examinations for the PhD, a diversified faculty provides opportunity for a wide range of specialization in the dissertation project. The department makes available a limited number of teaching assistantships and assists with job placement. Descriptions of all degree programs are available from the Department of Philosophy.

Students wishing to pursue graduate work in philosophy should note requirements for advanced degrees in the Graduate School section and should obtain a copy of the *Graduate Program Rules* from the department.

Descriptions of all degree programs are available from the Department of Philosophy.

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# Physics

The undergraduate degree in physics emphasizes knowledge and awareness of:

- the basic subfields of physics (classical mechanics, electricity and magnetism, quantum mechanics, statistical mechanics, and thermodynamics), as well as at least one specialty area of application (e.g., solid state physics or optics);
- the major principles of physics, their historical development, and the roles they play in the various subfields of physics;
- the interrelations between theory and observation, the role of systematic and random experimental errors, and methods used to analyze experimental uncertainty and compare experiment with theory;
- physical phenomena and experience in the use of basic experimental apparatus and measuring instruments;
- mathematics sufficient to facilitate the acquisition and application of physical principles; and
- the importance of physics in other fields such as chemistry, biology, engineering, medicine, and in society at large.

In addition, students completing the degree in physics are expected to acquire the ability and skills to:

- apply physical principles to new situations;
- construct and assemble experimental apparatus, conduct and analyze measurements of physical phenomena, analyze properly experimental uncertainty, and make meaningful comparisons between experiment and theory; and
- communicate results of scientific inquiries verbally and in writing.

Course code for this program is PHYS.

## *Bachelor's Degree Program(s)*

### Bachelor's in Physics

Three different plans are available to students in physics. Because there is some flexibility within each plan, the department encourages students to pursue their own interests in setting up their curriculum. The final responsibility for fulfilling the requirements for the degree rests with the student.

Students who have declared physics as a major are required to consult with the departmental advisor at least once per semester. Even if first-year students are only considering physics as a major, they are strongly encouraged to visit the departmental advisor and discuss the situation. Because most of the advanced physics courses have various prerequisites, failure to settle on an appropriate plan of study early in the college career can result in delay and complications later.

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

## Colleges & Schools

- > [Architecture & Planning](#)
- > [Arts & Sciences](#)
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- > [Programs of Special Interest](#)
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- > [Biological Sciences](#)
- > [British and Irish Studies](#)
- > [Central and East European Studies](#)
- > [Chemical Physics](#)
- > [Chemistry and Biochemistry](#)

## Plan I

Primarily for those planning graduate work in physics, this plan includes 45 credit hours of physics courses.

### Required Courses and Semester Credit Hours

- PHYS 1110 and 1120 General Physics 1 and 2—8
- PHYS 1140 Experimental Physics 1—1
- PHYS 2150 Experimental Physics—1
- PHYS 2170 Foundations of Modern Physics 3
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3220 Quantum Mechanics and Atomic Physics I—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3320 Principles of Electricity and Magnetism 2—3
- PHYS 3330 Junior Laboratory—2
- PHYS 4230 Thermodynamics and Statistical Mechanics—3
- PHYS 4410 Quantum Mechanics and Atomic Physics 2—3
- Electives in physics (chosen from the departmental list) minimum—9
- Three of the 9 hours must be one of the courses PHYS 3340, PHYS 4430, or PHYS 5430 or a research activity of 3 credit hours. The research activity may be completed in one of the following ways: (1) under either PHYS 4610/4620/4603 Honors or PHYS 4840/4850 Independent Study; or (2) by documentation of your accomplishments as an intern with a research activity within the physics department or a suitable cognate department, institute, or external entity such as NCAR, NIST, NOAA, etc. Approval by a physics department advisor is required for option (2) and should be obtained in advance. Up to 3 credit hours earned under choice (1) may be counted toward the electives requirement. No academic credit is earned under the internship option (2), so if an internship is taken, students must still earn credit through one of the required courses.
- In addition, the following nonphysics courses are required:
  - MATH 1300 Analytic Geometry and Calculus 1 or APPM 1350 Calculus 1 for Engineers—4-5
  - MATH 2300 Analytic Geometry and Calculus 2 or APPM 1360 Calculus 2 for Engineers—4-5
  - MATH 2400 Analytic Geometry and Calculus 3 or APPM 2350 Calculus 3 for Engineers—4
  - APPM 2360 Introduction to Differential Equations with Linear Algebra, or both MATH 3130 Introduction to Linear Algebra and MATH 4430 Ordinary Differential Equations—4-6
  - CHEM 1113/1114 and 1133/1134 General Chemistry 1 and 2 or CHEM 1151 and 1171 Honors General Chemistry 1 and 2—10

## Plan II

For students desiring either an interdisciplinary or an applied physics program. The interdisciplinary program includes astrophysics, atmospheric physics, geophysics, or a combination of a physics major with work in another area such as applied mathematics, biophysics, chemical physics, environmental sciences, philosophy and history of science, or pre-medicine. The applied physics program includes biotechnology, optics, fluid dynamics, or electronic devices. For the interdisciplinary program, 33 hours of physics courses, plus 3 hours of physics electives, plus 12 hours of interdisciplinary courses are required. For the applied physics program, 33 hours of physics courses plus 15 hours of applied physics courses are required.

### Required Courses and Semester Credit Hours

- PHYS 1110 and 1120 General Physics 1 and 2—8

- > Classics
- > Cognitive Science Studies
- > Communication
- > Comparative Literature Graduate Program
- > Distributed Studies Program
- > Ecology and Evolutionary Biology
- > Economics
- > English
- > Environmental Studies
- > Ethnic Studies
- > Film Studies
- > French and Italian
- > Geography
- > Geological Sciences
- Germanic and Slavic
- > Languages and Literatures
- > History
- > Humanities
- > Integrative Physiology
- > International Affairs
- > INVST Community Studies
- > Jewish Studies
- Lesbian, Gay, Bisexual,
- > Transgender, and Queer Studies
- > Linguistics
- > Mathematics
- > Medieval and Early Modern Studies

- PHYS 1140 Experimental Physics 1—1
- PHYS 2150 Experimental Physics—1
- PHYS 2170 Foundations of Modern Physics—3
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3220 Quantum Mechanics and Atomic Physics 1—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3320 Principles of Electricity and Magnetism 2—3
- PHYS 3330 Junior Laboratory—2
- PHYS 4230 Thermodynamics and Statistical Mechanics—3
- Electives in physics (chosen from the departmental list) minimum—3
- In addition, the following nonphysics courses are required:  
MATH 1300 Analytic Geometry and Calculus 1 or APPM 1350 Calculus 1 for Engineers—4-5  
MATH 2300 Analytic Geometry and Calculus 2 or APPM 1360 Calculus 2 for Engineers—4-5  
MATH 2400 Analytic Geometry and Calculus 3 or APPM 2350 Calculus 3 for Engineers—4  
APPM 2360 Introduction to Differential Equations with Linear Algebra, or both MATH 3130  
Introduction to Linear Algebra and MATH 4430 Ordinary Differential Equations—4-6  
CHEM 1113/1114 and 1133/1134 General Chemistry 1 and 2 or CHEM 1151 and 1171  
Honors General Chemistry 1 and 2—10

Courses in the interdisciplinary or applied physics subjects may not be double counted with the required 33 hours of physics courses. Interdisciplinary or applied physics courses must be approved by the physics department, either by the preapproved existing list of courses in each discipline or by a physics department mentor on a course-by-course basis. It is therefore imperative that students in Plan II be in close contact with the physics department advisor.

### *Plan III*

For students intending to become elementary/secondary school teachers, this plan involves a minimum of 28–31 credit hours of physics and a minimum of 35 hours in education courses. An education student advisor, who should be consulted for updated requirements, is available by appointment at **303-492-2559**.

#### **Required Courses and Semester Credit Hours**

- PHYS 1110 and 1120 General Physics 1 and 2—8
- PHYS 1140 Experimental Physics 1—1
- PHYS 1150 Experimental Physics 2—1
- PHYS 2130 General Physics 3—3
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3330 Junior Laboratory—2
- PHYS 4450 History and Philosophy of Physics—3
- ASTR 1030 Accelerated Introduction to Astronomy 1—4
- An additional required course for teaching in secondary schools: PHYS 3220 Quantum Mechanics and Atomic Physics 1—3
- In addition, the following nonphysics courses are required:  
CHEM 1011, 1031 Environmental Chemistry 1 and 2, or CHEM 1113/1114 and 1133/1134  
General Chemistry 1 and 2, or CHEM 1151 and 1171 Honors General Chemistry 1 and 2—7-  
10

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

> [Philosophy](#)

> **Physics**

> [Political Science](#)

> [Psychology and Neuroscience](#)

> [Religious Studies](#)

> [Scandinavian \(now Nordic Studies\)](#)

> [Sociology](#)

> [Spanish and Portuguese](#)

> [Speech, Language, and Hearing Sciences](#)

> [Theatre and Dance](#)

> [Western American Studies](#)

> [Western Civilization Studies](#)

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MATH 1300 Analytic Geometry and Calculus 1 or APPM 1350 Calculus 1 for Engineers—4-5  
MATH 2300 Analytic Geometry and Calculus 2 or APPM 1360 Calculus 2 for Engineers—4-5  
MATH 2400 Analytic Geometry and Calculus 3 or APPM 2350 Calculus 3 for Engineers—4  
APPM 2360 Introduction to Differential Equations with Linear Algebra or both MATH 3130  
Introduction to Linear Algebra and MATH 4430 Ordinary Differential Equations—4-6

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- > [Journalism & Mass Communication Program](#)

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  - > [Music](#)

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  - > [Other Academic Programs](#)

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### ***Special Requirements and Semester Hours***

#### **PLACE Basic Skills Assessment**

Prior to or during the semester for which students are seeking admission to the Teacher Education Program, they must take the PLACE Basic Skills Assessment. A copy of the PLACE Registration Bulletin form is available in the Office of Teacher Education in Education 151. Students should read it carefully for specific information on the assessments and registration procedures. Students must successfully complete the Liberal Arts, Professional Knowledge, and Contents Fields portions of this examination.

#### **Liberal Arts**

- Humanities (i.e., from “Literature and the Arts” in the College of Arts and Sciences core curriculum)—6
- Social sciences (i.e., from “Content Area Studies” in the College of Arts and Sciences core curriculum, except “Literature and the Arts” and “Natural Sciences”)—6

#### **Science**

- MATH 1300 Analytic Geometry and Calculus 1—5
- Two courses (minimum of 3 semester hours) in each of biology, chemistry, earth science, and physics. The eight courses must include a course with attached laboratory work in three of the four subjects)
- EDUC 5312 The Nature of Science and Science Education—3
- Science course work taken in the past five years—6

#### **Education**

- EDUC 3013 Proseminar 1: Becoming a Teacher—4
- EDUC 3023 Proseminar 2: Schools, Culture, and Society—4
- EDUC 4112-3 Educational Psychology and Adolescent Development (or PSYC 4205)—3
- EDUC 4122-3 Principles and Methods of Secondary Education—3
- EDUC 4232 Language and Literacy Across the Curriculum—3
- EDUC 5385 Methods and Materials in Secondary Science (EDUC 4122 is a prerequisite and EDUC 5312 is a prerequisite or corequisite)—4
- EDUC 4513 Proseminar 3: Education and Practice—2
- EDUC 4712 Student Teaching—Secondary (must be taken concurrently with EDUC 4513)—12

#### **Graduating in Four Years**

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in physics plans I and II, students should meet the following requirements:

- Declare a major in physics in the first semester of the freshman year.
- Complete PHYS 1110, 1120, 1140, MATH 1300 or APPM 1350, and MATH 2300 or APPM

1360 during the freshman year.

- Complete PHYS 2150, 2170, and 2210, CHEM 1111 or 1151, CHEM 1131 or 1171, MATH 2400 or APPM 2350, and APPM 2360 during the sophomore year. Either MATH 3130 or 4430 can substitute for APPM 2360.
- Complete PHYS 3210, 3220, 3310, 3320 and 3330 during the junior year.
- Students must meet with the physics advisor before the beginning of the junior year and get the fifth-semester approval for completion plan (FSACP). In addition to completing PHYS 4230 and 4410, plan I students must get approval to complete 9 credit hours in physics electives, with a research participation component. In addition to completing PHYS 4230, interdisciplinary Plan II students must complete 3 credit hours of physics electives and 12 credit hours of interdisciplinary courses. Applied physics students must complete 15 credit hours of applied physics courses.

*Note: Early in the first semester of the senior year, the student must meet with the physics advisor to have the statement of major status (a part of the graduation package provided by the College of Arts and Sciences) filled in. This includes a plan for completing the requirements of the major during the senior year and must be signed by the student and the advisor. Further details concerning the execution of the guarantee can be obtained from the department.*

## Minor Program

A minor is offered in physics. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. For more information see

[www.colorado.edu/artssciences/students/undergraduate/academics/minors.html](http://www.colorado.edu/artssciences/students/undergraduate/academics/minors.html).

## Graduate Degree Program(s)

### Graduate Study in Physics

Graduate study and opportunities for basic research are offered in the areas of nuclear physics, theoretical physics, condensed matter physics, elementary particle physics, plasma physics, atomic and molecular physics, optical science and engineering, laser physics, gravitational physics, fundamental measurements, and liquid crystal science and technology.

Doctoral programs in chemical physics and geophysics are offered jointly with the Department of Chemistry and with the other departments that participate in the interdepartmental geophysics program. For information on these programs, see Interdepartmental Programs in the Graduate School section.

### Departmental Requirements

Students wishing to pursue graduate work in physics leading to candidacy for an advanced degree should carefully read the requirements for advanced degrees in the Graduate School section.

Following are special departmental requirements.

## Master's Degree

**Prerequisites.** Entering graduate students must have a thorough undergraduate preparation in physics, equivalent to an undergraduate physics major at a recognized college or university. This preparation includes courses in general physics, analytical mechanics, electricity and magnetism, thermodynamics, quantum mechanics, atomic physics, and mathematics through differential equations and complex variables.

**Language.** The department has no foreign language requirement.

**Course Requirements.** There are two separate plans for obtaining the master's degree. Plan I includes a thesis (4 credit hours), PHYS 5210 Theoretical Mechanics, 5250 Introduction to Quantum Mechanics 1, and 7310 and 7320 Electromagnetic Theory along with electives (5 credit hours) and

mathematics (3 credit hours). The minimum requirement for the master's degree is 30 credit hours. At least 24 hours must be completed at the 5000 level or above. This may include 4–6 thesis hours.

Plan II (without thesis) includes PHYS 5210, 5250, 7310, 7320, and 5260 Introduction to Quantum Mechanics 2 or 7550 Atomic and Molecular Spectra along with mathematics (6 credit hours) and electives (6 credit hours).

All courses must be graduate courses numbered 5000 or above. A maximum of 6 credit hours may be completed at the 3000 or 4000 level as approved by the physics graduate committee for plans I and II.

**Qualifying Examination.** The Graduate Record Examination aptitude tests and advanced test in physics are normally used in place of a qualifying examination, and this examination is normally taken before the time of entry into the Graduate School.

**Comprehensive-Final Examination.** The physics department no longer offers a written qualifying exam. In spring of 2001, the faculty unanimously voted to replace the written exam with required course work. The associate chair may waive courses for students with graduate level equivalents. In addition to abolishing the written exam, the faculty modified the oral exam to better test skills used in professional research. The new examination includes a formal research paper and a formal presentation, followed by a question and answer session. Students usually present a thesis prospectus the semester following the exam.

## Doctoral Degree

**Prerequisites.** Same as for master's degree, above.

**Languages.** The department has no requirement in foreign languages.

**Qualifying Examination.** Same as for master's degree, above.

**Comprehensive Examination.** The comprehensive examination is divided into three parts. Part I consists of the six required courses outlined in the next section. Part II consists of a formal paper summarizing a broad research topic, an oral presentation on the research paper, and an oral exam on the topic and general physics. Part III consists of a thesis prospectus presented to the thesis committee.

Part II of the comprehensive examination must be taken within one year of successful completion of the six required courses described in the next section. Part III will take place early in the semester following Part II. Students with prior graduate education must take Part II in the spring semester following the first semester of course work in this department. Parts II and III of the comprehensive examination may be taken a second time, no more than one year after the first attempt. Students with insufficient preparation may petition for a one-year extension.

**Course Requirements.** To earn a PhD, candidates must complete 30 credit hours of course work and 30 hours of dissertation credit. As part of the course work, the following six courses are required: Theoretical Mechanics (PHYS 5210), Statistical Mechanics (PHYS 7230), Quantum Mechanics I and II (PHYS 5250 and 5260), and Electromagnetic Theory I and II (PHYS 7310 and 7320). In addition to satisfying the Comprehensive Examination requirements, candidates must complete these courses with a grade of *B-* or better in each in order to advance to candidacy. For a PhD, students with strong undergraduate preparation or previous graduate level work may petition to waive required courses.

At least 27 of the 30 credit hours of course work must be 5000-level or above physics courses, and the six required courses total 18 hours. All courses, required or otherwise, must be passed with a grade of *B-* or better, and a course may be repeated only once.

**Final Examination.** The final examination is oral and covers the thesis.

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# Political Science

The Department of Political Science offers instruction and research in the art and science of politics. Work within the department is organized around six basic fields: American government and politics, comparative politics, international relations, public policy, political theory, and empirical theory and methodology. In addition to excellence in the traditional fields, the department is committed to a cross-field emphasis on globalization and democratic governance.

At the most general level, the goal of the undergraduate curriculum in political science at the University of Colorado Boulder is to offer students the opportunity to develop an appreciation of politics and government and of the students' roles within them.

The undergraduate degree in political science emphasizes knowledge and understanding of the following:

- the values and beliefs that constitute the Western political tradition, as well as alternative ideologies and belief systems;
- the institutions and processes of the American political system and its strengths and weaknesses in the 21st century;
- other political systems, both Western and non-Western, which are members of the world community, our allies and competitors in international relations, and through comparative analysis offering a source of insight into American society and politics;
- the patterns of interaction among members of the world community, the causes of war and peace, and the sources of international conflict and cooperation; and
- the domestic and international policy issues facing the United States and the world community and the ability to make reasoned judgments—integrating facts and values, means and ends—regarding policies to address those problems.

In addition, students completing the degree in political science are expected to acquire the ability and skills to:

- evaluate conflicting arguments, assemble and present empirical evidence, and make reasoned conclusions from the evidence available; and
- communicate effectively, both orally and in written form.

Students interested in political science may want to consider the [Global Studies Residential Academic Program](#).

Course code for this program is PSCI.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Political Science

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

## Colleges & Schools

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[Residential Academic Programs \(RAPs\)](#)

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[Astrophysical and Planetary Sciences](#)

[Atmospheric and Oceanic Sciences](#)

[Bibliography](#)

[Biological Sciences](#)

[British and Irish Studies](#)

[Central and East European Studies](#)

[Chemical Physics](#)

[Chemistry and Biochemistry](#)

## Required Courses and Semester Credit Hours

- Students in the regular political science major must complete 39 credit hours in the department, of which 21 hours must be in upper-division courses. All 39 hours must be completed with grades of C- or better and an overall grade point average of 2.000. None of the required hours may be taken *pass/fail*.
- Fifteen hours are required from the following lower-division fields:  
**American:** PSCI 1101 The American Political Systems—3  
**Comparative:** PSCI 2012 Introduction to Comparative Politics—3  
**International Relations:** PSCI 2223 Introduction to International Relations—3  
**Theory:** PSCI 2004 Survey of Western Political Thought—3  
**Methodology:** PSCI 2075 Quantitative Methodology—3 (*This is a new requirement for students declaring a political science major beginning fall 2012 and replaces ECON 2020 requirement.*)
- Of the required 21 upper-division hours, students must take one course in at least four of the primary fields with two courses in one primary field. The primary fields are: American, comparative, international relations, theory, methodology, and policy.
- Required courses in addition to political science courses:  
ECON 2010 Principles of Microeconomics—4  
ECON 2020 Principles of Macroeconomics—4  
*Continuing students who entered the political science major prior to fall 2012 have the option to take PSCI 2075 in lieu of ECON 2020. Beginning in fall 2012, new students who declare a political science major in fall 2012 or later must take PSCI 2075 and ECON 2012 but are not required to take ECON 2020.*

*NOTE: Students who have completed ECON 1000 prior to declaration of the major should consult an undergraduate advisor in political science.*

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in political science, students should meet the following requirements:

- Declare major by the end of the second semester.
- Complete PSCI 1101 and two of the following required courses by the end of the third semester: PSCI 2012, 2223, 2004, or 2075.
- Complete the remaining lower-division political science course and the ancillary course ECON 2010 by the end of the fourth semester.
- Complete 12 upper-division credit hours of political science courses, including at least one course in three of the following fields by the end of the sixth semester: American, comparative, international relations, methodology, policy, and theory.
- Complete 12 credit hours of political science courses, including at least 9 upper-division credit hours and all remaining upper-division field distribution requirements during the seventh and eighth semesters.

Students seeking to combine a political science major with a social science certification in education should consult an undergraduate advisor in political science. Students who have completed ECON 1000 prior to declaration of the major should consult an undergraduate advisor in political science.

## Minor Program

A minor is offered in political science. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

- > [Classics](#)
- > [Cognitive Science Studies](#)
- > [Communication](#)
- > [Comparative Literature Graduate Program](#)
- > [Distributed Studies Program](#)
- > [Ecology and Evolutionary Biology](#)
- > [Economics](#)
- > [English](#)
- > [Environmental Studies](#)
- > [Ethnic Studies](#)
- > [Film Studies](#)
- > [French and Italian](#)
- > [Geography](#)
- > [Geological Sciences](#)
- > [Germanic and Slavic Languages and Literatures](#)
- > [History](#)
- > [Humanities](#)
- > [Integrative Physiology](#)
- > [International Affairs](#)
- > [INVST Community Studies](#)
- > [Jewish Studies](#)
- > [Lesbian, Gay, Bisexual, Transgender, and Queer Studies](#)
- > [Linguistics](#)
- > [Mathematics](#)
- > [Medieval and Early Modern Studies](#)

- Students must complete 21 credit hours of political science to complete the political science minor, of which 9 credit hours must be in upper-division course work. All 21 credit hours must be completed with grades of C- or better and an overall GPA of 2.000. None of the required hours may be taken *pass/fail*.
- 9 hours of lower-division courses are required:  
PSCI 1101 American Political Systems—3  
6 hours to be distributed from two of the following courses:  
PSCI 2012 Introduction to Comparative Politics—3  
PSCI 2223 Introduction to International Relations—3  
PSCI 2004 Survey of Western Political Thought—3
- 9 hours upper-division courses must be distributed in a minimum of two primary fields: American, comparative, international relations, theory, methodology, and policy. PSCI 4938 Internship will not fulfill a primary field area in the minor.
- 3 hours of lower- or upper-division political science.

International affairs majors who wish to minor in political science must apply the following additional rules:

- No more than 9 credit hours toward the PSCI minor can come from courses which count toward another major.
- International affairs majors must take PSCI 1101; at least one upper-division course in American Politics; one course (lower- or upper-division) in political theory; plus one upper-division elective.

## Graduate Degree Program(s)

### Graduate Study in Political Science

Applications for the MA in public policy and the PhD in political science are accepted from qualified and motivated students wishing to probe deeply into the analysis of political life. Professional courses in the graduate curriculum range from problem definition in policy analysis to the study of global political economy. The curriculum is structured to lead to the PhD degree and also offers several programs culminating in an MA degree. In addition to the master's degree in political science, the department offers a professionally oriented MA degree for students working toward entry into the public sector as a policy analyst.

Students wishing to pursue graduate work toward one of these degrees should read carefully the Graduate School requirements for admission and degrees in this catalog. In addition, they should refer to the departmental website for additional information on graduate programs.

### Departmental Admission Requirements

Applicants to the graduate program in political science should normally present evidence of at least 18 credit hours of course work in political science or in related fields, 9 of which should be at the upper-division level. In addition, the department requires applicants to present quantitative and verbal GRE scores that total at least 1100 and that show a score of at least 500 on the verbal section or 300 overall and 153 on the verbal section of the new exam. Three letters of recommendation, an undergraduate grade point average of at least 3.00, official transcripts, and a short essay detailing interests and plans also are required to complete the application packet. Foreign applicants must supplement their application by presenting TOEFL scores or other proof of English proficiency. Online applications should be submitted by December 15. Decisions regarding admission and financial aid are typically completed during March each year.

### Master of Arts in Political Science

The department does not accept applications for a terminal MA in political science. Students in the

> [Molecular, Cellular, and Developmental Biology](#)

> [Museum and Field Studies](#)

> [Neuroscience](#)

> [Nordic Studies \(Scandinavian\)](#)

> [Peace and Conflict Studies](#)

> [Philosophy](#)

> [Physics](#)

> **[Political Science](#)**

> [Psychology and Neuroscience](#)

> [Religious Studies](#)

> [Scandinavian \(now Nordic Studies\)](#)

> [Sociology](#)

> [Spanish and Portuguese](#)

> [Speech, Language, and Hearing Sciences](#)

> [Theatre and Dance](#)

> [Western American Studies](#)

> [Western Civilization Studies](#)

> [Women and Gender Studies](#)

> [Writing and Rhetoric, Program for](#)

> [Faculty: Arts & Sciences](#)

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PhD program earn a masters degree in political science at the completion of their second year in the program. Students concentrate in any one of six political science fields and take 3 credit hours of work in regularly scheduled political science seminars in each of three areas defined as follows: American politics, public policy, international relations, comparative politics, political philosophy, and empirical theory and methodology.

Students are responsible for familiarizing themselves with all degree requirements, some of which are outlined in the [Graduate School](#) section of this catalog. The degree requirements include a minimum of 31 credit hours of graduate credit, including at least 24 credit hours at the 7000 level or above (at least 15 credit hours of work must be in regularly scheduled political science seminars), and 4 credit hours for the MA thesis. Students may take up to 6 hours in political science graduate research topics, and up to 6 hours in a cognate discipline (senior undergraduate course, or independent study), but not more than a total of 9 hours combined. The 9 credit hours may not be substituted for required seminars. MA students on assistantship are required to take PSCI 7008 Teaching Political Science.

A thesis based on original investigation and showing mature scholarship and critical judgment, as well as familiarity with tools and methods of research, is required.

Students select a faculty advisor from among the regular members of the department graduate faculty at the earliest possible date, but no later than the end of the second week of the second semester. The faculty advisor must have general competence in the student primary field of emphasis and serves as the first reader of the MA thesis. The second reader, who likewise has general competence in the topic of the MA thesis, must be associated intimately with the thesis from its inception and in no case after the student begins writing. The completed draft of the thesis must be in the hands of the second and third readers at least four weeks prior to the comprehensive-final examination.

Each candidate for a master's degree is required to take a comprehensive final examination *after* the other requirements for the degree have been completed. This examination may be given near the end of the last semester of residence while the candidate is still taking required courses for the degree, provided satisfactory progress is being made in those courses. The examination is oral and lasts approximately two hours. It concentrates on the student field of emphasis as well as the MA thesis. The comprehensive final examination committee has three members, including the faculty advisor (the chair) and the second reader of the thesis. At least two committee members must be chosen from among regular members of the graduate faculty of this department, in consultation with the faculty advisor; the third committee member may be a graduate faculty representative from a cognate discipline. Satisfaction of the examination requires the affirmative vote of each of the three committee members.

## Master of Arts in Political Science (Public Policy)

The goal of the MA program in public policy is to train professional policy analysts for nonacademic careers. The curriculum is designed to provide the analytical skills necessary to participate responsibly and effectively in the policy process. The MA in political science (public policy) may be taken concurrently with the interdisciplinary Graduate Certificate Program in Environment, Policy, and Society.

This is an MA with thesis, requiring 33 credit hours. It includes 27 hours of course work, 2 hours in an applied research internship, and 4 hours of thesis credit. Completion of these requirements normally takes two years and at least one summer.

The core curriculum consists of three required seminars in policy analysis, introduction to data analysis, and either qualitative methods or research design. Twelve hours of electives should be used to develop additional analytical skills and/or a specialization in the student's area of substantive interest. The Graduate Certificate Program in Environment, Policy and Society provides one alternative for substantive specialization, drawing on courses in economics, philosophy, geography,

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and the law school. The internship is a supervised applied research project for a policy client, which should lead to the thesis project.

The thesis is a research report on a policy problem that provides concrete demonstration of the student analytical skills, intellectual perspective, and substantive knowledge.

## Doctor of Philosophy in Political Science

Requirements for the PhD in political science fall into the following major categories: course work, qualifying research paper defense, comprehensive examination, doctoral dissertation, and other requirements.

### Course Work

Students must complete a minimum of 42 hours of course work with a cumulative GPA of 3.000 or higher beyond the bachelor's degree. At least 39 hours must be taken at the graduate level and 35 of these must be taken in political science. A maximum 6 hours of independent study may be counted toward the PhD. Dissertation and research hours, master's thesis hours, and hours used to fulfill the language requirement do not count toward the 42 hours. The maximum amount of course work that may be transferred to this university for the PhD is 21 semester hours.

PhD students are required to take PSCI 7075 Introduction to Professional Political Science and PSCI 7085 Introduction to Political Data Analysis during the first semester. Funded graduate students are required to take PSCI 7008 and 7028 Teaching in Political Science during the first year. All PhD students must take the core seminar in at least three of five fields: PSCI 7011 American Politics, PSCI 7012 Comparative Politics, PSCI 7013 International Politics, PSCI 7004 Political Theory, or PSCI 7016 Public Policy. Two of these core seminars must be completed during the first year.

PhD students specialize in three fields of study. The first two fields, the major and minor fields, are areas in which the student takes comprehensive examinations, and students must take a minimum of two seminars beyond the core seminar in these two fields. In meeting these minimums, seminars cannot be double counted in more than one field. Competence in the third field may be demonstrated by completing two graduate seminars in that field with a GPA of 3.000 or higher.

### Qualifying Research Paper

Each PhD student is required to write and defend to a faculty committee an original research paper of potentially publishable quality by the end of their fourth semester. The purpose of the qualifying paper is to demonstrate the student's ability to independently identify an important question in political science and to bring relevant theory and evidence to bear in evaluating that topic. The formulation of the ideas in the paper may come from reworking a seminar paper, condensing and elaborating prior MA work undertaken at CU or elsewhere, or starting an entirely new project.

The research paper is read by the student's three-person advisory committee, consisting of the student's major advisor, a second major field reader, and a representative of the student's second field of concentration. Following consideration of the written work, an oral examination is conducted by the advisory committee to test both the depth of the student research as well as the breadth of the student's general training. Competence in core seminar materials is expected.

The oral examination committee is charged with the task of evaluating the potential of each PhD student. Students whose work is deemed inadequate are asked to leave the program.

Students are eligible for a plan II MA upon completion of 32 hours of graduate course work. The awarding of the Plan II MA is at the discretion of the examining committee. This decision is independent of the decision to encourage or discontinue the student in the PhD program.

**Research Competence.** Each PhD student must fulfill the research competence requirements as determined in conjunction with the advisory committee. Committees may set higher research competence standards for the student than those outlined below.

Methodological competence is demonstrated by completing PSCI 7095 with a grade of *B* or better, and requires completion of at least two advanced methods courses beyond PSCI 7085.

Language competence is evidenced by completion of a fourth-semester college-level language course of 3 or more credit hours with a grade of *B* or better, high GSFLT scores for the language, high scores on another standardized examination recognized by University of Colorado language departments, or other evidence of competence in the language. Advanced competence is demonstrated by completion of at least a fifth-semester language course or other work deemed appropriate by the advisory committee.

The competence requirement also may be met by demonstrating basic competence standards in both methodological and language skills (i.e., by completing PSCI 7095 and fourth-semester foreign language skills).

The competence standard must be communicated in writing to the Director of Graduate Studies by the end of the second year in residence. Both the principal advisor and the student must signify that they accept the committee determination of research competence standard. Required course work (or its surrogate) must be completed no later than the semester in which the PhD comprehensive examination is taken.

**Comprehensive Examination.** The comprehensive examination serves to demonstrate that students have acquired the skills and knowledge necessary to function as independent scholars in political science generally and in their chosen fields of specialization. Broad knowledge is expected as well as a critical understanding of the literature and the ability to apply that understanding to the central, enduring questions of politics and government.

Comprehensive examinations are administered once each semester. Oral examinations are administered one to two weeks after written examinations.

A final grade of *pass* or *fail* is assigned following the orals. Students who fail an exam are provided a single opportunity to retake it and are given an explanation of the failure by the committee.

**Dissertation Requirements and Final Examination.** A dissertation based on original investigation and showing mature scholarship and critical judgment, as well as familiarity with tools and methods of -research, is required. A candidate for the PhD selects a dissertation topic in consultation with a dissertation advisor who is rostered in the student's primary field of emphasis, a second reader who has general competence in the dissertation topic, and at least one additional faculty member rostered in the student's primary field of interest. The student submits the topic, along with the names of the second reader and other faculty consulted in its selection, to the director of graduate studies for approval.

Once the dissertation has been accepted tentatively by the first two readers, a final oral examination is conducted by the dissertation committee. Approved by the dean of the Graduate School, the committee shall consist of not fewer than five representatives from those departments in which a student has worked, including at least one professor of authority outside the political science department who qualifies for university graduate faculty membership.

The examination is open to the public. More than one dissenting vote from the committee disqualifies the candidate in the final examination.



# Population Studies

## *Certificate Program*

### Population Studies Graduate Certificate

The Graduate Certificate in Population Studies, offered through the Population Program of the Institute of Behavioral Science, recognizes master's and doctoral degree students for interdisciplinary work in demography. The population program, which is international in scope and has an applied and policy-oriented focus, fosters research on population trends and patterns and provides training in population analysis. Students who are earning graduate degrees through the Departments of Economics, Geography, or Sociology and are interested in majoring in demography are eligible to petition for admission to the program.

The population program emphasizes research training through direct faculty/student interaction and involvement in research projects. Students are required to take three core courses: ECON 8666 Economic Demography; GEOG 6732 Formal Population Geography; and SOCY 6012 Population Issues, Problems, and Policies. Students are granted a certificate on the basis of the three core courses, their applied research, and their thesis or dissertation.

Questions about the certificate program in population studies should be directed to the Population Program, Institute of Behavioral Science, University of Colorado Boulder, 484 UCB, Boulder, CO 80309-0484; **303-492-7986**; [www.colorado.edu/ibs/pop](http://www.colorado.edu/ibs/pop); [cupc@colorado.edu](mailto:cupc@colorado.edu).

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# Power Electronics

Power electronics is a key enabling technology in essentially all electronic systems ranging from wireless communication devices, portable and desktop computers, to telecommunication infrastructure systems, renewable energy systems, and industrial systems. The necessity for power electronics technology in these rapidly expanding areas creates a rising need for design engineers equipped with knowledge and skills to follow sound engineering principles and actively participate in multidisciplinary teams. The power electronics field has evolved rapidly with the advances in technology and introduction of many new application areas. As a result, it is likely that the required knowledge and skills were not in the curricula when many of today's professionals were in college. This creates a strong ongoing demand for continuing education of the workforce in the area of power electronics. The certificate program addresses the ongoing demand for skilled power electronics design engineers.

This program offers an opportunity for electrical engineers to obtain the specialized knowledge required to practice power electronics. It is intended for students and engineers having a BS degree in electrical engineering or equivalent.

## Certificate Program

### Power Electronics Professional Certificate

The courses required for the professional certificate in power electronics are:

- ECEN 5797 Introduction to Power Electronics
- ECEN 5807 Modeling and Control of Power Electronic Systems
- ECEN 5817 Resonant and Soft-Switching Techniques in Power Electronics

The certification program was initiated by the Colorado Power Electronics Center, and is operated through the Department of Electrical, Computer, and Energy Engineering and through the Center for Advanced Engineering and Technology Education (CAETE). A grade of *B-* or better is required for each course applied toward the certificate. For more information, go to [ecee.colorado.edu/academics/cert\\_programs/overview.html](http://ecee.colorado.edu/academics/cert_programs/overview.html).

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## Preprofessional Programs

Preprofessional advising resources have been developed at CU-Boulder to help undergraduate students and previously graduated students prepare for later study at professional schools. Except for prejournalism, CU-Boulder does not offer preprofessional undergraduate majors or degrees. Completion of preprofessional prerequisites does not guarantee later admission to a professional school. However, preprofessional advisors are well-equipped to provide information about professional schools within Colorado and beyond, and can help students to prepare well for later professional study.

## Prehealth Programs

Students can prepare to enter the undergraduate professional health science program at the Anschutz Medical Campus of University of Colorado Denver in the area of nursing by taking courses on the Boulder campus.

Students whose goals include entering the medical, dentistry, physical therapy, physician assistant, pharmacy, or public health programs and schools at the University of Colorado Denver, or the veterinary medicine or occupational therapy programs at Colorado State University in Fort Collins, can complete any undergraduate major at CU-Boulder. In most cases, these students are required to complete a baccalaureate degree before entering professional school. In fact, a baccalaureate degree is recommended for most health professions.

At the time of application to a professional school, students are judged on several factors, including performance in undergraduate courses. For this reason, no required course may be taken on a *pass/fail* basis. Some fields require specific preprofessional examinations before application. For most fields, interviews are an essential part of the application process.

In all cases, admission committees are concerned with students' compassion, coping, and decision-making abilities, intellectual capabilities, realistic self-appraisal, sensitivity in interpersonal relations, and staying power (physical and motivational). In addition to formal course work, students should have experience in people-related activities (especially those related to their field of choice), so they can be more certain of their motivation for health careers. Also, health-related activities expose premed and other health science hopefuls to various patients and illnesses. The health professions require, or strongly recommend, such experience.

Some of the professional programs at the Anschutz Medical Campus give preference to Colorado residents and residents of WICHE (Western Interstate Commission on Higher Education) states; interested students should check with individual programs for specific policies. Students from other states usually can obtain at CU-Boulder the preprofessional courses required by their state schools, but should check with those schools in advance. Students are encouraged to apply to their state school, as well as to other public and private professional schools, to increase their chances of gaining acceptance to the professional program of their choice.

During the preprofessional years, personal intellectual development leads many students to change professional goals. Since there are usually more applicants for these programs than there are spaces

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available, many students need to pursue alternative goals. Under these circumstances, students should plan college programs to give themselves the greatest flexibility in considering other vocations.

Advising for preprofessional study in the health sciences is conducted through the Preprofessional Advising Office in the University Club. Check the prehealth advising website at [www.colorado.edu/aac/prehealth.html](http://www.colorado.edu/aac/prehealth.html) for information on prerequisite courses, events, volunteer opportunities, student prehealth organizations, applications, and many other useful resources. Students should attend a prehealth advising session at orientation and then schedule an appointment with a prehealth advisor ([aac.colorado.edu](http://aac.colorado.edu)) early in their undergraduate careers to help plan course work and extracurricular experience in preparation for applying to programs of their choice. CU-Boulder also offers an extensive array of workshops and informational meetings, practice interviews, a fall speaker series, and a spring Health Professions Information Day.

## Prejournalism

A specific prejournalism and mass communication option is offered at CU-Boulder in the College of Arts and Sciences. Students complete two prerequisite courses while working toward arts and sciences core curriculum requirements. See the School of Journalism and Mass Communication at [journalism.colorado.edu](http://journalism.colorado.edu) for more information.

## Prelaw

Students who plan to apply to law school upon completing their baccalaureate degree do not have to complete any specific requirements for admission to law school. Instead, they should major in the discipline that best suits their intellectual interests and talents. Prelaw students should seek a rigorous and broad-based education that will ensure them a fundamental understanding of American society and its institutions. Students should become familiar with mathematical analysis and scientific reasoning, and develop excellent oral and written communication skills.

Prelaw advising is available in the Preprofessional Advising Center. In addition, there are faculty members who have special interest and expertise in the theoretical and practical aspects of the law and judicial systems. These faculty advisors are available for consultation with students on the CU-Boulder campus. Contact the Preprofessional Advising Center in Old Main 1B-90 for more information.

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# Presidents Leadership Class

The Presidents Leadership Class (PLC) is a specially designed academic curriculum that focuses on leadership development, personal development, and community service initiatives. Skills are developed in an interdisciplinary, experiential environment through exposure to government, education, the humanities, business, and science. Students from all of the schools and colleges participate in the Presidents Leadership Class curriculum as a part of their regular course work.

The Presidents Leadership Class is a program of CU-Boulder and the Presidents Leadership Institute, and is overseen by a Board of Trustees representing Colorado business, educational, nonprofit, and government communities.

## Admission and Enrollment

Admission to the Presidents Leadership Class is considered one of the highest honors awarded to incoming University of Colorado Boulder students. Presidents Leadership Class students are admitted prior to the beginning of their first year. Selection criteria include academic excellence, demonstrated commitment outside of self, demonstrated leadership potential, and uniqueness of contribution. Each year, 50 first-year students are enrolled, comprising both Colorado residents and nonresidents. A separate admission application must be obtained from the PLC office and returned prior to February 15. Applications may be obtained by visiting the website at [www.presidentsleadershipclass.org](http://www.presidentsleadershipclass.org) or by calling the PLC office at **303-492-4PLC**.

Only students who are accepted into the Presidents Leadership Class are eligible to enroll in PLC courses. Students receive arts and sciences core credit in ideals and values for PRLC 1810 Leadership and Ethics; and core credit in contemporary societies for PRLC 1820 Community Issues in Leadership.

## Academic Program

Although there are many unique aspects of each leadership situation, leaders generally follow three basic steps when faced with a leadership situation: 1) try to get a read on the existing situation, 2) set a strategy to achieve a desired outcome, and 3) execute the strategy.

This fundamental human process—read, set, execute—has strong roots in basic psychological processes (i.e., stimulus, thought, response), but the steps can happen with varying degrees of quality. Because PLC's mission is to develop extraordinary leaders, research was done on the differences in quality between the read-set-execute process that ordinary leaders use and the read-set-execute process that extraordinary leaders use. The research determined that the routes to ordinary leadership are different than those to extraordinary leadership.

Extraordinary leaders need to read situations with insight, generate incisive strategy, and then execute with stunning results. The PLC Strategic Academic Plan is built upon developing six core leadership skills: information literacy, critical thinking, applied quantitative ability, writing, oratory, and group process. The six skills executed in an integrative manner provide the key fundamentals for

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students to read, set, and execute in an extraordinary manner.

For more information on the PLC Academic Plan and the research behind it, go to [www.presidentsleadershipclass.org](http://www.presidentsleadershipclass.org).

## *Required Courses*

- PRLC 1810 Ethical Leadership
- PRLC 1820 Community Leadership
- PRLC 2820 Multilevel Leadership
- PRLC 3810 Global Leadership
- LDSP 4010 Leadership Capstone (only required for Leadership Certificate)

## Scholarship Programs and Opportunities

PLC students receive a merit-based scholarship of \$1,000 to over \$12,000 (dependent upon participation). Students must enroll in PRLC course work to maintain their scholarship.

Scholars are also eligible to be selected for a variety of other merit-based scholarships only available to PLC students, including the FirstBank Colorado Scholarship Fund (base scholarship of \$6,000 plus additional funding depending on endowment earnings), the Alvin G. Flanigan Scholarship Fund (annual \$1,000 minimum awards), the Walker Family Scholarship Fund (annual \$500 minimum awards), the Michael Lee Hoelscher Memorial Scholarship (annual \$2,000 award), and additional scholarships available only to the Presidents Leadership Class scholars.

The course code for this program is PRLC.

## *Certificate Program*

### University of Colorado Boulder Leadership Certificate

The University of Colorado Boulder offers a certificate in the Study and Practice of Leadership. The certificate is comparable to a minor in leadership studies and is permanently marked on the student's transcript to certify that he or she has completed a focus in leadership studies at the undergraduate level.

Certificate requirements are as follows:

- Complete a minimum of 12 credit hours of PRLC courses during year one and two of the program: PRLC 1810, PRLC 1820, PRLC 2820, PRLC 3810.
- Complete a minimum of 4 credit hours of upper-division PRLC course work: LDSP 4010.
- Complete 3 additional credit hours of approved upper-division course work outside of PLC. Approved courses are listed at [www.colorado.edu/chancellorsrap/lcelectives.html](http://www.colorado.edu/chancellorsrap/lcelectives.html) and a student may also petition to have an unlisted course accepted.
- Participation in practica and/or internships. These may be built into courses or conducted outside of courses.
- Receive an overall 3.000 average GPA for all required Leadership Certificate courses.



# Psychology and Neuroscience

At the undergraduate level, this department offers a major in either psychology or neuroscience. Psychology is a broad discipline that seeks to understand human cognition, emotion, and behavior. It is also an applied field that is concerned with testing perception, psychopathology, inheritance of complex behavioral traits, mental health, memory, and social factors that influence behavior. Neuroscience is the study of the mechanisms of nervous system—the brain, the spinal cord, and networks of sensory nerve cells, or neurons. Neuroscientists work to describe how neural circuits transmit signals and process different types of information. The principles of neuroscience are derived from the application of methods from many scientific disciplines, including molecular and cellular biology, biochemistry, physiology, structure, and computational modeling. Note that no terminal master's degree is offered except for the concurrent BA/MA program in cognitive psychology.

Students contemplating postgraduate education, either in professional or in graduate school, are encouraged to participate in the departmental honors program, which provides special opportunities for individualized attention.

CU-Boulder's Department of Psychology and Neuroscience has been ranked by the National Academy of Sciences as one of the best in the country with respect to the quality of the faculty and their scholarly productivity. Moreover, the department offers undergraduates a wide range of opportunities for involvement in research.

Course codes for this program are PSYC and NRSC.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Psychology

Students must complete the general requirements of the College of Arts and Sciences and one of the two programs listed below. Additional explanatory notes are available in the department advising office in Muenzinger D243.

### *Neuroscience Major*

Students are subject to the major requirements in effect at the time they formally declare the major. A major in neuroscience requires a minimum of 30 hours in neuroscience course work with grades of C- or better. At least 18 of these hours must be in upper-division course work. The department recommends completing NRSC 2100 by the end of the sophomore year.

#### *Required Courses and Semester Credit Hours*

- Complete **one** of the following genetics courses: (Please check all prerequisites and corequisites before enrolling in courses.)  
MCDB 2150 with 2151 Principles of Genetics with Lab or EBIO 2070 Genetics: Molecules to Populations or CHEN 2820 Foundations in Bioengineering—3-4
- NRSC 2100 Introduction to Neuroscience—4
- Statistics/Computation requirement (complete **one** of the following): IPHY 2800 Introduction to

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Statistics or ECON 3818 Introduction to Statistics with Computer Applications or MATH 2510 Introduction to Statistics or MATH 2520 Introduction to Biometry or PSYC 3101 Statistics and Research Methods in Psychology or BCOR 1020 Business Statistics or APPM 1710 Tools and Methods for Engineering Computing or APPM 2750 Java: Training and Mathematical Algorithms or CHEN 3010 Applied Data Analysis and CHEN 3130 Chemical Engineering Lab 1—3-4

### Upper-division Neuroscience Major Requirements

- Complete MCDB 3135 Molecular Cell Biology 1—3
- Complete at least **two** of the following: NRSC 4032 Neurobiology of Learning and Memory, NRSC 4052/PSYC 4052 Behavioral Neuroscience, NRSC 4132 Neuropharmacology, NRSC 4072 Clinical Neuroscience—6-7
- Complete 12 hours by taking additional courses from upper-division requirement above or from the following neuroscience and general science electives: (Please check all prerequisites and corequisites before enrolling in courses.)  
CHEM 3311 with 3321 Organic Chemistry 1 with Lab  
CHEM 3351 with 3361 Organic Chemistry 1 for Chemistry and Biochemistry Majors with Lab  
CHEM 4611 Survey of Biochemistry  
CHEM 4711 General Biochemistry 1  
ECEN 3030 Electrical/Electronic Circuits Non-Major  
ECEN 4811 Neural Signals and Functional Brain Imaging  
EBIO 3240 Animal Behavior  
EBIO 3770 Animal Diversity: Vertebrates  
EBIO 3850 Animal Diversity: Invertebrates  
IPHY 3410 Human Anatomy  
IPHY 3430 Introduction to Human Physiology  
IPHY 3470 Human Physiology 1  
IPHY 4200 Physiological Genetics and Genomics  
IPHY 4720 Neurophysiology  
MCDB 3140 Cell Biology Lab  
MCDB 3280 Molecular Cell Physiology  
NRSC 4011 Senior Thesis/ Research Ethics  
NRSC 4015 Affective Neuroscience  
NRSC 4072 Clinical Neuroscience  
NRSC 4092 Behavioral Neuroendocrinology  
NRSC 4155/PSYC 4155 Cognitive Neuroscience/Neuropsychology  
NRSC 4545 Neurobiology of Addiction  
NRSC 4911 Teaching of Neuroscience  
PSYC 3005 Cognitive Science  
PSYC 4165 Psychology of Perception  
PSYC 4175 Computational Cognitive Neuroscience

### Ancillary Foundation Courses

- **Ancillary molecular biology requirement:** EBIO 1210 with 1230 General Biology 1 with Lab or MCDB 1150 with 1151 Introduction to Cellular and Molecular Biology with Lab or CHEN 2810 Biology for Engineers—3-4
- **Ancillary calculus requirement:** MATH 1300 Analytical Geometry and Calculus 1 or MATH 1310 Calculus, Statistics, and Modeling or APPM 1350 Calculus 1 for Engineers or APPM 1340 and 1345 Calculus 1, Part A and Calculus 1, Part B—4-6
- **Ancillary general chemistry sequence requirement:** CHEM 1113 with 1114 and CHEM 1133 with 1134 General Chemistry 1 and 2 with Labs or CHEM 1251 and 1271 General Chemistry 1 and 2 for Chemistry and Biochemistry majors or CHEM 1351 and 1371 Honors General Chemistry 1 and 2—10

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## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in psychology-neuroscience, students should meet the following requirements:

- The psychology-neuroscience major must be started in the first semester. Adequate progress is defined as cumulative completion of at least one fourth of the required course work for the major during each academic year, including the following specific requirements:
  - a) The ancillary molecular biology requirement and the genetics requirement must be completed during the first year;
  - b) All ancillary requirements (molecular biology, calculus, and general chemistry) and Introduction to Neuroscience must be completed by the end of the second year.
- The psychology-neuroscience major requires at least 51 hours of required course work. Thus, at least 13 hours must be completed yearly, including timely completion of advanced course prerequisites.
- The four-year guarantee also requires completion of 30 hours of core curriculum courses by the end of the sophomore year. Calculus counts as three hours of QRMS; chemistry and molecular biology count as 13 hours of natural science.

## Psychology Major

In order to graduate with a degree in psychology, the department requires that students fulfill the following course requirements with a grade of C- or better. Additional explanatory notes are available in the department advising office, Muenzinger D243.

The department recommends taking PSYC 1001, 2012, 2145, and 2606 by the end of the sophomore year, and 3101 by the end of the junior year.

### Required Courses and Semester Credit Hours

- PSYC 1001 General Psychology—4
- PSYC 2012 Biological Psychology—3
- PSYC 2145 Introductory Cognitive Psychology—3
- PSYC 2606 Social Psychology—3
- PSYC 3101 Statistics and Research Methods in Psychology—4
- One of the following:
  - PSYC 3102 Behavioral Genetics—3
  - PSYC 3313 Psychopathology—4
  - PSYC 4303 Abnormal Psychology—3
- At least one course from the following upper-division laboratory and methods courses:
  - PSYC 3001 Honors Research Methods Seminar—4
  - PSYC/NRSC 4052 Behavioral Neuroscience—4
  - PSYC 4136 Human Judgment and Decision-Making Lab—4
  - PSYC 4145 Advanced Cognitive Psychology—4
  - PSYC/NRSC 4155 Cognitive Neuroscience/Neuropsychology—4
  - PSYC 4165 Psychology of Perception—4
  - PSYC 4175 Computational Cognitive Neuroscience—4
  - PSYC 4376 Research Methods in Social Psychology—4
  - PSYC 4443 Research Methods in Clinical Psychology—4
  - PSYC 4733 Psychological Testing and Assessment—4
- Additional electives to bring total hours in psychology and neuroscience to at least 31, but not more than 45, of which at least 18 must be upper division. (Students are encouraged to use

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independent study to gain field or laboratory experience. However, independent study hours are pass/fail credit only and cannot be used toward the 31 hours required for graduation.)

- In addition to the course requirements listed above, and the minimum of 31 hours in psychology, the student is required to pass one of the following natural science sequences with a grade of C- or better:

CHEM 1011 and 1031 Environmental Chemistry 1 and 2

CHEM 1051 and 1071 Introduction to Chemistry and Introduction to Organic and Biochemistry

CHEM 1113 and 1071 General Chemistry 1 and Introduction to Organic and Biochemistry

CHEM 1113 and 1133 General Chemistry 1 and 2

CHEM 1251 and 1271 General Chemistry 1 and 2 for Chemistry/Biochemistry majors

EBIO 1210 and 1220 General Biology 1 and 2 (formerly EPOB 1210 and 1220)

MATH 1300 and 2300 Analytical Geometry and Calculus 1 and 2

MCDB 1150 and 2150 Introduction to MCD Biology 1 and Principles of Genetics

MCDB 1150 and EBIO 1220 Introduction to MCD Biology 1 and General Biology 2

PHYS 1110 and 1120 General Physics 1 and 2 (science and engineering majors only)

PHYS 2010 and 2020 General Physics 1 and 2

*NOTE: Transfer students must complete a minimum of 12 upper-division hours of psychology course work on the Boulder campus with a C- or better. Of those 12 hours, one laboratory and methods course must be included.*

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## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in psychology, students should meet the following requirements:

- Declare the major by the beginning of the second semester.
- Complete PSYC 1001, 2012, 2145, 2606, and the natural science sequence during the first two years of study.
- Complete PSYC 3313 or 3102 or 4303, the laboratory and methods course, and at least two upper-division PSYC electives during the junior (third) year. (If students are unable to enroll in these courses due to oversubscription during the junior year, they will have top enrollment priority the senior year.)
- Complete remaining elective requirements during the senior year.

## Department of Psychology and Neuroscience Prerequisites Statement

It is policy to enforce the course prerequisites listed in the course descriptions. If you have not either taken and passed (C- or better) the prerequisites for a course, or obtained permission from the instructor or a departmental advisor to take the course based on equivalent preparatory course work or experience here or elsewhere, you may be administratively dropped from the course.

## *Concurrent Bachelor's/Master's Program*

### Concurrent BA/MA Program with Specialization in Cognitive Psychology

A concurrent BA/MA in psychology, with specialization in cognitive psychology, is offered. Both the BA and MA degree must be completed within a five-year period. In recent years, both basic and applied research in cognitive psychology have come to rely increasingly on related findings, theories, and methods in other cognitive science disciplines, including philosophy, computer science, and linguistics.

The purpose of this degree program is to provide training that prepares students either for continuing doctoral study in cognitive psychology or for technical careers involving cognitive psychology in government and industry. Students complete the requirements for an undergraduate major in

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psychology, an interdisciplinary undergraduate certificate in cognitive science, and a master's degree in the cognitive psychology graduate training program. Because of the demanding nature of this program, only highly qualified students are admitted.

## *Graduate Degree Program(s)*

### PhD Programs in Psychology and Neuroscience

Students are admitted for graduate studies leading to the PhD in one of five fields: **behavioral genetics**, **behavioral neuroscience** (including learning and motivation), **clinical**, **cognitive**, and **social psychology**. *Note that no terminal master's degree program is offered.* The behavioral genetics program focuses on the study of genetic contributions to individual differences in behavior. The fundamental tenet of the behavioral neuroscience program is that a complete understanding of behavior entails unraveling mechanisms and principles at any and all levels of organization (i.e., behavior, neuroanatomy, neurophysiology, neurochemistry). The major training goals of the clinical psychology program follow the Boulder model in that the preparation of scientist-practitioner is stressed. The clinical psychology program is accredited by the American Psychological Association. The cognitive psychology program includes course work and research in the following areas of cognition: problem solving, thinking, human learning and memory, judgment and decision making, language, artificial intelligence, reading, attention and performance, perception, and information processing. The program in social psychology trains students to conduct research, either applied or basic, in the fields of social cognition, self-concept development, close relationships, and health. Additional courses in the department offer graduate training in the knowledge, theory, and research methodology relating to cultural influences on behavior.

### Requirements for the PhD Degree

All students are admitted with the expectation that they will work toward the PhD degree. Many students receive a master of arts degree in the course of working toward the PhD. Students who receive the PhD degree must demonstrate that they are proficient in some broad subject of learning and that they can critically evaluate work in this field; furthermore, they must show the ability to work independently in their chosen field and must make an original contribution of significance to the advancement of knowledge.

In the first year of graduate study, all psychology graduate students enroll in a two-semester graduate statistical sequence. There is a first-year research requirement that starts the student on an active program of research. The student also must enroll in a sequence of courses designed to give exposure to various research topics and methods.

Before admission to candidacy for the PhD degree, the student must pass a comprehensive examination in the field of concentration and related fields. This examination tests the student mastery of a broad field of knowledge, not merely the formal course work completed.

A variety of advanced research seminars are taught on a regular basis. Students are required to be enrolled in at least one substantive course in the department each semester until the comprehensive examinations have been successfully completed. Upon completing the comprehensives, students engage in the dissertation research, culminating in a public oral defense.

## *Certificate Program*

### Neurosciences Certificate

The neurosciences certificate program encourages undergraduate students interested in how the brain controls behavior to take courses in the basic sciences while providing the means to specialize in neuroscience. Since this subdiscipline of the biological sciences spans a number of departments at the university (e.g., integrative physiology, psychology, and MCD biology), students are encouraged to obtain greater academic breadth through interdepartmental course selection.

To obtain the certificate, a student must satisfy the requirements of a major and the certificate

program, and maintain a grade point average of 3.200 or better.

For more information, see [www.colorado.edu/neuroscienceprogram](http://www.colorado.edu/neuroscienceprogram).

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# Religious Studies

The curriculum in religious studies includes the study of traditions such as Buddhism, Christianity, Confucianism, Daoism, Hinduism, Islam, Judaism, and Native American and other traditional religions. The program examines topics such as ritual studies, peace studies, dance, religion and literature, women and religion, and religion and psychology.

The undergraduate degree in religious studies emphasizes knowledge and awareness of:

- the academic study of religion and the related writing and critical skills directed toward one area of concentration (tradition, issue, or theme); and
- different theoretical and methodological approaches to the study of religion.

In addition, students with a degree in religious studies are expected to acquire the ability and skills to:

- identify textual, performative, and artifactual data relevant to the study of religion;
- draw connections between different historical and/or cultural contexts of religion; and
- communicate data analysis and interpretation competently in written form.

Course codes for this program are RLST and SNSK.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Religious Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

#### Major Requirements

Students must complete at least 36 hours of religious studies course work including the following required courses and projects:

- Two required seminars in the Academic Study of Religion:
  - RLST 3020 Advanced Writing in Religious Studies** (taken at the first available offering after declaring major and reaching junior status). This course, which also fulfills the advanced writing requirement, focuses the development of writing skills on the introduction and preparation of students for a major in the academic study of religion. Taught fall semester.
  - RLST 4830 Senior Majors Seminar** (taken the last year as an undergraduate after all other requirements have been met). This course involves students in an extensive exploration of the academic study of religion. The topic will be selected by the faculty person offering the course including a careful consideration of the theoretical dimensions of the work presented in historical context. Student papers culminating the concentration area are presented at the conclusion of this course. Taught spring semester.
- **Concentration Area:** three courses (9 hours). With the consultation and approval of an undergraduate advisor, three RLST courses are to be selected so that the courses build competence in a designated area of concentration. A 10-page paper reflects on the coherency

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of the select area including how the three courses taken interrelate and how the area of concentration relates to the academic study of religion. The paper is the basis for capstone discussion during the last weeks of Senior Seminar.

## *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in religious studies, students should meet the following requirements:

- Declare the major at the beginning of the second semester of study.
- Complete two religious studies courses each semester.
- Take the senior seminar the last spring semester in residence.

## *Minor Program*

Students must complete at least 18 credit hours in Religious Studies course work, including at least 6 hours of lower-division and 9 hours of upper-division work. At least 12 hours must be taken in the CU Department of Religious Studies.

## *Graduation with Honors*

The honors program in religious studies offers the opportunity for highly motivated undergraduates to undertake a deeper and more individualized study than is provided by the regular BA curriculum and to earn an honors designation on their diploma. Religious studies majors with at least a 3.300 overall grade point average and 3.500 in the major are eligible to participate in the program. Honors that may be earned are cum laude (with honors), magna cum laude (with high honors), and summa cum laude (with highest honors).

Students interested in pursuing departmental honors are encouraged to consult with the departmental undergraduate advisor by the beginning of their junior year.

## *Concurrent Bachelor's/Master's Program*

### **Concurrent Bachelor's/Master's in Religious Studies**

A concurrent bachelor's/master's degree program offers a select group of exceptional undergraduates the opportunity to begin graduate work while still an undergraduate and thereby complete the BA and MA degrees simultaneously and on an accelerated schedule. The entire program normally requires five to six years and permits 6 credits to be double-counted toward both degrees. Otherwise requirements for the two degrees remain unchanged.

### **Admission to the Program**

Applicants to the program must be full-time, continuously enrolled students with a minimum overall GPA of 3.000, and a 3.500 GPA in RLST courses. They must have completed at least 24 credit hours prior to admission to the concurrent BA/MA degree program, and must have satisfied any MAPS deficiencies. Applications will include letters of recommendation from RLST faculty and will be evaluated by faculty as a whole, much as graduate applications are.

### **Continuation in the Program**

Students enrolled in the concurrent BA/MA program must maintain a minimum cumulative GPA of 3.250, and 3.500 in the department. Concurrent degree students may not participate in the Time Out program; exceptions may be granted by the CDAC (Concurrent Degree Appeals Committee) based on a review of extenuating circumstances. Each BA/MA student will be assigned a graduate advisor with whom to meet regularly and will be required to demonstrate satisfactory progress toward degree to the advisor within the framework of the department's graduate student assessment policies.

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## Curriculum

Students enrolled in the concurrent BA/MA program are permitted to double-count 6 credits of course work, thereby reducing the total amount of RLST course work to  $(36 + 31 - 6 =) 61$  credit hours. One of these courses must be RLST 6830 Intro to the Academic Study of Religion, which would replace Senior Seminar for BA/MA students, and the other must be in an area of depth concentration. Otherwise program students will fulfill all the normal requirements for the BA and the MA degree.

## Graduate Degree Program(s)

### Master's in Religious Studies

A graduate degree represents the mastery of a significant body of knowledge and interpretation within an academic discipline. A degree is not granted merely because a student completes a specific number of courses. Students should not expect to gain all knowledge and training necessary for the degree from formal courses alone. The student is expected to acquire both breadth and depth in religious studies. Breadth is achieved by satisfying two types of course requirements as set forth in 2 below, which include exposure to a diversity of approaches to the study of religion. Depth is achieved through three courses in a particular area or approach and by independent work related to the thesis or concentration, as set forth in 3 below. Listed below are the minimum formal requirements for the MA degree in religious studies.

1. The student must successfully complete 31 semester hours of academic work, at least 24 of which must be completed at the 5000 level or above.

Up to 9 credit hours of course work may be taken outside the department or transferred from another accredited institution, consistent with the student's special needs and interests and with the advisor's approval.

Independent study credit hours shall not exceed six hours.

2. To insure breadth of learning, the student must successfully complete two types of required courses:

Approaches. RLST 6830 Introduction to the Academic Study of Religion, offered every fall term. This course should be taken the first fall term the student is in residence.

Three seminars in the academic study of religion. At least one seminar will be designated each semester.

3. To ensure depth of learning, the student must successfully complete two types of required courses:

Three research concentration courses (to be determined in consultation with one's advisor). These may be taken in or out of the department, as appropriate.

In the final semester of graduate study, which must be taken in residence, students will select either a thesis or non-thesis research option. Those selecting the thesis option will take a 4-credit thesis course, which will culminate in the completion and defense of a thesis. Those selecting the non-thesis option will take a 4-credit directed readings course on secondary scholarship in a specific field (theoretical topic, geographic area, or religious tradition) which will culminate in the successful passing of a written examination on this topic.

4. A final oral comprehensive examination, given by the student's research committee, will focus on three substantial term papers and either the thesis or the written examination in a specific field.

5. Courses for each term must be approved by the student's faculty advisor and be in compliance with the requirements of the Graduate School where necessary. In order to register for any given term, the student must have the course of study for that term approved in writing by the advisor on the student's "Record of Progress Toward the MA Degree" form. No changes can be made in registration without the advisor's approval.

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6. In order to receive the degree a student must meet the foreign language requirement. The student must have a satisfactory reading knowledge of a language other than English, demonstrated by a *B* or better in the fourth semester of the language, or by successful completion of a translation exam on material related to the student's field; and material in the language must be employed in a significant way in the thesis or other project.
7. All students must fulfill the residency requirement. In general this can be fulfilled by either two full-time semesters or four part-time semesters of study. A full-time program is defined as either five hours of course work at the 5000 level or higher, eight hours of total course work, or at least one hour of thesis research.

A student who has not completed at least 12 semester hours, or the equivalent, of undergraduate academic course work directly related to the study of religion will be required to do remedial work to make up this deficit before beginning graduate study, or, with the director of Graduate Studies' permission, after beginning the program. This can be done by attaining a grade of *B* or better in an appropriate 2000- or 3000-level course taken within the first year. Remedial courses may not be counted toward the degree.

## *Dual Degree Programs*

### Dual Master's in Religious Studies

The Department of Religious Studies also participates in a dual master's degree program with the Departments of History and Asian Languages and Civilizations. Students interested in exploring this option should contact the graduate director of the department for specific requirements.

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# Remote Sensing

Remote sensing (satellite and ground-based) is increasingly being used as technique to probe the Earth's atmosphere, ocean, and land surfaces. Probing of other planets is accomplished largely by satellite remote sensing. Given national priorities in such areas as climate and global change, the interest in remote sensing will only increase with time.

Remote sensing is a relatively new academic subject, with few universities having any sort of an organized curriculum. The purpose of formalizing the CU remote sensing curriculum is to coordinate curricula across campus so that a coherent curriculum in remote sensing can be provided to complement and supplement the student's regular degree program. An additional purpose is to encourage multidisciplinary education of the students in the area of remote sensing.

Graduate students, research staff, and faculty work on a wide variety of topics, ranging from the theory of remote sensing to its application. These applications include: use of satellite remote sensing to determine ocean surface temperature and heat fluxes; use of surface radar to improve the determination of clouds and precipitation from satellite; determination of surface biological characteristics and productivity from satellite; mapping of land use from satellite; mapping of surface landform and topographical features; searching for locations of buried artifacts; use of surface radar to determine upper atmosphere wind motions; and aircraft remote sensing to assess the validity of satellite retrieval algorithms of surface and atmospheric characteristics.

## Certificate Program

### Remote Sensing Certificate

A Certificate in Remote Sensing will be awarded based on a written request by the student to the remote sensing graduate chairman, provided that the following requirements have been met:

- All students must take at least three Remote Sensing core courses (passed with grade *B* or better) and register for ATOC 7500/ASEN 6310 Remote Sensing Seminar for at least one semester. This class is given once each year. **Most remote sensing core courses are offered once each year.**

The Remote Sensing graduate courses are:

- ATOC 7500/ASEN 6210: Remote Sensing Seminar
- ASEN/ATOC 5235: Introduction to Atmospheric Radiative Transfer and Remote Sensing (previously offered as "Remote Sensing of the Atmospheres and Oceans")
- ASEN 5337: Remote Sensing Data Analysis
- ASEN 5168: Remote Sensing Instrumentation
- ASEN 5245/ECEN 5254: Radar and Remote Sensing
- ECEN 5274: Radar Science and Techniques
- GEOG/GEOL 5093: Remote Sensing of the Environment
- GEOL 5240: Remote Sensing Image Analysis

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- GEOG 6181/EBIO 6440: Remote Sensing Field Methods
- GEOL 6340: Remote Sensing of Planetary Surfaces
- ECEN 5234: Remote Sensing Signals and Systems
- ECEN 5264: Electromagnetic Absorption, Scattering and Propagation
- ECEN 5134: Electromagnetic Radiation and Antennas
- ECEN 5634: Microwave and RF Measurements

For more information or to contact the Remote Sensing Graduate Committee, write Remote Sensing Graduate Chairman Professor Bill Emery, 431 UCB; call **303-492-8591**; e-mail [emery@colorado.edu](mailto:emery@colorado.edu); or go to [Certificate Request Form](#).

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# Renewable and Sustainable Energy

## *Certificate Program*

### Renewable and Sustainable Energy Certificate

The graduate renewable and sustainable energy certificate program provides a broad exposure to energy issues, with an emphasis on renewable and sustainable energy. Required course work on energy science and technology, policy, and business, coupled with electives on energy economics, energy law, and other topics, give students the skills and knowledge to tackle society's pressing energy problems.

The energy certificate core required courses are:

- ENVS 5100 Energy Science and Technology
- ENVS 5820 Renewable Energy Policy
- BADM 6930 Commercializing Sustainable Energy Technologies

In addition, students are required to complete 9 credits of course work from a list of approved electives. These electives include energy-related courses in engineering, business, law, and other disciplines. A complete list of approved electives can be found at [rasei.colorado.edu](http://rasei.colorado.edu).

Interested students must apply to the program, and admissions are competitive. There are no prerequisite courses for the program, and applications are accepted from any student pursuing a graduate degree at CU-Boulder. Details on the application process are available at [rasei.colorado.edu](http://rasei.colorado.edu).

This program is administered by the Renewable and Sustainable Energy Institute (RASEI). RASEI also offers an undergraduate energy certificate program—for details, see [rasei.colorado.edu](http://rasei.colorado.edu).

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# Reserve Officer Training Corps

Enrollment in Reserve Officer Training Corps (ROTC) programs is open to both men and women, and ROTC lower-level leadership courses are open to all students whether or not they contract with ROTC.

All services provide undergraduate and selected graduate students with the opportunity to combine academic study with a military officer's educational program. The three services conduct courses in their respective areas leading to a regular or reserve commission upon graduation. The Navy also offers a program leading to a regular commission in the Marine Corps.

The course codes for these programs are AIRR, MILR, and NAVL.

## Air Force Aerospace Studies

U.S. Air Force ROTC offers several programs leading to a commission in the U.S. Air Force upon receipt of at least a baccalaureate degree.

### *Standard Four-Year Program*

This standard program is designed for incoming freshmen, or any student with four years remaining until degree completion. It consists of three parts: the general military course (GMC) for lower-division (normally freshman and sophomore) students; the professional officer course (POC) for upper-division students (normally juniors and seniors); and the leadership laboratory (LLAB) attended by all cadets. Completion of a four-week summer field training program is required prior to commissioning.

### *Modified Four-Year Program*

Certain undergraduate and graduate students may be eligible for this program. It is offered to full-time, regularly enrolled degree students and requires at least five semesters of full-time college work (undergraduate or graduate level, or a combination). May only be available to students pursuing academic majors in demand. Those selected for this program must complete the field training program during the summer months as a prerequisite for entry into the professional officer course the following fall semester.

### *Leadership Lab*

All AFROTC cadets must attend leadership lab (two hours per week). The laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities, and the life and work of an Air Force junior officer.

### *Other Air Force ROTC Programs*

Other programs are frequently available based on current Air Force needs. Any AFROTC staff member in Boulder (303-492-8351) can discuss the best alternatives. Interested students should make initial contact as early as possible to create the best selection opportunity, as selection is on a competitive basis. There is no obligation until a formal contract is entered.

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## *Air Force College Scholarship Program*

Normally a scholarship board is held at the end of each semester for students who have at least one semester of full-time college credit. Prior participation in AFROTC may not be required to compete for these scholarships. Students can compete for scholarships in most academic majors. Students selected for this program receive scholarships that pay up to \$18,000 in tuition, a book allowance, nonrefundable educational fees, and subsistence each month, tax-free. These scholarships are available in all academic disciplines and are two to three years in length.

## *USAF Medical Programs*

Qualified nursing students can compete for nursing scholarships. These scholarships can lead to a career as an Air Force officer, serving as a nurse. Students may also compete for a prehealth designator. If selected, they would receive a scholarship for medical school.

## *Air Force ROTC Course Credit*

AFROTC credit for graduation varies with each college. Students should contact the appropriate college for credit determination.

## *Registration*

CU-Boulder students who wish to register for AFROTC classes sign up for them through the normal course registration process.

## **Military Science (U.S. Army)**

The Department of Military Science is a leadership program leading to an officer's commission in the Active Army, Army Reserve, or National Guard in conjunction with an undergraduate or graduate degree. Military science courses supplement a regular degree program and offer practical leadership and management experience. Scholarships are available for those that qualify. Additionally, financial benefits may be available for enlisted soldiers.

## *Four-Year Program*

For college freshmen, the four-year program consists of two phases: the basic course (freshman and sophomore years) and the advanced course (junior and senior years).

**Basic courses (MSI & MSII)** cover Army history and organization as well as military leadership and management. Labs provide the opportunity to develop leadership experience while learning basic military skills. Participating in the basic courses incur no military obligation, except for those receiving an Army scholarship.

**Advanced courses (MSIII & MSIV)** cover leadership, tactics and unit operations, training techniques, military law, and professional ethics. Additionally, a four-week summer leadership camp at Fort Lewis, Washington, is a requirement between the Junior and Senior year, and is a prerequisite for commissioning. Students enrolled in the advanced courses must have completed the basic courses (or the equivalent) and obtain permission from the professor of military science (PMS).

## *Two-Year Program*

For college students entering as a sophomore, the two-year program consists of the advanced courses, preceded by a four-week summer ROTC leadership training course (LTC) at Ft. Knox, Kentucky. Inquiries into LTC should be directed to the Department of Military Science prior to completing the sophomore year. LTC is a paid internship and the academic equivalent to the MS1/MSII basic courses.

Prior service and enlisted soldiers who have completed basic training may be eligible to enroll in the advanced course without attending LTC or completion of the ROTC basic courses. Enlisted soldiers

pursuing advanced placement must obtain permission from the PMS.

### *Scholarship Programs*

College freshmen, sophomores, and juniors may be eligible for four-, three-, and two-year scholarships, regardless of academic major. Interested students must enroll in Army ROTC and meet eligibility requirements, including an army physical fitness test.

High school scholarship applicants may be eligible for four- and three-year college scholarships. High school students can apply during their junior year and before January 10 of their senior year,

All scholarship recipients receive tuition and fees, a \$1,200 book allowance, and a stipend of \$300–500 per month during the academic year. Students interested in scholarships should contact the enrollment and scholarship officer at [armyrotc@colorado.edu](mailto:armyrotc@colorado.edu), **303-492-3549**, or **303-492-6495**.

### *Simultaneous Membership Program*

College sophomore and juniors who want additional leadership training, may participate with an Army Reserve or Army National Guard unit as an officer trainee. Students participating in this program earn approximately \$240 in monthly drill pay, plus a monthly ROTC stipend of \$300–500. Additionally, SMP participants receive Army National Guard or reserve tuition benefits of up to \$4,500 per year. Enlisted and prior service students retain their authorized GI benefits.

### *Army ROTC Course Credit*

ROTC is an elective credit in most departments. Individual academic advisors verify if ROTC classes count toward the student's degree.

### *Registration*

Amy ROTC classes begin with MILR prefix. Register for classes through the normal course registration process. For more information, contact the enrollment and scholarship officer at CU-Boulder at [armyrotc@colorado.edu](mailto:armyrotc@colorado.edu), **303-492-3459**, or **303-492-6495**. See also the AROTC website at [www.colorado.edu/arotc](http://www.colorado.edu/arotc).

## Naval Science

Naval science course work is offered in the fall and spring semesters only. All naval science students enroll in NAVR 1010, 2020, 4010, and 4020. Those desiring commissions in the U.S. Navy enroll in NAVR 3020, 3030, 3040, and 4030 for upper-division work. Those desiring commissions in the U.S. Marine Corps enroll in NAVR 3101 and 4101 for upper-division work.

### *Scholarship Programs*

NROTC offers two-, three-, and four-year scholarship programs, and two-year and four-year college (non-scholarship) programs. Navy scholarships may be earned while students are enrolled in the college program. Scholarship students receive tuition and fees, a \$375 book allowance per semester, and a \$250 per month subsistence allowance. This subsistence allowance gradually rises to \$400 by the student's senior year. College program students receive a \$350 per month subsistence allowance their junior year and \$400 per month subsistence allowance their senior year in the program.

Naval science (Navy option) students must complete one year of calculus, physics, and English, and one semester of American military history or national security policy, and a cultural course. Students should check with their naval science instructor to determine specific course offerings that fulfill the above requirements.

### *Degree Credits*

The number of NROTC semester hours of credit that may count toward degree requirements is determined by the individual colleges. Students should therefore consider their college's policy when formulating their degree plan.

### *Commissioned Service*

Opportunities for commissioned service are presently available in the unrestricted line (surface, subsurface, aviation, special warfare, and special operations) and staff corps (nursing) in the U.S. Navy. Opportunities in ground and aviation specialties are available in the U.S. Marine Corps. Students interested in other programs leading to commissions in either the U.S. Navy or U.S. Marine Corps are encouraged to contact the NROTC unit on campus. All commissioning programs require that the student be working toward, and receive, a college degree.

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# Science and Technology Policy

## *Certificate Program*

### Science and Technology Policy Certificate

The graduate certificate in science and technology policy is a rigorous educational program to prepare students pursuing graduate degrees for careers at the interface of science, technology, and decision making. Past recipients of the certificate have gone on to positions in the U.S. Congress, academia, NOAA, and other policy relevant positions. Students come from such graduate programs as aerospace engineering, atmospheric and oceanic sciences, biological sciences, chemistry, civil engineering, environmental studies, geography, journalism, and mechanical engineering. Students enrolled receive either a master's or doctoral degree in their department and a certificate in science and technology policy. Each year, the certificate program will begin with a capped enrollment of 18 students per cohort. These 18 students will take three required courses:

- ENVS 5100 Science and Technology Policy
- ENVS 5110 Science, Technology, and Society Studies
- ENVS 5120 Quantitative Methods of Policy Analysis

In addition to the above three required courses students are also required to take three additional courses from a list of approved electives. For a list of all required courses and electives see [sciencepolicy.colorado.edu/stcert/curriculum/courses.html](http://sciencepolicy.colorado.edu/stcert/curriculum/courses.html). Successful completion of the certificate program requires the completion of 18 hours of course work (or course work plus internship credit).

For more information, visit [sciencepolicy.colorado.edu/stcert](http://sciencepolicy.colorado.edu/stcert).

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# Sociology

The undergraduate degree in sociology emphasizes knowledge and awareness of:

- the basic data, concepts, theories, and modes of explanation appropriate to the understanding of human societies;
- the structure of modern American society, its social stratification, its ethnic, racial, religious, and gender differentiation, and its main social institutions—family, polity, economy, and religion;
- the basic social processes that maintain and alter social structure, especially the processes of integration, organization, and conflict; and
- the diversity of human societies, including the differences between major historical types such as foraging, agricultural, industrial, and post-industrial societies.

In addition, students completing the degree in sociology are expected to acquire the ability to:

- locate and consult works relevant to a sociological investigation and write a sociological paper that is coherent, cogent, and grammatically correct;
- understand the basic procedures of sociological research and analyze sociological data;
- understand and interpret the results of sociological research; and
- integrate and evaluate sociological writings.

Course code for this program is SOCY.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Sociology

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below. A minimum of 36 credit hours (but not more than 45) in sociology is required for the degree. Of the 36 semester hours, 21 must be upper division with a minimum of 15 upper-division credit hours of course work in the major taken on the Boulder campus. All required major courses must be completed with a grade of C- or better. The cumulative GPA required in sociology courses is 2.000.

#### *Required Courses and Semester Credit Hours*

- SOCY 1001 Introduction to Sociology—3
- SOCY 2061 Introduction to Social Statistics or SOCY 4061 Social Statistics. A non-SOCY statistics course (C- grade or higher) can be used to substitute for SOCY 2061 or 4061 if one additional SOCY course is taken.—3
- SOCY 3001 Classical Theory—3
- SOCY 3301 Survey -Methods or SOCY 3401 Field Methods—3
- Electives—24

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## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in sociology, students should meet the following requirements:

- Declare the major by the beginning of the second semester.
- Complete SOCY 1001 and 3001 and 6 credit hours of sociology electives by the end of the fourth semester.
- Complete SOCY 2061 or 4061 and either 3301 or 3401 and 15 credit hours, with a minimum of 9 upper-division credit hours of sociology electives, by the end of the sixth semester.
- Complete 36 credit hours (but not more than 45), in sociology with at least 21 credit hours in upper-division courses by the end of the eighth semester.

## Graduate Degree Program(s)

### Graduate Study in Sociology

Students wishing to pursue graduate work in sociology leading to candidacy for an -advanced degree should carefully read the requirements for advanced degrees in the Graduate School section.

The following are additional requirements for admission to the graduate degree programs of the department:

- A combined grade point average of at least 3.00 (B) for all courses in sociology undertaken as an undergraduate or graduate student prior to admission.
- Satisfactory scores (as determined by the department) on the Graduate Record Examination, including both the verbal and quantitative sections.
- Proficiency in statistics as demonstrated by a grade of B or better in an undergraduate statistics course.

The deadline for applications is December 15 for the academic year.

## Master’s Degree

The Department of Sociology does not have a master’s degree program. However, students may obtain the MA degree in transit to the PhD if they wish, and students unable to complete PhD requirements may pursue a terminal MA degree, pending approval by the Graduate Committee. The department does not allow extra time for the completion of the MA degree.

All MA students are required to complete a minimum of 30 semester hours of graduate credit. These 30 hours must include at least 6 credit hours in at least two seminars in the student’s major fields. Students may take a maximum of 6 hours of independent study. These may not be substituted for required seminars. In addition, all students must take courses from at least four different members of the faculty. Finally, all MA students must designate a Master’s Advisory Committee. This committee must consist of at least three regularly appointed graduate faculty members from the Department of Sociology.

## Plan I—Thesis Option

For the MA degree, a student must complete 24 hours of course work at the 5000 level or above, including the required Theory and Methods sequence, and at least 4 and a minimum of 6 hours of thesis credits. Students must register for thesis credit hours in the semester of thesis defense.

## Plan II—Non-Thesis

For the MA degree, a student must complete 30 hours of course work at the 5000 level or above,

> Classics

> Cognitive Science  
Studies

> Communication

> Comparative Literature  
Graduate Program

> Distributed Studies  
Program

> Ecology and  
Evolutionary Biology

> Economics

> English

> Environmental Studies

> Ethnic Studies

> Film Studies

> French and Italian

> Geography

> Geological Sciences

> Germanic and Slavic  
Languages and  
Literatures

> History

> Humanities

> Integrative Physiology

> International Affairs

> INVST Community  
Studies

> Jewish Studies

> Lesbian, Gay, Bisexual,  
Transgender, and  
Queer Studies

> Linguistics

> Mathematics

> Medieval and Early  
Modern Studies

including the required Theory and Methods sequence, and take a written exam in their major area within sociology. The Advisory Committee, here constituted as an examining committee, creates an exam that will assess the candidate's competence in the relevant areas of sociological knowledge.

## Doctoral Degree

The main requirements for the doctoral degree are:

- A minimum of 45 credit hours at or above the 5000 level. At least 24 of these 45 hours must be taken in the sociology department at CU-Boulder.
- The following required courses must be included in the 45 hour minimum: 6 hours of sociological theory (including SOCY 5201); 9 hours of research methods and statistics (SOCY 5031, 5111, and 6111); two 1.5-hour graduate forums (SOCY 6821); and one 1-hour proseminar (SOCY 6831).
- A student must have passed all first-year work with a 3.500 GPA and no grade lower than a B to continue into the second year.
- Successful completion of exams in sociological theory and methods by the end of the first year.
- Successful first-year and second-year reviews.
- A student must pass the comprehensive examination, having become eligible to take this examination only after having satisfied requirements 1, 2, and 3 above.
- A student must write a PhD dissertation and defend this dissertation in an oral examination.

A detailed description of the PhD program is given in the graduate handbook available from the graduate program assistant of the sociology department. All inquiries about graduate programs should be addressed to the Graduate Program Assistant, Department of Sociology, University of Colorado Boulder, 327 UCB, Boulder, CO 80309-0327 or by e-mail to [sociology@colorado.edu](mailto:sociology@colorado.edu). For more information, visit the department website at [socsci.colorado.edu/SOC](http://socsci.colorado.edu/SOC).

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# Software Engineering

## *Certificate Program*

### Software Engineering Professional Certificate

Experienced software professionals work in a field that has maintained a relentlessly rapid rate of change for decades, making it impossible to stay current in all aspects of software engineering. Those with limited experience find that the challenges of work assignments exceed their preparation from most undergraduate degree programs. In a typical computer-related undergraduate curriculum, it is not possible to devote enough credit hours specifically to software engineering to address all aspects of engineering complex systems including, for example, design for embedded systems, maintainability, concurrency, and distributed systems.

The professional certificate in software engineering, offered by the Department of Electrical and Computer Engineering and the Division of Continuing Education, covers the body of knowledge necessary to develop products more predictably and reliably for stand-alone programs as well as for software in more complex environments. The courses required for the professional certificate in software engineering are:

- ECEN 4583/5543 Software Engineering of Stand-alone Programs (same as CSCI 5548)
- ECEN 4643/5643 Software Engineering of Concurrent Systems
- ECEN 4753/5753 Software Engineering of Distributed Systems

Applicants for the certificate program must have received or currently be enrolled in a baccalaureate degree from an accredited institution and have satisfied the prerequisites for each course through class work or work experience. They need not be enrolled in a degree-granting program at CU-Boulder. A grade of *B-* or better is required for each course applied toward the certificate. For more information, visit [ecee.colorado.edu/academics/cert\\_programs/overview.html](http://ecee.colorado.edu/academics/cert_programs/overview.html).

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# Spanish and Portuguese

***Portuguese: Although no major in Portuguese alone is offered, the department offers a combined Spanish and Portuguese Language and Culture degree option (see the Spanish Majors section). Language courses at the elementary and intermediate levels are also available, as well as senior and graduate courses in Luso-Brazilian civilization and literature.***

The department has identified the following as educational outcomes for the three tracks within the Spanish major.

The undergraduate degree in Spanish language and literature emphasizes knowledge and awareness of:

- the fundamental outlines of the history of Spanish literature or of Spanish American literature;
- the major creative writers in either Spanish or Spanish American literature;
- basic critical methodologies in the study of poetry, drama, narrative fiction, and the essay; and
- the social and historical contexts in which particular literary traditions developed.

In addition, students completing the degree in Spanish language and literature are expected to acquire the ability and skills to:

- read sophisticated Spanish texts at a level at which literary analysis can be performed;
- write and speak Spanish sufficiently to participate in critical discussions and write critical essays;
- analyze and interpret literary texts in terms of themes, characters, structure, style, and overall textual strategies;
- relate analysis and interpretations of different texts to one another; and
- communicate such interpretations competently in written form in Spanish.

The undergraduate degree in Spanish and Portuguese language and culture emphasizes knowledge and awareness of the same topics listed in the degree in Spanish Language and Literature, but specifies electives and related field courses, focusing on the Luso-Brazilian culture and adding knowledge of the Portuguese language.

The undergraduate degree in international Spanish for the professions emphasizes knowledge and awareness of:

- modern business practices as applied to the Spanish-speaking world;
- the theories of economics, business law, and international trade and finance;
- fundamental business Spanish terminology;
- the cultural environment in which business is conducted in the Spanish-speaking world;
- basic business according to the canons of this discipline; and
- international relationships.

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In addition, students completing the degree in international Spanish for the professions are expected to acquire the ability and skills to:

- read and interpret in cultural and business-related terms sophisticated Spanish texts concerning business transactions;
- write and speak Spanish sufficiently to communicate effectively on business-related issues, be involved in critical discussions, and write critical essays on the subject;
- analyze a particular business problem to place it in a relevant context and formulate an appropriate response; and
- adequately translate business-related documents.

Course codes for this program are SPAN and PORT.

### *Bachelor's Degree Program(s)*

## Undergraduate Study in Spanish

Students must complete the required courses of the College of Arts and Sciences and the required courses listed below. All Spanish majors are encouraged to consult with their designated departmental advisor before they register each semester.

### *Required Courses and Semester Credit Hours*

### *BA in Language and Literature Option*

#### *Required Courses and Semester Credit Hours*

- SPAN 3000 Advanced Spanish Language Skills, SPAN 3100 Literary Analysis in Spanish, and SPAN 3120 Advanced Spanish Grammar—11
- **Hispanic linguistics requirement.** Of the total 32 credit hours required for the degree, at least 3 credit hours must be in Hispanic linguistics (SPAN 3050, 3150, 4430, or 4450).
- At least 9 credit hours in upper-division literature, culture, and/or language (may include the Hispanic linguistics requirement)—9
- At least 12 credit hours in courses at the 4000 level or above, with at least 9 credit hours devoted to literature (3 credit hours must come from either SPAN 4150 or 4160, and 3 credit hours must come from either SPAN 4170 or 4180). (Twelve credit hours may include the Hispanic linguistics requirement.)—12
- In addition to the 32 credit hours in the Department of Spanish and Portuguese, 6 credit hours in courses from outside the Spanish department in one or more related fields—6

### *BA in Spanish and Portuguese Language and Culture Option*

Students must complete the required courses of the College of Arts and Sciences and the required courses listed below. All majors are encouraged to consult with their designated departmental advisor before they register each semester.

Note that prerequisites for the program include sufficient Spanish knowledge to be admitted to 3000-level courses and sufficient knowledge of Portuguese to be admitted to 2000-level courses.

#### *Required Courses and Semester Credit Hours*

- PORT 2110 Second-Year Portuguese 1 or PORT 2350 Portuguese for Spanish Speakers—3
- PORT 2120 or SPAN/PORT upper-division—3

## Upper-division Courses

- > Classics
- > Cognitive Science Studies
- > Communication
- > Comparative Literature Graduate Program
- > Distributed Studies Program
- > Ecology and Evolutionary Biology
- > Economics
- > English
- > Environmental Studies
- > Ethnic Studies
- > Film Studies
- > French and Italian
- > Geography
- > Geological Sciences
- > Germanic and Slavic Languages and Literatures
- > History
- > Humanities
- > Integrative Physiology
- > International Affairs
- > INVST Community Studies
- > Jewish Studies
- > Lesbian, Gay, Bisexual, Transgender, and Queer Studies
- > Linguistics
- > Mathematics
- > Medieval and Early Modern Studies

- PORT 3003 Advanced Portuguese Language Skills—3
- PORT 3220 Latin American Culture: Spanish America and Brazil or PORT 3230 Lusophone Cultures: Brazil, Portugal, and Lusophone Africa—3
- 4000-level PORT course—3
- SPAN 3000 Advanced Spanish Language Skills, SPAN 3100 Literary Analysis in Spanish, and SPAN 3120 Advanced Spanish Grammar—11
- **Hispanic linguistic requirement.** Of the total 32 upper-division credit hours required for the degree, at least 3 hours must be in Hispanic linguistics (SPAN 3050, 3150, 4430, or 4440).
- Upper-division SPAN or PORT literature, culture, and/or language (may include Hispanic linguistics requirement).—6
- “Masterpieces” courses. Three of these credit hours must come from either SPAN 4150 or 4160, and 3 credit hours must come from either SPAN 4170 or 4180—6
- SPAN or PORT 4000-level course—3

*NOTE: Directly-related courses outside of the department, such as ANTH 4730, can replace 3 hours of Spanish or Portuguese elective credits. These courses must be preapproved by the department.*

Native speakers of Portuguese, and in general, all students whose Portuguese skills are beyond the PORT 2120 or 2150 level, are not required to take these courses. However, students have to make up these credit hours by taking 6 hours of upper-division SPAN or PORT courses or any related courses outside the department. Related courses must be approved by the department.

*NOTE: To fulfill the requirements for a Spanish Language and Literature or a Spanish and Portuguese Language and Culture major, students must complete 32 credit hours in courses at the 3000 level or above and at least 12 upper-division credits at CU-Boulder, 6 of which must be from the masterpiece courses listed previously (SPAN 4150 or 4160, and SPAN 4170 or 4180).*

No more than 3 independent study credit hours may count toward the major.

No grade lower than C- in a Spanish course will be counted in the major requirement.

Students seeking teaching certification in Spanish must take SPAN 3050, 3120, and 3200 or 3210.

Students who want certification for teaching at the secondary level should note that the School of Education requires SPAN 4650 and 4660. Students who major in Spanish are expected to meet with their departmental advisor before registration. Failure to do so may delay graduation. Students considering entering graduate school for an advanced degree in Spanish, either at CU-Boulder or any other institution, should see a departmental advisor as early as possible.

## *Graduating in Four Years*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in Spanish, students should consult with the department associate chair for undergraduate studies to obtain detailed guidelines.

## *BA in International Spanish for the Professions Option*

In cooperation with the Leeds School of Business, the department offers an interdisciplinary major in international Spanish for the professions. It offers students numerous career possibilities, both in government and private industry, at home and abroad. Those choosing this major are not able to enter the Boulder graduate program in Spanish without fulfilling the requirements in the language and literature major. Only a limited number of students may enroll in the international Spanish for the professions major. Courses within the major normally are completed in the student’s junior and senior

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years. Declaration of the major should be completed as early as possible in the student's academic career, but no later than the second semester of the sophomore year.

Note: Prerequisites for the program include sufficient Spanish to be admitted to 3000-level courses, ECON 2010 and 2020. SPAN 3040 and SPAN 4070 must be taken at CU-Boulder.

### **Required Courses and Semester Credit Hours**

#### **Professional Spanish Courses** (No substitutions permitted.)—15 credit hours

- SPAN 3030 Professional Spanish for Business 1—3
- SPAN 3040 Professional Spanish for Business 2—3
- SPAN 3200 Spanish Culture or SPAN 3210 The Cultural Heritage of Latin America or 3220 Latin American Culture: Spanish America and Brazil or SPAN 3420 Catalan Culture—3
- SPAN 4060 Problems of Business Translation in Spanish 1—3
- SPAN 4070 Problems of Business Translation in Spanish 2—3

#### **Spanish Language Courses**—17 credit hours

- SPAN 3000 Advanced Spanish Language Skills—5
- SPAN 3100 Literary Analysis in Spanish—3
- SPAN 3120 Advanced Spanish Grammar—3
- Any SPAN 4000-level course—3
- Upper-division elective (recommended: SPAN 3050, 3310, 3340, 4930)—3

#### **Courses in the Leeds School of Business** (No substitutions permitted.)—16 credit hours

- BCOR 2000 Accounting and Financial Analysis—4
- BCOR 2050/2400 Fundamentals of Marketing—3
- BCOR 2150/2300 Adding Value with Management—3
- BCOR 3000/3100 Business Law, Ethics, and Public Policy—3
- ECON 3403 International Economics and Policy (Prereq. ECON 1000 or ECON 2010 and 2020)—3

Completion of the above sequence does not fulfill all requirements for a minor in the Leeds School of Business. Majors interested in this option must consult with the Spanish department advisor and will have to take some courses for the minor during the summer.

#### **Area Courses**—12 credit hours

- Students are required to take courses outside the Spanish department in a field related to their professional interests or a second major or degree. These may include courses in business, economics, computer science, linguistics, another foreign language, Chicano studies, Latin American studies and international affairs, and any course dealing with the Hispanic world from anthropology, history, political science, and geography. Courses meeting this requirement must be approved by an advisor.
- Six credit hours may be taken in lower-division courses.
- Six credit hours must be taken in upper-division courses.

*NOTE: The College of Arts and Sciences does not allow more than 45 credit hours in any one discipline to be counted toward the 120 credit hours required for a BA degree. This rule does not mean that a students may not take more than 45 credit hours in Spanish, but rather that one must*

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have a least 75 credit hours in courses other than Spanish. PORT 2110 and 2120 or 2150 will be accepted as partially fulfilling upper-division courses in other foreign languages. No Spanish or approved area courses with a grade lower than a C- will be counted in the major requirements. The ancillary GPA (made up of the combined grades from the Business courses and the Area courses) must be at least 2.00.

## *Minor Program*

A minor program is offered in Portuguese. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school. For more information, visit

[www.colorado.edu/artssciences/students/undergraduate/academics/minors.html](http://www.colorado.edu/artssciences/students/undergraduate/academics/minors.html).

## *Study Abroad*

The department strongly recommends that all majors include some study in a Spanish-speaking country in their major program. The university cooperates with full-year and semester programs in Argentina, Bolivia, Chile, Costa Rica, Dominican Republic, Ecuador, Mexico, Nicaragua, and Spain. There are also programs in Brazil and Portugal for Portuguese speakers. Credit earned normally counts toward satisfaction of the major requirements, but the student should see the associate chair for undergraduate studies before enrolling in a foreign program to discuss transfer of credit. Credit for work done in special programs offered by foreign universities is evaluated on an individual basis. It should be noted that courses taken abroad and designated as Spanish are also subject to the 45-hour maximum rule of the College of Arts and Sciences.

Students who present transfer work or credit earned in CU study abroad programs to satisfy major requirements are expected to complete at least 12 upper-division credits, including at least 6 from the 4000-level masterpiece courses listed above, on the Boulder campus. As an exception, one of the masterpiece courses can be taken in the program at Santiago de Compostela, Spain.

## *Concurrent Bachelor's/Master's Program*

### Concurrent BA/MSIB in Spanish

This program is designed for exceptional students who wish to combine their BA in international Spanish for the professions with an MS in international business (MSIB) from the University of Colorado Denver. Students are able to complete both degrees in five years, including two summer sessions, because 15 credit hours of the undergraduate major can be used to waive the common body of knowledge requirement of the MS program.

Students who wish to pursue the joint degree will need to take the following undergraduate business courses.

#### *Required Courses and Semester Credit Hours*

- BCOR 2000 Accounting and Financial Analysis—4
- BCOR 1010/2010 Business Statistics (must be taken during summer)—3
- BCOR 2050/2400 Fundamentals of Marketing—3
- BCOR 3000/3100 Business Law, Ethics, and Public Policy—3
- ECON 3403 International Economics and Policy—3

**Admission Procedures.** Students apply for the MSIB program in their third year by declaring their intention to the Spanish for the professions advisor, submitting the standard MSIB application forms, and completing admissions requirements, which include the GMAT (Graduate Management Admissions Test). Students are notified of acceptance to the program before the start of their fourth year. Students must have at least a 3.00 GPA to be considered for admission.

## *Graduate Degree Program(s)*

# Graduate Study in Spanish

Students wishing to pursue graduate work in Spanish leading to candidacy for advanced degree should read carefully requirements for advanced degrees in the Graduate School section.

## Master's Degree

**Language Requirement.** Students must demonstrate, as early as possible and before taking the comprehensive examination, a communication knowledge (as defined by the Graduate School) of a foreign language other than Spanish. They also must be able to speak, read, and write English well.

**Areas of Concentration.** The MA in Spanish is offered in two areas of concentration: one with an emphasis on literature, and one with an emphasis on linguistics. (Contact the department for further information.)

## Doctoral Degree

**Residence Requirement.** PhD students must complete a minimum of one academic year in residence on the Boulder campus (excluding summer) within the four years immediately preceding the date on which they present themselves for the PhD comprehensive examination.

**Language Requirement.** The student must demonstrate as early as possible, but at least one full semester before taking the comprehensive examination, a communication knowledge (as defined by the Graduate School) of one foreign language and a reading knowledge of a second language in addition to Spanish. The languages are chosen by the student in consultation with the advisory committee.

**Areas of Concentration.** The PhD in Spanish is offered in six literary periods of concentration: medieval, golden age, 18th and/or 19th century peninsular, 20th century peninsular, colonial and 19th century Spanish American, and 20th century Spanish American. For further information on these options, contact the department.

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# Speech, Language, and Hearing Sciences

The undergraduate program in speech, language, and hearing sciences (SLHS) introduces concepts basic to human communication, and provides opportunities for students to acquire an understanding of normal and disordered speech, language, and hearing processes. The curriculum for the undergraduate degree in SLHS has been designed to fulfill the prerequisite requirements for entrance into accredited graduate programs in speech-language pathology and audiology, but also provides a strong academic foundation for students with other professional goals.

The undergraduate degree in speech, language, and hearing sciences emphasizes knowledge and awareness of:

- the anatomy of the speech and hearing mechanisms, as well as the processes of speech production, transmission, and reception;
- the development of language;
- scientific methods used in investigating speech/language/learning and hearing processes;
- the etiologies, manifestations, and treatments of speech/language/learning and hearing disorders; and
- the role of the professional speech-language pathologist and audiologist, including the history and development of the profession, the scientific traditions of the discipline, and the ethical issues in providing service to individuals with communication disorders.

In addition, students completing the degree in speech, language, and hearing sciences are expected to acquire the ability and skills to:

- express themselves effectively both orally and in written scientific and clinical discipline-specific reports;
- critically evaluate literature in the discipline; and
- analyze the acoustic output of the speech production process auditorily and/or instrumentally.

Course code for this program is SLHS.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Speech, Language, and Hearing Sciences

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

#### *Required Courses and Semester Credit Hours*

Majors must present a minimum of 35 credit hours of course work in the recommended sequence below.

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[Chemical Physics](#)

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## Freshman and/or Sophomore Year

- SLHS 2000 Introduction to Communication Disorders—3
- SLHS 2010 Human Communication Science—3
- LING 2000 Introduction to Linguistics—3
- SLHS 3006 Phonetics or LING 3100 Sound Structure of Language—3
- PSYC 1001 (as prerequisite for SLHS 4560)—4

## Junior Year

### Fall Semester

- SLHS 3106 Hearing Science—3
- SLHS 4560 Language Development—3
- SLHS 4918 Introduction to Clinical Practice—3

### Spring Semester

- SLHS 3116 Speech Science—3
- SLHS 4918 Introduction to Clinical Practica (Only one semester of SLHS 4918 is required and may be taken in either the fall or spring.)—2

## Senior Year

### Fall Semester

- SLHS 4502 Language Disorders: Child and Adult—3
- SLHS 4704 Audiological Evaluation—3

### Spring Semester

- SLHS 4512 Speech Disorders—3
- SLHS 4714 Audiological Rehabilitation—3

## Graduating in Four Years

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in speech, language and hearing sciences students should meet the following requirements:

- Declare the major by the beginning of the sophomore year
- Complete prerequisite courses—LING 2000 and PSYC 100—by the end of spring semester of sophomore year.
- Complete the required courses in the sequence listed above.

## Graduate Degree Program(s)

# Graduate Study in Speech, Language, and Hearing Sciences

The graduate curriculum in speech, language, and hearing sciences leads to either a master's or a doctoral degree. The programs in speech-language pathology and audiology are accredited by the Council on Academic Accreditation (CAA) and the Colorado State Department of Education.

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Prospective students should read requirements for advanced degrees in the Graduate School section.

## Master's Degree

There are two areas of focus available at the MA level: 1) MA leading to professional certification in speech-language pathology by the American Speech Language Hearing Association (ASHA) and licensure for the Colorado State Department of Education and 2) research. Within departmental and ASHA guidelines, master's students with a focus in speech-language pathology devise individualized programs of academic and clinical study that allow them to develop clinical specialties of their choosing. Clinical assignments are initiated in the department on-site Speech, Language, and Hearing Center; later, student input is obtained in making off-campus clinical assignments in educational and medical settings.

Students with an undergraduate degree in speech-language pathology and audiology can expect to complete the program in two calendar years. Those without such a background are required to make up undergraduate deficiencies, which normally require at least an additional 28 credit hours of courses in speech, language, and hearing sciences and related disciplines. Students must meet standards for both academic and clinical competence, as well as professional conduct. Full-time graduate study is required. Students not seeking clinical certification place major emphasis on speech, language, or hearing sciences under the guidance of their primary advisor and thesis research committee.

## Doctoral Degree

There are two areas of focus available at the doctoral level: 1) AuD leading to professional certification in audiology, and 2) PhD with emphasis on research. The PhD program is grounded in research. Supervisory, administrative, instructional, and research activities are provided to acquaint students with problems and concepts at a higher level of professional activity and responsibility.

Wide latitude prevails in planning individual PhD programs. It is expected that students have some professional experience before entering the program, and that they have specific academic or professional goals in mind. PhD candidates must take a four-course sequence in statistics and computer science and four core courses within Speech, Language, and Hearing Sciences (SLHS). Beyond that, student degree plans are individually prepared through the joint efforts of the student and an advisory committee.

The AuD program is a four-year post-baccalaureate program consisting of academic course work, clinical practicum experiences, capstone project, and advanced clinical rotations. Clinical assignments are initiated in the Boulder satellite of the University of Colorado Hospital Marion Downs Hearing Center; later student input is obtained in making off-campus clinical assignments. The program is designed so students complete all requisite clinical and academic experience for ASHA certification.

In addition, the department offers students the opportunity to pursue an integrated program of study leading to dual doctorate degrees in the field of audiology and speech, language, and hearing science. The PhD/AuD dual degree program trains students in clinical research and clinical practice in audiology. Students in the program gain training that will prepare them to become independent scholars, to teach in higher education, to conduct research, to become certified clinical audiologists, and to gain skills in leadership. The dual degree program allows students to pursue both their clinical training and their research training in a rigorous, intensive, and streamlined program. Students may apply to both programs simultaneously, or may apply to the PhD portion after having been accepted into the AuD portion or may apply to the AuD portion after having been accepted into the PhD portion.

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# Teacher Licensure Program

## On This Page:

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- [Performance-Based Standards for Colorado Teachers](#)
- [Academic Majors](#)
- [Arts and Sciences Core Requirements for Teacher Candidates](#)
- [Admission](#)
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The School of Education offers course work leading to initial Colorado licensure to undergraduate, postbaccalaureate, and master's degree students. Colorado requires public school teachers to be licensed by its state department of education. Students who successfully complete all School of Education requirements will be recommended for a Colorado provisional (initial) teaching license, the license issued to all new teachers in Colorado. Licensure requirements vary from state to state and from teaching area to area. Students who are interested in teaching in other states should familiarize themselves with the requirements of those states so they may plan an appropriate degree program.

## *Undergraduate and Postbaccalaureate (Nonmaster's Degree) Licensure Programs*

- Elementary (grades K–6) education
- Secondary education (grades 7–12) fields:
  - English
  - World language (French, German, Japanese, Latin, Russian, or Spanish)
  - Mathematics
  - Science
  - Social studies
- Music (grades K–12)

## *Secondary Master's Degree Plus Licensure Program (see Graduate Study section for additional program information)*

- Secondary education (grades 7–12) fields:
  - English
  - Mathematics
  - Science
  - Social studies

## Program Goals

Teacher education programs focus on the preparation of novice teachers in three interdependent

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areas:

- knowledge of subject matter and pedagogy,
- education of students in a diverse society, and
- professional obligations and dispositions of teachers in a democracy.

To meet these goals teacher education students engage in a planned sequence of courses and accompanying field experiences in community and school sites.

## Performance-Based Standards for Colorado Teachers

In addition to program goals, the teacher education programs address eight performance-based standards for Colorado teachers, as adopted by the Colorado Department of Education in January 2000.

1. **Knowledge of Literacy.** The teacher shall be knowledgeable about student literacy development in reading, writing, speaking, viewing, and listening.
2. **Knowledge of Mathematics.** The teacher shall be knowledgeable about mathematics and mathematics instruction.
3. **Knowledge of Standards and Assessment.** The teacher shall be knowledgeable about strategies, planning practices, assessment techniques, and appropriate accommodations to ensure student learning in a standards-based curriculum.
4. **Knowledge of Content.** The elementary teacher is knowledgeable, in addition to literacy and mathematics, in the following content areas: civics, economics, foreign language, geography, history, science, music, visual arts, and physical education. Middle school and secondary content teachers shall be knowledgeable in literacy and mathematics and expert in their content endorsement area(s).
5. **Knowledge of Classroom and Instruction Management.** The teacher is knowledgeable about classroom practice in order to successfully manage time, communications, and record keeping procedures that will support and enhance student learning.
6. **Knowledge of Individualization of Instruction.** The teacher is responsive to the needs and experiences children bring to the classroom, including those based on culture, community, ethnicity, economics, linguistics, and innate learning abilities. The teacher is knowledgeable about learning exceptionalities and conditions that affect the rate and extent of student learning, and is able to adapt instruction for all learners.
7. **Knowledge of Technology.** The teacher is skilled in technology and is knowledgeable about using technology to support instruction and enhance student learning.
8. **Democracy, Educational Governance, and Careers in Teaching.** The teacher recognizes the school's role in teaching and perpetuating our democratic system. The teacher knows the relationships among the various governmental entities that create laws, rules, regulations, and policies that determine educational practices.

The objectives of the university relative to teacher education are the following:

1. Provide programs of undergraduate and graduate studies designed to develop outstanding teachers, supervisors, college teachers, administrators, and researchers.
2. Conduct and direct educational research and to engage in writing and related creative endeavors.
3. Identify and attract future outstanding teachers into the teacher education program.
4. Cooperate with other state, regional, and federal agencies to improve educational programs.

Teacher education at the University of Colorado, while administered by the School of Education, is a university-wide function. Many academic departments provide course work that supports the teacher in training. Undergraduate students follow a prescribed set of arts and sciences core courses that meet state content preparation standards, complete a major, and satisfy professional education requirements concurrently. The program involves a combination of courses at the university and K–12 school placements.

## Academic Majors

**Undergraduate Students.** Undergraduate students enrolled at the University of Colorado Boulder seeking both a bachelor's degree and teacher licensure must complete a major approved for prospective teachers by the Colorado Department of Higher Education. With careful planning beginning freshman year, these programs may be completed in four years. A list of these approved majors is available on the School of Education website, [www.colorado.edu/education](http://www.colorado.edu/education). No professional education course work taken before the implementation of the Colorado Model Content Standards and Performance-Based Standards for Colorado Teachers may count for teacher education requirements.

The major selected is determined by the student's interest in teaching a certain subject or instructional level. Before selecting a particular major, students may see the School of Education advisor. **Students interested in teaching at the secondary level should be aware that in many subject areas the teaching program requires additional courses or more hours than the academic major.** Course requirements for all programs are explained in the program checklists available in Education 151.

## Arts and Sciences Core Requirements for Teacher Candidates

Arts and sciences students must complete college core curriculum requirements (see College of Arts and Sciences Undergraduate Degree Requirements section). Teacher licensure students must take specified courses within some categories of this core curriculum.

The arts and sciences core is listed below; courses specified in each area for students seeking teaching licensure are in ***bold italic*** type.

### *Elementary Licensure*

- Foreign Language: Third semester proficiency in a single modern or classical foreign language.
- Quantitative Reasoning and Mathematical Skills: 3–6 semester hours.  
***MATH 1110 and 1120 Spirit and Uses of Mathematics 1 and 2 or MATH 1300 Calculus 1***
- Written Communication: 3 lower-division and 3 upper-division semester hours.
- Historical Context: 3 semester hours.  
***HIST 1010 Western Civilization 1 or HIST 1020 Western Civilization 2***
- Human Diversity: 3 semester hours.  
***EDUC 3013 School and Society***
- United States Context: 3 semester hours.  
***HIST 1015 History of the United States to 1865 or HIST 1025 History of the United States since 1865***
- Literature and the Arts: 6 semester hours, 3 upper-division semester hours.
- Natural Science: 13 semester hours, including a 2-course sequence and a laboratory or field experience.

- Physical science required (ASTR, ATOC, CHEM, GEOG, GEOL, PHYS)
- Biological science required (EBIO, MCDB, or IPHY 3420)
- Contemporary Societies: 3 semester hours.  
**PSCI 1101 American Political Systems**
- Ideals and Values: 3 semester hours.
- Additional liberal arts requirement:  
**Human/Cultural Geography: 3 semester hours**

## *Secondary Licensure*

- Foreign Language: Third semester proficiency in a single modern or classical foreign language.
- Quantitative Reasoning and Mathematical Skills: 3–6 semester hours.  
**MATH 1410 Mathematics for Secondary Teachers** or **MATH 1300 Calculus 1**
- Written Communication: 3 lower-division and 3 upper-division semester hours.
- Historical Context: 3 semester hours.
- Human Diversity: 3 semester hours.  
**Course from major** or **EDUC 3013 School and Society**
- United States Context: 3 semester hours.
- Literature and the Arts: 6 semester hours, 3 upper-division semester hours.
- Natural Science: 13 semester hours, including a 2-course sequence and a laboratory or field experience.
- Contemporary Societies: 3 semester hours.  
**Course from major** or **EDUC 3013 School and Society**
- Ideals and Values: 3 semester hours.

**Postbaccalaureate Students.** Postbaccalaureate students are not required to have a degree in one of the majors approved by the Colorado Department of Higher Education. *However, students who have graduated with a nonapproved major often must take additional arts and sciences and major course work to fulfill state teacher licensure requirements.*

## Admission

Admission to all School of Education programs is selective. Satisfying minimal admission criteria does not guarantee admission.

## *Students Entering or Currently Enrolled at the University of Colorado*

Undergraduate students seeking to complete the School of Education teacher education program must be enrolled in an approved degree program in one of the colleges or schools of the university. All undergraduates interested in teaching may seek teacher education advising at the time they enter the university. Freshman and sophomore students are encouraged to satisfy as many of the arts and sciences core requirements, liberal arts requirements for the appropriate licensure program, and major field requirements as possible before applying for admission to the teacher education program. Some education courses may be taken prior to admission to the teacher education program. Students should pick up advising materials in Education 151 and attend all education information sessions, including freshman orientation.

## *Transfer Students*

Undergraduate students who seek to transfer to the University of Colorado from another accredited institution must apply for admission through the Office of Admissions. They must enroll in a degree

program in one of the undergraduate degree-granting colleges or schools of the university and also apply for admission to the teacher education program in the School of Education. At least 30 hours of course work for licensure must be taken while the student is officially enrolled as a student in the university. Credit in student teaching will not transfer to the University of Colorado Boulder. Please see Undergraduate Admission in the General Information section for specific requirements.

### *Former Students*

Former students who have not completed an undergraduate degree may reenter the university according to general university policies; however, subsequent to that readmission, they must apply separately for entry into the teacher education program. Undergraduate students who anticipate that they will graduate prior to completing the teacher education program must see the School of Education advisor. All admitted students who remain continuously enrolled will be expected to complete the program in effect at the time of their admission to the program unless state accrediting changes dictate otherwise.

### *Postbaccalaureate and Master's Degree Students Seeking Teacher Training*

Students who already hold a bachelor's degree and wish to pursue licensure should apply directly to the School of Education. Students desiring institutional recommendation for licensure must complete at least 30 semester hours of work at the University of Colorado and also must fulfill the same academic area requirements as undergraduate students. The actual number of required hours will depend on courses already completed.

## Application Requirements

Students may apply to one of the teacher education programs if the following requirements have been fulfilled:

1. **GPA.** Elementary and secondary students must have and maintain a 2.75 (on a 4.00 scale) cumulative GPA, 2.75 at CU-Boulder, 2.75 in their subject area (secondary teacher fields), and 2.75 in education. Music students must have and maintain a 3.00 overall and in their subject area. Students applying to Master's Plus (MA+) programs must have and maintain a 3.00 cumulative GPA.
2. **Prior Degrees.** Students applying to Postbaccalaureate and Master's Plus (MA+) programs must have a bachelor's degree from an accredited institution.
3. **Youth Experience.** Students must provide written verification of 25 clock hours of satisfactory experiences with elementary, middle/junior high, or senior high school-aged youth (appropriate to the desired program) in the past five years. Forms for this purpose are available in the Office of Student Services, Education 151, or online at [www.colorado.edu/education/prospective/teachereducation.html](http://www.colorado.edu/education/prospective/teachereducation.html). Students in the CU Teach program meet this requirement through school experiences in Step 1 and 2 courses.
4. **Basic Skills.** All teacher education students must demonstrate basic skills competence in mathematics and literacy. This may be done through acceptable grades in appropriate college course work, or by acceptable standardized test scores. Contact the Office of Student Services in Education 151 for more information.
5. **Letters of Recommendation.** See the Application Materials section.
6. **Personal Statement.** See the Application Materials section.
7. **Fee.** The appropriate application fee should be submitted with application materials. Fees vary by program.
8. **Deadlines.** Deadlines for undergraduate and postbaccalaureate admission are February 1 for

fall and September 15 for spring. The deadline for MA+ is January 1.

## *Application Materials*

Individuals interested in completing the teacher education program at the University of Colorado Boulder should request application materials from the Office of Student Services, Education 151 or online at [www.colorado.edu/education/prospective](http://www.colorado.edu/education/prospective). Students currently enrolled in a degree program at Boulder will need to complete an application and submit official transcripts from all previous colleges to the Office of Student Services, Education 151. Transcripts must be mailed directly to the School of Education from the previous college to be considered official.

Individuals who have completed a baccalaureate degree at an accredited institution and are not currently enrolled at the university must complete a program application, a university application, and submit official transcripts from all previous colleges directly to the School of Education. Applications will not be processed until all materials are received in the Office of Student Services.

## Advising

Students are responsible for obtaining a student handbook and program checklist in Education 151, available online at [www.colorado.edu/education/students/teachereducation.html](http://www.colorado.edu/education/students/teachereducation.html). These materials include specific information for all teaching fields and information on how to seek advising.

Off-campus students may obtain advising materials online at [www.colorado.edu/education/students/teachereducation.html](http://www.colorado.edu/education/students/teachereducation.html) or by calling **303-492-6555**.

At CU-Boulder, degree requirements vary among the schools and colleges. Students seeking a degree at the University of Colorado should consult, as soon as possible, with an advisor in the college or school from which they expect to graduate and with the School of Education advisor.

Students are encouraged to become familiar with the teacher education requirements by comparing their own transcripts to the published advising materials. Students can then talk with an advisor before applying to the program or they may wait until after their applications are processed. Students seeking teacher training in French, German, Japanese, Latin, Russian, Spanish, or music should see the designated advisor for that teaching field in addition to the School of Education advisor.

Advising also may be obtained by e-mail through [EdAdvise@colorado.edu](mailto:EdAdvise@colorado.edu). When requesting e-mail advising, students should make questions as specific as possible.

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# Technology, Arts, and Media Program

The ever-expanding landscape of the networked age requires new and adaptable skill-sets, within both academic and commercial paradigms. In order to address this need, the Technology, Arts, and Media Program, based within the ATLAS Institute, offers two undergraduate programs: a minor in Technology, Arts, and Media (MTAM) and a smaller Certificate in Digital Media (CDM). The minor is intended for students who wish to pursue research and careers related to digital media, whereas the certificate is intended for students who are interested in the fundamentals of digital media production.

The course code for this program is ATLS.

## Minor in Technology, Arts, and Media (MTAM)

The minor in Technology, Arts, and Media (MTAM) provides a broad multidisciplinary perspective that integrates technological skills with a critical, theoretical, and historical understanding of technology, media, and the arts. The MTAM curriculum includes creative production courses, as well as classes that impart foundational knowledge and critical perspectives on the role of technology in society. Students from a wide range of majors receive instruction in digital media production, design, art criticism, computer programming, information technology, data visualization, media and societal analysis, and project development.

### Minor Goals

- to prepare the next generation of artists, designers, and media producers for the networked age
- to give students the necessary technical, theoretical, and historical backgrounds so they can contribute to the development of new functionalities and aesthetics for computer media
- to facilitate the exploration of the intersection of technology and other specific disciplines
- to produce active and critically aware participants and producers of technology

### Minor Requirements

- A minimum of **21** credit hours:
  - ATLS 2000 The Meaning of Information Technology
  - ATLS 3010 Digital Media 1
  - ATLS 3020 Digital Media 2
  - ATLS 3030 Fundamentals of Digital Design
  - Critical thinking in technology elective\*
  - Invention and practice elective\*
  - ATLS 4010 Capstone
- Students must maintain a 2.000 GPA within all MTAM courses.
- Students must earn a minimum grade of C in all courses counted for the minor.

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- Students may not take more than one elective course from a single department (this does not apply to ATLS courses).
- Course work used to satisfy MTAM requirements cannot be taken *pass/fail*.
- ATLS core courses cannot be substituted (ATLS 2000, ATLS 3010, ATLS 3020, ATLS 3030, ATLS 4010).
- A minimum of 15 credit hours must be taken on the Boulder campus.
- Failing to meet the minimum grade for any individual ATLS core course twice will result in automatic removal from the MTAM program.

\*See [tam.colorado.edu](http://tam.colorado.edu) for a current listing of approved elective courses.

## Course Substitutions

- Course work not on the approved elective list (including course work from another University of Colorado campus, another institution, Study Abroad, or Semester at Sea) must be approved by the MTAM Faculty committee. Students must complete a Course Substitution Petition Request Form and attach supporting documentation (syllabus).
- Substitution requests will not be considered if the student has already satisfied the requirement with an approved elective course.

## Certificate Program

### Certificate in Digital Media (CDM)

The Certificate in Digital Media (CDM) provides a fundamental understanding of information technology and digital media production. The program will motivate students to think critically about technology and its impacts upon society.

### Certificate Goals

- to equip students with a basic digital media skill-set
- to transform students from passive users of technology into active producers of technology

### Certificate Requirements

- A minimum of 12 credit hours:
  - ATLS 2000 The Meaning of Information Technology
  - ATLS 3010 Digital Media 1
  - Critical thinking in technology elective\*
  - Invention and practice elective\*
- Student must maintain a 2.000 GPA within all CDM courses.
- Students must earn a minimum grade of *C* in all courses counted for the certificate.
- Course work used to satisfy CDM requirements cannot be taken *pass/fail*.
- Core ATLS courses cannot be substituted (ATLS 2000, ATLS 3010).

\*See [tam.colorado.edu](http://tam.colorado.edu) for a current listing of approved elective courses.



# Telecommunications

## Graduate Degrees in Telecommunications

This interdisciplinary graduate curriculum offers MS and PhD degrees to students from a variety of technical and non-technical undergraduate backgrounds. Students obtain an understanding of the latest thinking and best practices relating to networking, wireless systems, cyber security, 21st century telecom technology, as well as business and regulatory policy frameworks. Graduates of this program will be able to apply their learning to many industries such as telecommunications, utilities, financial services, healthcare, e-commerce, and Internet-based organizations that rely on networks and information technology in the day-to-day operations of their businesses. This understanding is gained through course work, research, and laboratory studies. For more information, visit [telecom.colorado.edu](http://telecom.colorado.edu).

Course code for this program is TLEN.

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# Telecommunications

## *Graduate Degree Program(s)*

The Interdisciplinary Telecom Program provides the opportunity for study in technology, management, and policy of telecommunications systems including telephony, internet, wireless systems, and smart grids. Graduate students are offered courses on these technologies, how they are used, and future technology directions. This includes detailed study of technical aspects, and the financial and socioeconomic impact. Courses and laboratories are available in electrical, optical, and wireless transmission, switching, cable television, signaling, digital processing, computer protocols, smart grids and network design and management. Study also incorporates management, government and industry use, competitive trends, standards, regulatory practice, and all levels of communications and information law (local through international). Students can combine their ITP MS degree with MBA, Business, Engineering Management, and Law degrees.

ITP offers emphasis in the following areas: wireless technology, network security, networking, smart grids, telecom business strategy, regulation, policy, and more!

All students will have exposure to the topics below.

- **Internet:** Develop expertise in next-generation Internet architectures, technologies, applications, and protocols. Learn the technical details of baseline Internet technologies such as TCP/IP, routing, switching, address and domain name management, e-mail, and the World Wide Web (HTTP). Explore cutting edge topics including enhanced quality of service for streaming media, peer-to-peer protocols and architectures, caching, application-aware traffic management, and Internet security (anti-virus and anti-spam). Investigate the development and deployment of next generation access network technology such as WiMAX, 3G/4G, EVDO, DSL, and high speed cable networks (DOCSIS).
- **Communications:** Explore the evolution from specific networks to seamless, IP-centric, media-aware networks. Investigate the issues and technology necessary to build the next generation broadband networks designed to support delivery of real-time linear content (IPTV, broadcast video), non-real time stored content (Video on Demand and MP3 Audio), regional multicast content, and personalized individual content (VoIP, video conferencing) all delivered seamlessly to any end-point the customer desires (home, office, mobile).
- **Media:** Discover the impact of the Internet on content creation, distribution, and management. In our classrooms and labs, explore voice migration to VoIP; understand video and audio compression (MPEG4, wavelet); study technology supporting media delivery and consumption (Podcasting, PVR, TiVO MP3, ACC); and investigate trends in digital rights management (Windows Media, Real Networks, iTunes).
- **Business Strategy:** Study the strategic, financial, and entrepreneurial aspects of the migration from traditional networks and business models to the suite of new products and services enabled by ubiquitous broadband internet connectivity. Learn the basic economic theories that empower next-generation networks including network economics, first-mover advantage, versioning, information goods pricing, and launch strategies.
- **Law and Regulation:** Survey the legal, regulatory, and policy implications of an interconnected world. Learn about advances in intellectual property rights (patent, copyright, trademarks),

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spectrum management, content management, and government and emergency services (E911, wire tapping, universal service).

## Degrees Offered

- JD/MS, ME, MS, MS/MBA, PhD

## Degree Details

- MS in Telecommunications
- ME in Telecommunications
- PhD in Telecommunications
- ME Engineering Management/MS Telecommunications
- MBA/MS in Telecommunications with the Leeds School of Business
- BS Operations and Information Management (OPIM)/MS Telecommunications
- JD/MS in Telecommunications with the School of Law

## Certificate Program

### Telecommunications Certificates

Please refer to [telecom.colorado.edu](http://telecom.colorado.edu) for additional information, admission requirements, and application instructions.

**Admission.** Application deadline for spring 2013 is October 1, 2012.

### Certificate in Energy Communication Networks

The energy utilities are facing the retirement of 50 percent of their engineering and management employees in the next 10 years. Simultaneously, the energy industry is rocked by a dramatic shift in the technologies and policies that define their business. New technologies for distributed generation, communications and control, facilities automation, renewable energy sources, and operational management are all changing workforce requirements. There are exciting opportunities for a new generation of leaders who understand networking, wireless communication, and security in the context of the energy industry.

The benefits are:

- develop critical competencies in 12 to 18 months
- courses delivered both on campus and via asynchronous distance learning
- graduate credit earned can apply towards a master's in telecommunications or a master's in electrical and computer engineering
- interact with an industry-diverse and world-wide student body.

**Admission.** To apply, provide along with the application form a one page statement of purpose to Elizabeth Golder, [elizabeth.golder@colorado.edu](mailto:elizabeth.golder@colorado.edu). Fellowship seekers should keep in mind that fellowship awards are based on academic merit and financial need.

The certificate covers fundamentals of communication systems, data communications, energy systems, and smart grid technologies. The curriculum consists of four required courses:

- [TLEN 5310](#) (3): Telecommunications Systems
- [TLEN 5330](#) (3): Data Communications 1
- [TLEN 5830](#) (3): Energy Communication Networks

> [Engineering Management](#)

> [Environment, Policy, and Society](#)

> [Geophysics](#)

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- [ECEN 5007](#) (3): Introduction to Energy Systems

Students who have advanced experience in one or more of these classes may make substitutions as noted below. ECN certificate students must receive substitution approval in advance.

Substitutes for TLEN 5310:

- [TLEN 5350](#) Satellite Communication Systems
- [TLEN 5470](#) Signaling Protocols
- [TLEN 5480](#) Intro to Optical Fiber Communication
- [TLEN 5510](#) Wireless and Cellular Communications
- [TLEN 5520](#) Wireless LANs
- [TLEN 5560](#) Wireless Systems Lab

Substitutes for TLEN 5330:

- [TLEN 5400](#) Network Design and Optimization
- [TLEN 5410](#) Network Management and Operations
- [TLEN 5430](#) Data Communications 2
- [TLEN 5460](#) Telecommunications Lab
- [TLEN 5530](#) Applied Network Security
- [TLEN 5540](#) Network Security Lab
- [TLEN 5550](#) Foundation of Computer and Network Security
- [TLEN 5570](#) IP Network Design

Students who have an EE background should substitute the following class for ECEN 5007: [ECEN 5017](#) Conventional and Renewable Energy Issues.

## Certificate in Network Architecture

The Interdisciplinary Telecommunications Program (ITP) at the University of Colorado Boulder is proud to offer a Graduate Professional Certificate in Network Architecture.

The study of network architecture incorporates the designing of communications solutions based on a myriad of systems including theoretical and hands on experience.

- What happens behind the wall jack or wireless access point to which users connect?
- How does data travel along a business intranet?
- What happens after the data is delivered to your service provider?
- How does the service provider transport information to the destination, and what are the challenges of running applications across the entire network?

The benefits are:

- develop critical competencies in 12 to 18 months
- most courses delivered through both on campus and via asynchronous, distance learning (however, some hands-on coursework might require in-campus attendance)
- graduate credit earned can apply toward a masters' in telecommunication or a masters' in electrical and computer engineering
- interaction with an industry-diverse and world-wide student body
- training uses commercially available products and potentially students could complement their certificate by seeking out some vendor specific credentials.

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This certificate covers a wide range of topics and includes not only the fundamentals of how networks operate or how to configure these networks, but also how to approach network design in a practical manner. Topics range from technical theory to industry best practices. The curriculum consists of two required core courses and two electives. All certificate courses must be passed with a grade of *B* or better. The Network Architecture advisor can provide guidance for any questions you may have.

## Core Courses

- [TLEN 5330](#) Data Communications 1
- [TLEN 5460](#) Telecommunications Systems Lab

## Electives (choose two):

- [TLEN 5430](#) Data Communications 2
- [TLEN 5340](#) VoIP Network Design
- [TLEN 5370](#) IP Routing Protocols (classroom only)
- [TLEN 5400](#) Network Design and Optimization
- [TLEN 5410](#) Network Management and Operations
- [TLEN 5440](#) Multimedia Networking
- [TLEN 5462](#) Advanced Telecommunications Lab (classroom only)
- [TLEN 5470](#) Signaling Protocols
- [TLEN 5490](#) Network Programming
- [TLEN 5570](#) IP Network Design (classroom only)
- [CSCI 5273](#) Network Systems

Students may be exempted from enrolling in TLEN 5330 or TLEN 5460 with the successful completion of a written examination. (Students exempted from TLEN 5330 will be eligible to fulfill the certificate with 9 credit hours of study.) Students who are exempted from enrolling in TLEN 5460 will be required to replace the course by enrolling in TLEN 5462.

## Certificate in Telecommunications Policy

The Telecommunications industry must consider the policy, law, and economics that govern best practices.

- How do these affect the technical advances in network equipment and user trends?
- What are the legal pitfalls that must be avoided?
- How can one navigate the regulatory landscape to best design, deploy, and use telecommunications technology?

The certificate will provide expertise in the complex and continually changing legal, political, and regulatory dynamics that characterize the communications industry. The curriculum consists of two core courses and two advanced policy courses.

The benefits are:

- develop critical competencies in 12 to 18 months.
- courses delivered both on campus and via asynchronous, distance learning.
- graduate credit earned can apply toward a master's in telecommunications or a master's in electrical and computer engineering.
- interaction with an industry-diverse and world-wide student body.

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Students currently seeking the masters' degree who choose advanced policy options as part of their electives can earn this certificate without any additional course work beyond that required for the MS degree. All courses must be completed with a grade of B or better to be used towards the certificate. Contact the policy [advisor](#) with any additional questions or for help choosing certificate courses.

## Core Courses

- [TLEN 5010](#) Network Economics and Finance 1
- [TLEN 5210](#) Principles of Telecommunications Policy

## Elective Courses (select two):

- [TLEN 5020](#) Economics of Competition Policy
- [TLEN 5160](#) Information Technologies and Communications
- [TLEN 5230](#) Spectrum Management and Policy (formerly Topics in Telecom Policy)
- [TLEN 5240](#) Telecom Law and Policy
- [TLEN 5250](#) Technology Law and Policy Clinic (classroom only)
- [TLEN 5380](#) The Future of Video: Technology, Policy and Economics
- [TLEN 5831](#) International Telecommunications Policy
- [TLEN 5835](#) Introduction to Trustworthy Computing
- [TLEN 5832](#) Privacy, Security, and Digital Rights Management
- [TLEN 5833](#) Law for the Information Age
- [TLEN 5833](#) Law and Economics of Utility Regulation
- [TLEN 5835](#) Antitrust Law
- [TLEN 5255](#) Computer Crime Seminar

In addition, we often offer special topics courses related to policy. Please contact the policy [advisor](#) to identify options.

## Certificate in Computer and Network Security

To understand network security requires more than simply taking an introductory course on network security; it requires a comprehensive understanding of not only how networks operate but also how users behave on the network. Simply designing a technically secure network fails to appreciate the social engineering vulnerabilities facing modern networks. To actually protect networks requires a detailed and well-executed process, one that includes substantial technical, behavioral, economic, accounting, and policy understanding. Therefore, students must gather a wide range of training and experiences to truly understand what is required to secure a network.

The benefits are:

- develop critical competencies in 12 to 18 months
- courses delivered both on campus and via asynchronous, distance learning
- graduate credit earned can apply toward a master's in telecommunications or a master's in electrical and computer engineering
- interaction with an industry-diverse and world-wide student body

The certificate covers a wide range of topics and includes not only the fundamentals of how networks operate and how to secure these networks, but also how to approach security in a practical manner. Security issues and topics range from technical theory to legal procedures. The curriculum consists of two required core courses and two electives:

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## Core Courses

- [TLEN 5530](#) Applied Network Security
- [TLEN 5540](#) Network Security Lab

## Electives (2 of the following required):

- [TLEN 5410](#) Network Management and Operations
- [TLEN 5462](#) Advanced Telecommunications Lab (security projects only)
- [TLEN 5470](#) Signaling Protocols
- [TLEN 5832](#) Privacy, Security and Digital Rights Management
- [TLEN 5834](#) Information Privacy
- [TLEN 5255](#) Computer Crime Seminar
- [CSCI 6268](#) Computer and Network Security cross listed / [TLEN 5550](#)
- [CSCI 7000](#) Cryptography (Last offered Spring 2010)
- [ECEN 5022](#) Cryptography (Last offered Spring 2008)

In addition, we frequently offer special topics courses related to security. Please contact the computer and network security [Advisor](#) to identify options.

## Certificate in Wireless Networks and Technology

Wireless is everywhere. There are almost twice as many cell phones in the world today than there are wireline service connections. Cell phone users not only make billions of phone calls, but last year they sent 135 billion text messages from their cell phones. Wireless LANs and hotspots are gaining ground in the marketplace, and new wireless technologies and standards are being developed to further advance the wireless world.

There is a continuing need for personnel who understand wireless technologies. Network administrators and technicians must know what a given product can and cannot do, how to select the right product, how to deploy a reliable wireless network, how different wireless products might interact, and the security and vulnerability characteristics of wireless networks. Higher level management should understand the regulatory and legal aspects of owning and operating wireless networks as well as the cost-benefit tradeoffs between wireless vs. non-wireless options. Managers should also understand the opportunities now offered by new-generation (3G) cell phone technologies in maintaining contact with mobile employees.

The benefits are:

- develop critical competencies in 12 to 18 months.
- courses delivered both on campus and via asynchronous, distance learning.
- graduate credit earned can apply toward a master's in telecommunications or a master's in electrical and computer engineering.
- interaction with an industry-diverse and world-wide student body.

The certificate program covers a range of wireless and LAN issues, and includes topics ranging from technical theory to legal procedures. It is designed to satisfy the needs of working professionals and students with technical, legal, or business backgrounds. The curriculum consists of two required core courses and two electives.

## Core Courses

[TLEN 5510](#) Wireless and Cellular Communications

- [TLEN 5520](#) Wireless LANs

## Electives

- TLEN 5190 Standardization and Standards Wars
- [TLEN 5230](#) Topics in Telecom Policy: Spectrum
- TLEN 5260 Law for the Information Age
- [TLEN 5350](#) Satellite Communication Systems
- [TLEN 5440](#) Multimedia Networking ([View Syllabus](#))
- [TLEN 5470](#) Signaling Protocols
- [TLEN 5832](#) Seminar: Software Defined Radio
- [TLEN 5834](#) Standards: Business, Law, Policy
- [TLEN 5839](#) Cognitive Radios
- ECEN 5692 Principles of Digital Communication
- CSCI 5273 Network Systems
- ASEN 5090 Intro to Global Navigation Satellite Systems

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# The Leadership Residential Academic Program at Williams Village

The Leadership Residential Academic Program at Williams Village houses two academic programs for students with an interest in leadership studies: the **Ethnic Living and Learning Community Leadership Studies Program (ELLC)** and the **Chancellor’s Leadership Studies Program (CLSP)**.

**Admission and Enrollment.** Students select one of the leadership programs in the Leadership RAP during the housing application process prior to beginning their freshman year. When students choose their residence hall they are given the option to enroll in one of these programs. Most participants reside at Williams Village. More information about these programs can be found at [LeadershipRAP.colorado.edu](http://LeadershipRAP.colorado.edu).

## The Ethnic Living and Learning Community Leadership Studies Program

The Ethnic Living and Learning Community Leadership Studies Program (ELLC) offers students a multicultural living and learning experience and the opportunity to study leadership from a multicultural and global perspective. Students are required to take a 3-credit-hour leadership course and the ELLC Practicum each semester of their freshman year. In these courses, students explore their roles and responsibilities in society including the moral and ethical dimensions of leadership. Students also learn about contemporary issues related to leadership and take part in activities that develop teamwork, ethical decision making, and problem solving. Credits earned from these courses may be applied toward graduation as well as a Certificate in the Study and Practice of Leadership.

### *ELLC Curriculum and Semester Credit Hours*

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society (spring)—3
- LDSP 2910 Field Practicum (1 credit each semester of freshman year)—1
- LDSP 3100 Multicultural Leadership: Theories, Principles and Practices—3
- LDSP 4010 Critical Issues in Leadership—4

### **Fees and Scholarship Opportunities**

There is a \$850 program participation fee. Some scholarships to cover the fee are available for students with financial need. A LEAD Alliance scholarship of \$1,500 per year is also available to qualifying ELLC students.

## The Chancellor’s Leadership Studies Program

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**The Leadership Residential Academic Program at Williams Village**

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The Chancellor's Leadership Studies Program (CLSP) examines the academic foundations of leadership and engages students in practical applications of leadership through simulations and class projects. Utilizing an experiential learning model, students learn the basics of decision making, problem solving, dialogue skills, ethical reflection, and an understanding of how institutions and communities solve problems. Students take a required 3-credit-hour leadership course fall semester and must take at least one CLSP course in the spring. Credits earned from these courses may be applied toward graduation as well as a Certificate in the Study and Practice of Leadership.

### ***CLSP Curriculum Semester Credit Hours***

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 1571 Topics in Leadership—1
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society (spring)—3
- LDSP 2910 Field Practicum—1
- LDSP 3100 Multicultural Leadership: Theories, Principles and Practices —3
- LDSP 4010 Critical Issues in Leadership—4

### **Fees and Scholarship Opportunities**

There is a \$850 program participation fee.

## ***Certificate Program***

### **Certificate in the Study and Practice of Leadership**

ELLC and CLSP students who complete 10 credits of approved lower-division courses and 8 credit hours of approved upper-division courses with a 3.000 GPA as well as a pre-approved supervised internship are eligible to earn a Certificate in the Study and Practice of Leadership. The certificate is comparable to a minor in leadership studies and is noted on a student's transcript at graduation.

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

- LDSP 1000 The Foundations of 21st Century Leadership—3
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society —3
- Students must take 2 credits from the following courses. These classes are repeatable for credit:
  - LDSP 1561 Compassionate Leadership and Mindfulness—1
  - LDSP 1571 Topics in Leadership—1
  - LDSP 2910 Field Practicum—1

#### **Sophomore Year**

- One approved lower-division elective—3

#### **Junior Year**

- LDSP 3100 Multicultural Leadership: Theories, Principles, and Practices— 3
- One approved upper-division elective—1-3
- Internship—can be completed during academic year or during the summer.

#### **Senior Year**

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## Theatre and Dance

The Department of Theatre and Dance offers undergraduate and graduate degrees in both theatre and dance. These programs combine traditional studies with practical training. Ambitious seasons of theatre productions and dance concerts feature student performers and student designers, directors, and choreographers. Guest artists of national and international fame often participate in curricular and extracurricular activities. Recent guests have included Art Bridgman/Myrna Packer, Rennie Harris, Heidi Henderson, Kathleen Hermesdorf, Deborah Jowitz, Darrell Jones, Susan Marshall & Co., Bebe Miller, David Dorfman, Joe Goode, Kevin Wynn, and Shelley Senter in dance; Ami Dayan, Terry Berliner, Lee Blessing, Jim Moody, Tim Miller, Holly Hughes, Jane Page, Joan Schirle, Karen Finley, and Mark Medoff in theatre.

Students interested in theatre and dance are urged to consult with an advisor in the appropriate field to obtain both advice and the most current information concerning program opportunities and expectations.

Course codes for this department are THTR and DNCE.

### Theatre

The undergraduate degrees in theatre emphasize knowledge and awareness of:

- the major works of dramatic literature that are representative of the most important eras in the development of theatre and drama in the western world;
- the history of theatrical production—its styles, conventions, and socially related mores—from the ancient Greeks to the present time;
- the various means through which a theatrical concept is realized; and
- the aesthetic and intellectual relationship between theatre in its various 21st century modes and contemporary society.

In addition, students completing a degree in theatre are expected to acquire the ability and skills to:

- analyze and interpret plays and performances with particular attention to acting and performance of literature, designing, directing, and/or playwriting and criticism;
- use, with safety and efficiency, the tools and equipment basic to theatre production technology;
- communicate to an audience through at least one of the components of theatrical art—acting, directing, designing, playwriting, or criticism; and
- function effectively as a member of a production team in the preparation of regularly scheduled public productions.

### Dance

The CU Dance Program is designed to provide a well-rounded dance education including both physical and intellectual training that instill concrete skills in performance and choreography as well

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as an appreciation of the role that dance plays in human culture around the world. The following areas of knowledge and experience are central to all the undergraduate degrees in dance:

- physical accomplishment at a basic level in a range of dance styles, including contemporary, ballet, jazz, African, and other world dance traditions, and advanced study of at least one of these styles, according to the student's individual interests;
- experience with the process and underlying aesthetics of dance creation and composition;
- basic familiarity with cultural, sociological, and aesthetic issues important to the contemporary realities of the field of dance, including a working knowledge of major world dance styles, works of dance literature, and the history of dance;
- knowledge of the various means, such as stagecraft, costuming, makeup, and promotion, through which a public presentation of dance is realized;
- study and practical experience with the act of teaching dance, including issues of creativity, style, and pedagogical appropriateness;
- basic knowledge of tactics for prevention of injury to the dancer's body, first aid and approaches to rehabilitation from injury, and of various somatic approaches to dance training; and
- experiential study of the relationship between dance and music, including concrete practice of skills in playing and hearing music.

In addition, students completing a degree in dance are expected to acquire the ability and skills to:

- actively participate in dance as an art form with particular attention to at least one of the following areas of dance: performance, choreography, dance production, scholarship, pedagogy, or criticism;
- understand and mobilize knowledge of appropriate use of the anatomy and physiology of the body in performance and teaching;
- communicate effectively to an audience through at least one of the components of dance—performance, choreography, teaching, or scholarship; and
- function constructively as a member of a dance community in the preparation of regularly scheduled public productions.

BA and BFA students are expected to take at least one course each in contemporary, ballet, jazz, and African dance technique before the end of their sophomore year. Dance majors must earn a C- or better in all required courses. Students who have not placed in the major technique class (DNCE 2021, 3041, or 4061) by their second semester in dance program are strongly advised not to continue in the major program in dance. Placement into and successful completion of major technique is a prerequisite for enrollment in other required dance courses.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Theatre and Dance BA Degree in Theatre

The BA degree program in theatre requires 44 credit hours in theatre, 3 in dance, and 6 in dramatic literature and/or global arts outside the department. It is a broadly based program of theatre practice and study for the student who may wish to pursue in-depth studies in another area as well. It also serves as the core of studies for a student who wishes to pursue further theatre training in one of the BFA areas of concentration. A grade of C- or better is needed in each required course toward the BA degree.

Students must complete the general requirements of the College of Arts and Sciences and the

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required courses listed below.

### **Required Courses and Semester Credit Hours**

- THTR 1011 Development of Theatre 1: Global Ancient and Classical Theatre—3
- THTR 1019 Theatre Foundations—3
- THTR 1105 Stage Technologies—3
- THTR 1115 Costume Technologies—3
- THTR 2003 Acting 1—3
- THTR 2005 Introduction to Theatre Design—3
- THTR 2021 Development of Theatre 2: Modern Theatre and Drama—3
- THTR 3035 Practicum (including section 821 Tech Studio)—5
- THTR 3149 Professional Orientation—2
- THTR 4021 American Theatre and Drama—3
- THTR 4149 Theatre Internship—1
- One upper-division performance course from the following:—3
  - THTR 3043 Voice for the Stage
  - THTR 3053 Acting 2
  - THTR 4059 Open Topics: Performance for Justice and Development
  - THTR 4063 Audition Techniques
  - THTR 4073 Performing Voices of Women
  - THTR 4103 Acting for Camera
- Electives in theatre (all must be upper-division)—9
- Electives in dance—3
- Electives in dramatic literature and/or global arts, outside the Department of Theatre and Dance, including at least 3 upper-division—6

### **Curriculum Notes**

1. Choices must be advisor approved; BFAs do not have the same options as BAs.
2. BFA Performance students must take 3 credits in Shakespeare (ENGL 3563 or 3573).
3. No more than 2 credit hours of THTR 3035 may be taken in a given semester.

Recommended sequence of courses during the initial year of theatre major program, BA and BFA:

- THTR 1011 Development of Theatre 1—3
- THTR 1019 Theatre Foundations—3
- THTR 1105 Stage Technologies—3
- THTR 1115 Costume Technologies—3
- THTR 2003 Acting 1—3

### **Graduating in Four Years with a BA in Theatre**

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BA in theatre, students should meet the following requirements:

- Complete THTR 1011, 1105, 1115, 1003, 2003, or 1019, and 2021 by the end of the fourth semester
- Complete 6 upper-division credit hours plus 1 credit of THTR 3035 by the end of the fifth semester
- Complete 9 additional upper-division credit hours, including all practicum/ tech studio

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> **Theatre and Dance**

> [Western American Studies](#)

> [Western Civilization Studies](#)

> [Women and Gender Studies](#)

> [Writing and Rhetoric, Program for](#)

> [Faculty: Arts & Sciences](#)

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requirements by the end of the sixth semester

- Complete 6 additional upper-division credit hours, plus all 3 credits in dance by the end of the seventh semester
- Complete THTR 4021 by the end of the eighth semester

## BFA Degree in Theatre

The BFA degree programs in theatre offer preprofessional training to a limited number of highly motivated and talented students aiming at professional careers. The BFA student pursues one of three possible areas of concentration: performance, theatre design, technology and management, or musical theatre.

Admission is limited not only due to student capacity, but also to ensure the type of individual attention necessary for effective training. Interested students should identify themselves as early as possible.

Formal application to the musical theatre concentration should be made concurrent with application to the university. Auditions/interviews will be held at the regular spring auditions for the College of Music. Formal application to the performance concentration should be made at the beginning of the second semester. Formal application to the design/technology/management concentrations should be made at the beginning of the third semester.

Admission is based on talent, academic record, motivation, and audition-interviews. Contact the department for information concerning auditions for these BFA tracks.

The college counts only 67 credit hours of THTR credits toward the total hours required for graduation. A grade of C- or higher is needed in each course required to fulfill the requirements of the BFA degree.

In addition to the general College of Arts and Sciences requirements for the BA degree, requirements for the BFA degree are as follows. (Courses taken as part of a student BFA concentration cannot also be counted towards fulfillment of the BA electives.)

### ***Required Courses and Semester Credit Hours***

### ***Concentration in Performance***

#### ***Required Courses and Semester Credit Hours***

61 credit hours are required in THTR, plus 9 in other disciplines. Students accepted into the performance concentration each year constitute an ensemble and as a group follow the required sequence of courses. Specific details about this sequence are available from the department. Students in this concentration must fulfill BA requirements in theatre, with specified electives, and are required to audition for major season productions each semester.

- THTR 3013 Studio 1: Building a Character—3
- THTR 3023 Studio 2: Creating a Role—3
- THTR 3033 Acting Practicum (1 credit repeated twice)—2
- THTR 3043 Advanced Voice for the Stage—3
- THTR 4013 Studio 3: Acting Shakespeare—3
- THTR 4023 Studio 4: Playing with Styles—3
- THTR 4033 Movement for the Actor—3
- THTR 4193 Studio 5: Creating an Ensemble—3

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## *Concentration in Design, Technology, and Management*

### **Required Courses and Semester Credit Hours**

62 credit hours are required in THTR, plus 15 in other disciplines. Students in the design, technology, and management concentration must fulfill BA requirements in theatre as advised and will use the electives in the BA requirements to fulfill prerequisites for the following:

- THTR 2035 Design Fundamentals—3
- THTR 4085 Theatre Management—3
- THTR 4555 Production Studio (1–2 credits repeated for a total of 6)—6
- Four Advanced Technical Theatre electives (as advised)—12
- As advised, courses in other departments in drawing, painting, drafting, sculpture, and/or environmental design—6

## *Concentration in Musical Theatre*

### **Required Courses and Semester Credit Hours**

60 credit hours are required: 26 in THTR courses, 4 in DNCE courses, and 30 in the College of Music. See department website for audition information and application, [www.colorado.edu/theatredance/theatre/education.html](http://www.colorado.edu/theatredance/theatre/education.html).

#### **Theatre/Dance**

- THTR 1019 Theatre Foundations—3
- THTR 1105 Stage Technologies—3
- THTR 1115 Costume Technologies—3
- THTR 2003 Acting 1—3
- THTR 3011 Development of American Musical Theatre—3
- THTR 3035 Production Practicum—3
- THTR 3135 Tech Studio—2
- THTR 3053 Acting 2 or THTR 2043 Voice for the Stage—3
- THTR 4039 Musical Theatre Repertory—3
- Electives in Dance Technique—4

#### **Music**

- (MUSC 1081 Intensive Music Theory—(3)
- MUSC 1101 Music Theory 1—2
- MUSC 1111 Music Theory 2—2
- MUSC 1121 Aural Skills—1
- MUSC 1131 Aural Skills—1
- MUSC 1802 Introduction to Music History—3
- PMUS 1105 Keyboard Musicianship 1—1
- PMUS 1205 Keyboard Musicianship 2—1
- PMUS 1726 Voice—9
- PMUS 4137 Opera Theatre 1—1
- PMUS 4147 Opera Theatre 2—1
- PMUS 4157 Opera Practicum—2
- Non-Western Music History (2000–4000 level)—3

- Western Music History (2000–4000 level)—3

## *Graduating in Four Years with a BFA in Theatre*

Consult the Four-Year Guarantee Requirements for information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BFA in theatre, students should meet the following requirements:

- All potential BFA students in musical theatre must declare, in writing, their intention to audition before December 1, the year before they intend to start at CU. Actual auditions and interviews for the performance and design/technology concentrations must take place by the second semester of study. Students who are accepted into a major in these BFA concentrations must declare their major immediately upon acceptance. In addition to the specific course requirements listed for completing a BFA degree in the performance and design/technology/management concentrations, students must fulfill all requirements for the BA degree in theatre. Once accepted into a BFA concentration, students should meet with a departmental advisor to confirm, in writing, specific courses to be completed within the remaining semesters of study.
- As part of the first two years of study, all students who intend to enter the BFA programs in performance and design/technology must complete the following courses: THTR 1011, 1019, 1105, 1115, 2003, and one semester of 3035.

### **Performance Concentration**

- Upon acceptance to the performance concentration, students must meet immediately with a departmental advisor. All BFA performance majors must complete the following courses in the prescribed order: THTR 3013, 3023, 3043, 4013, 4023, 4093. Students are also encouraged to complete EMUS 1184 (voice).
- All students in this concentration must audition for all main stage departmental productions.

### **Theatre Design, Technology, and Management Concentration**

- Upon acceptance to the theatre design, technology, and management concentration, students must meet immediately with a departmental advisor.
- Students in this concentration must take THTR 1019 Theatre Foundations as well as complete a design course in their chosen area by the end of the sophomore year.

### **Musical Theatre Concentration**

All potential BFA musical theatre students must declare in writing, during the application process, their intention to audition by submitting the appropriate pre-audition materials ([www.colorado.edu/TheatreDance/theatre/application2.html](http://www.colorado.edu/TheatreDance/theatre/application2.html)). Students who are accepted into the BFA musical theatre concentration must confirm their decision to enroll as TBFA MUS immediately upon acceptance following the audition. They must also meet immediately with a departmental advisor.

## **Dance**

BA and BFA students are expected to take at least one course each in contemporary, ballet, jazz, and African dance technique before the end of their sophomore year. Dance majors must earn a C- or better in all required courses. Students who have not placed in the major technique class (DNCE 2021, 3041, or 4061) by their second semester in dance program are strongly advised not to continue in the major program in dance. Placement into and successful completion of major technique is a prerequisite for enrollment in other required dance courses.

# BA Degree in Dance

## *Required Courses and Semester Credit Hours*

- DNCE 1012 Dance Production 1—2
- DNCE 1013 Improvisation—2
- DNCE 1027 Introduction to Dance and Culture—3
- DNCE 2501 African Dance—2
- DNCE 2005 Movement Awareness and Injury Prevention for the Dancer—3
- DNCE 2014 Rhythmic Analysis—2
- DNCE 2021 or DNCE 3041 or DNCE 4061 Major Technique (Note 1)—6
- DNCE 2033 Beginning Composition—3
- DNCE 4015 Movement Analysis—3
- DNCE 4016 Creative Dance for Children or DNCE 4036 Methods of Teaching Dance—3
- DNCE 4017 History and Philosophy of Dance—3
- DNCE 4037 Looking at Dance—3
- DNCE 4939 Senior Project: Internship—1-3
- THTR 1115 Costume Technologies—3
- THTR 3035 Practicum—2
- THTR 4029 Touring Ensemble—2
- THTR 4081 Senior Seminar—3
- Electives in dance technique courses ending in “1” (Note 1)—6
- General electives in dance—2

## **Curriculum Note**

*1. Students are placed at the appropriate level based on audition. Students without sufficient training will be asked to take nonmajor technique classes to make up the deficiency. These classes will not count toward the degree requirement.*

## ***Graduating in Four Years with a BA in Dance***

Consult the Four-Year Guarantee Requirements for more information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BA in dance, students should meet the following requirements:

- Declare the major by the beginning of the second semester.
- Complete by the end of the sophomore year: 2 credits of DNCE 2021, 3041, or 4061; 2 credits of DNCE 2501.
- Complete by the end of sophomore year: DNCE 2005, 1012, 1013, 1027, 2014, and 2033; THTR 1115, 3035, and 4029.
- Complete during junior and senior years: DNCE 4037, 4015, 4016 or 4036, and 4017.
- Complete during senior year: DNCE 4939, THTR 4081.
- Complete additional 4 hours of DNCE 2021, 3041, or 4061; 6 hours of additional courses ending in “1”; and 2 hours of dance electives at appropriate time with the advice of the advisor.

# BFA Degree in Dance

The BFA in dance is designed to meet the needs of highly talented students interested in preparing for a professional dance career while in an academic setting. The degree requires 67 credit hours in dance and 12–13 hours in theatre. Admission is limited by faculty consent to ensure the type of individual attention necessary for effective training. Students apply during the third semester while taking DNCE 2033. Students should be advised that 9 or 10 semesters are often needed to complete the BFA program. More than 120 hours may be needed for graduation.

## **Required Courses and Semester Credit Hours**

- DNCE 1012 Dance Production 1—2
- DNCE 1013 Improvisation—2
- DNCE 1027 Introduction to Dance and Culture—3
- DNCE 2501 African Dance—2
- DNCE 2005 Movement Awareness and Injury Prevention for the Dancer—3
- DNCE 2014 Rhythmic Analysis—2
- DNCE 2021, 3041, or 4061 Major Technique (Note 1)—12
- DNCE 2033 Beginning Composition—3
- DNCE 3024 Musical Resources—2
- DNCE 3043 Intermediate Comp—3
- DNCE 3601 Alexander Technique—2
- DNCE 4012 Concert Production—1
- DNCE 4015 Movement Analysis—3
- DNCE 4016 Creative Dance for Children or DNCE 4036 Methods of Teaching Dance—3
- DNCE 4017 History and Philosophy of Dance—3
- DNCE 4037 Looking at Dance—3
- DNCE 4053 Advanced Composition—3
- DNCE 5052 Studio Concert—3
- THTR 1003 or 2003 Acting or DNCE 4023 Performance Improvisation Techniques—2-3
- THTR 1115 Costume Technologies—3
- THTR 3035 Practicum—1
- THTR 4029 Touring Ensemble—4 in progress
- THTR 4081 Senior Seminar—3
- Electives in dance technique courses ending in “1” (Note 1)—9
- Electives in dance—3

### **Curriculum Note**

*1. Students are placed at the appropriate level based on audition. Students without sufficient training will be asked to take nonmajor technique classes to make up the deficiency. These classes will not count toward the degree requirement.*

## ***Graduating in Four Years with a BFA in Dance***

Consult the Four-Year Guarantee Requirements for more information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress toward a BFA in dance, students should meet the following requirements:

- Acceptance into the BFA by the end of the third semester with consent of dance faculty.
- Complete by the end of the sophomore year: 4 credits of DNCE 2021, 3041 or 4061; 2 credits of DNCE 2501.
- Complete by the end of the sophomore year: DNCE 1012, 1013, 1027, 2005, 2014, 2033; THTR 1115, 3035 and 2 credits of THTR 4029.
- Complete during junior or senior years: DNCE 3024, 3043, 4012, 4015, 4016 or 4036, 4037, 4053; 2 credits of THTR 4029 in progress.
- Complete during senior year: DNCE 5052, THTR 4081.
- Complete at appropriate time with advice from advisor: 8 additional credits of DNCE 2021, 3041, or 4061; 9 hours of dance technique courses ending in “1”; 3 credits of dance electives; DNCE 3601; THTR 1003 or 2003 or DNCE 4023.

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## Minor Programs

The minor in dance is designed to provide the student with a broad overview of dance. Requirements include a minimum of 20 credit hours; 9 of which must be upper division; a minimum grade of C- in each dance class; and a minimum of a 2.000 GPA for all dance courses. Transfer students may apply a maximum of 9 transfer hours with a maximum of 6 upper-division hours to the dance minor.

- Required courses: 10 credit hours  
Two of the following 3-credit courses: DNCE 1027 Introduction to Dance and Culture, DNCE 3027 Looking at Dance, DNCE 4017 History and Philosophy of Dance
- Plus 4 additional credits of dance technique (courses ending in 0 or 1), which could include DNCE 1013 Improvisation
- Elective courses: 10 credit hours

Students select courses from the dance curriculum based on their interests and course availability.

## *Graduate Degree Program(s)*

### Graduate Degrees in Theatre and Dance

The MA and PhD degrees are offered in theatre. The MFA degree is offered in dance. A joint MA/MBA degree is offered in theatre with the CU Leeds School of Business.

**Departmental Requirements.** Students wishing to pursue graduate work in theatre or in dance should carefully read both requirements for advanced degrees in the Graduate School section and the following departmental requirements. Students should note that departmental requirements are sometimes more comprehensive than those minimums established by the Graduate School.

**Prerequisites.** Applicants are admitted to the graduate program in theatre and in dance on the basis of their academic records and recommendations. Students admitted who are unable to offer a substantial number of credit hours of work in the area of their intended specialization or allied fields must expect that a significant number of additional courses and credit hours are required of them in order to make up deficiencies.

Applicants for the MFA program in dance must audition in person; international students may audition in digital format. Applicants are expected to show a high level of proficiency in dance performance and choreography. Contact the dance office for specific audition dates; auditions are usually held in February for admission the following fall. The deadline for applications from U.S. citizens is December 15; from non-U.S. citizens, it is December 1. Applicants who want to apply for graduate part-time instructor (GPTI) positions must apply by December 1.

**Diagnostic Meeting.** Every student will have a meeting with faculty upon entering the program. Topics discussed in the meeting and other available information are employed to design the best possible course of study for the student. This evaluation may indicate course work as necessary above and beyond the required hours for the degree.

**Advisor and Graduate Committee.** For every student who declares an intention to work toward an advanced degree, an advisor and committee are designated so that a degree plan may be designed before the end of the first semester of residence.

All candidates for a degree have the responsibility of making certain that the appropriate persons or committees have been appointed to supervise the various steps in their graduate programs. Detailed instructions are available from the department.

## Master's Degree in Theatre

**Course Requirements.** All master's degree students in theatre are required to complete THTR 5011,

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6009, and two of the following: THTR 6011, 6021, 6031, or 6041. Students can choose either a thesis or nonthesis track program.

After any undergraduate deficiencies have been removed, students must earn 30 semester hours, at least 16 of which must be in THTR courses at the 5000 level or above. Four to six thesis credit hours may be counted toward the 30-hour requirement. At least 24 of the 30 hours must be at the 5000-level or above.

## Doctoral Degree in Theatre

Doctoral students in theatre are normally expected to earn 30 credit hours of course work beyond the master's degree at the 5000-level or above. When approved by the student advisory committee, credits from other departments on campus may count, provided the course is taught by a member of the graduate faculty in that department.

Doctoral study in theatre is based on the following core of required advanced courses.

- THTR 5011 Theory and Criticism
- THTR 6009 Research Strategies and Techniques
- Plus three of the following:
  - THTR 6011 On-Stage Studies: Classical and Neoclassical Drama
  - THTR 6021 On-Stage Studies: Elizabethan and Jacobean Drama
  - THTR 6031 On-Stage Studies: American Theatre and Drama
  - THTR 6041 On-Stage Studies: Modern European Drama

Beyond the core courses, studies are determined by students and their advisors, consistent with Graduate School and departmental requirements. Doctoral students are required to demonstrate proficiency in a foreign language equivalent to the completion of a second-semester college level before taking the comprehensive exam. In addition to the 30 hours of course work, 30 dissertation credits (THTR 8999) are required.

## MFA Degree in Dance

**Course Requirements.** The three-year program requires a minimum of 60 credit hours, at least 30 of which must be taken in dance at the 5000 level or above. The program focuses on performance/choreography and secondary areas of specialization. At least 6 credit hours must be taken outside of dance in an approved allied field. The program is designed to accommodate recent BA or BFA graduates and practicing professionals desiring a graduate degree who have a bachelor's degree.

The MFA in dance is based on a required core of courses including contemporary dance, ballet, African dance, Alexander technique, choreography, history, readings in dance, seminars in dance and music, research strategies, pedagogy, and a creative project or thesis. Contact the department for detailed information.

**Project or Thesis.** In the second year of the degree program, a written proposal for a creative project or thesis must be presented and approved. Upon its completion, an oral defense of the project or thesis is required.

**Graduate Comprehensive Essay Portfolio.** Three well defined essays are submitted during the final semester that demonstrate knowledge of scholarly sources and articulation of personal philosophy.

## *Dual Degree Programs*

### Master of Business Administration/Master of Arts in Theatre

The Leeds School of Business, in conjunction with the Department of Theatre and Dance, offers students the ability to earn an MBA and an MA in theatre through a three-year dual-degree program. Students in the MBA/MA dual-degree program pursue careers in a wide variety of fields and jobs in the world of the performing arts. Types of organizations include theatre companies, dance companies, opera companies, symphonies, arts councils, performing arts complexes, civic auditoriums, and arts presenters.

**Admission.** An individual must apply separately and be admitted to both programs under each school's or college's admission procedures and standards. Applicants are encouraged to apply to the two programs concurrently.

**Course of Study.** Students in the MBA/MA in theatre spend the first year of their dual-degree program exclusively in either the business school or the theatre/dance program. In the second year, courses are taken exclusively in the other department. The third year offers students the opportunity to take both MBA and theatre/dance elective courses.

**Credit for Courses.** Dual-degree students are required to complete 43 hours of MBA course work and 24 hours of theatre/dance course work. A minimum of 67 approved credits must be completed to earn both degrees.

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## Western American Studies

The Center of the American West offers an undergraduate certificate program in Western American Studies for students who have an intellectual commitment to any of a broad range of issues and aspects of the American West, including history and literature, culture and society, and economic and environmental challenges facing western communities. Courses involve students in an exploration of the past, an appreciation for traditional and contemporary stories and art in the region, and an understanding of western landscapes, ecosystems, and the factors that affect them.

The certificate program is interdisciplinary, drawing on courses and expertise from over a dozen departments spanning the humanities, natural sciences, and social sciences. Course work may be taken concurrently with undergraduate studies. Students complete 18 credit hours of course work including the introductory course, CAMW 2001, and the capstone course, CAMW 4001. Contact the Center of the American West at **303-735-1399** or visit [www.centerwest.org/academics/certificate](http://www.centerwest.org/academics/certificate) for program details.

Course code for this program is CAMW.

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## Western Civilization Studies

The Center for Western Civilization (CWC) offers an undergraduate certificate program, Foundations of Western Civilization, for students interested in a rigorous grounding in Western culture. The certificate promotes critical reflection and academic research on the traditions and issues that characterize Western civilization through the study of Western culture, science, and government in their ancient, medieval, and modern forms. It helps students understand their role as citizens in a nation founded on the ancient ideals of consensual rule and republican government.

The curriculum is interdisciplinary with over 30 courses taught by faculty in departments that include classics, English, history, philosophy, religious studies, and Germanic languages and literatures. The certificate requires the completion with a grade of C- or better of eight courses (24 credit hours), of which 15 credit hours must be at the upper-division level. Up to three courses (or nine credit hours) may come from the student's major. In addition, students must fulfill the requirements for a BA in their major in a school or college at the University of Colorado. For more information on the program, requirements, and current course offerings ([www.colorado.edu/cwc](http://www.colorado.edu/cwc)), contact CWC Director Robert Pasnau at **303-492-4837** or [pasnau@colorado.edu](mailto:pasnau@colorado.edu).

Course code for this program is CWCV.

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# Women and Gender Studies

The interdisciplinary women and gender studies undergraduate major and minor offer students a rigorous but flexible program of study that examines women, gender, and sexuality in relation to race, class, national identity, and ability. Students explore the ways that gender and sexuality work in diverse communities and in different cultural and historical contexts. Areas of inquiry include but are not limited to: gender/sex systems across cultures and historical periods; gender, sexuality, and culture; legal and public policy issues around gender and sexuality; women's participation in social and cultural production; transnational feminisms; feminist theory and its relation to different philosophical and epistemological traditions; sexual identity politics and histories; and queer theory. Drawing from approximately 50 courses, many cross-listed with other academic units, students fulfill the requirements of the major or minor and can design an emphasis relevant to their special interests by focusing on one of three cognate areas: gender/sexuality, race/ethnicity, or global/transnational. The program houses a reading library and organizes colloquia, workshops, and other cultural and educational events.

Students have gone on to careers in fields such as law, medicine, government, public health, public policy, social work, teaching, counseling, advocacy, media, public relations, education, politics, fundraising, small business development, librarianship, and arts administration.

The undergraduate degree and the minor in women and gender studies will provide students with an in-depth understanding of:

- the historical and cross-cultural variability of social norms of masculinity and femininity
- the ways in which gender/sex systems intersect with other axes of domination, such as class, race, ethnicity, ability, and national identity
- the centrality of gender and sexuality to politics, economics, social relations, and culture at the local, national, and international level
- the diversity of global feminism
- how gender roles and expectations play out in the global economy
- how power and privilege function at the intersection of gender, sexuality, race, class, ability, and national identity
- how women participate in, contribute to, and transform areas of social life including politics, economics, social relations, culture, and religion
- institutionalized discrimination and violence against women, girls, and LGBTQ individuals
- women's activism and resistance to oppression
- the varied research methods and theoretical perspectives used in women, gender, and sexuality studies, including the relationship between theory and practice
- the history of women, gender, and sexuality studies as an academic discipline and the main themes that have characterized its emergence

In addition, students with degrees in women and gender studies will be able to:

- communicate complex ideas related to women and gender studies to academic and general

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audiences

- employ creative problem solving techniques, especially with regard to research and analysis of the issues noted in the previous section
- organize and synthesize material in new ways, especially with regard to research and analysis of the issues noted in the previous section
- read, critically evaluate, and synthesize women and gender studies scholarship
- work collaboratively with colleagues and the general public, especially with regard to the issues noted in the previous section

For more information, visit [wgst.colorado.edu](http://wgst.colorado.edu).

Course code for this program is WMST.

## *Bachelor's Degree Program(s)*

### Bachelor's Degree in Women and Gender Studies

Students must complete the general requirements of the College of Arts and Sciences and the required courses listed below.

#### *Required Courses and Semester Credit Hours*

Students must complete a minimum of 36 credit hours with grades of C- or better in approved women and gender studies courses, a minimum of 24 credits of which must be upper division (3000 or 4000 level).

#### Required Courses—12 semester credit hours

- WMST 2000 Introduction to Feminist Studies—3
- WMST 2600 Gender, Race, and Class in a Global Context—3
- WMST 3100 Feminist Theories—3
- WMST 4800 Senior Colloquium in Feminist Studies—3

#### Lower-division Elective Courses

(no more than 6 additional credit hours at the 1000–2000 levels)

Students may choose from any of the lower-division courses listed below, or courses approved by the women and gender studies advisor and the department, that are not applied to courses listed either above or below.

- LING 2400 Language and Gender—3
- LGBT/ENGL 2707 Introduction to Lesbian, Bisexual, and Gay Literature—3
- WMST/SOCY 1006 Social Construction of Sexuality or WMST/SOCY 1016 Sex, Gender, and Society 1—3
- WMST/ENGL 1260 Introduction to Women's Literature—3
- WMST 2020 Fемinities, Masculinities, Alternatives—3
- WMST 2030/LGBT 2000 Introduction to Lesbian, Gay, Bisexual, and Transgender Studies—3
- WMST 2050 Gender, Sexuality, and Popular Culture—3
- WMST 2200 Women, Literature, and the Arts—3
- WMST 2400/HIST 2636 Women of Color and Activism—3
- WMST/PSYC 2700 Psychology of Contemporary American Women—3

#### Upper-division Courses

- > Classics
- > Cognitive Science Studies
- > Communication
- > Comparative Literature Graduate Program
- > Distributed Studies Program
- > Ecology and Evolutionary Biology
- > Economics
- > English
- > Environmental Studies
- > Ethnic Studies
- > Film Studies
- > French and Italian
- > Geography
- > Geological Sciences
- > Germanic and Slavic Languages and Literatures
- > History
- > Humanities
- > Integrative Physiology
- > International Affairs
- > INVST Community Studies
- > Jewish Studies
- > Lesbian, Gay, Bisexual, Transgender, and Queer Studies
- > Linguistics
- > Mathematics
- > Medieval and Early Modern Studies

(at least 18 credit hours; total credits hours must come to 36)

Students must take at least one course from each of the following cognate areas: gender/sexuality; race/ethnicity; global/transnational. For the remaining 9 credits, students may take additional courses from these three categories and/or the upper-division electives list. Consult the women and gender studies advisor or the department for additional choices.

### **Gender/Sexuality (at least 3 credits)**

- LGBT 3796 Queer Theory—3
- WMST/SOCY 3046 Topics in Sex and Gender—3
- WMST 3300/PSCI 3301 Gender, Sexuality, and U.S. Law—3
- WMST 4010/SOCY 4000 Gender, Genocide, and Mass Trauma—3
- WMST/SOCY 4016 Sex, Gender, and Society 2—3
- WMST/LGBT 4287 Studies in Lesbian, Gay, Bisexual, and Transgender Literature—3
- WMST/HIST 4636 Lesbian and Gay History—3
- WRTG 3020 Topics in Writing: Gender and Sexuality—3

### **Race/Ethnicity (at least 3 credits)**

- ETHN 3026 Women of Color: Chicanas in U.S. Society—3
- WMST/SOCY 3044 Race, Class, Gender, and Crime—3
- WMST 3135/ETHN 3136 Chicana Feminisms and Knowledges—3
- WMST 3210/ETHN 3213 American Indian Women—3
- WMST 3505/ETHN 3502 Historical and Contemporary Issues of African American Women—3
- WMST 3600 Latinas: History, Culture, and Social Activism—3
- WMST 3900/ETHN 3905 Asian American Women: Historical and Contemporary Issues—3
- WMST/JOUR 4331 Gender, Race, Class, and Sexuality in Popular Culture—3
- WMST/HIST 4619 Women in Asian History—3

### **Global/Transnational (at least 3 credits)**

- WMST/SOCY 3012 Women and Development—3
- WMST 3220 Women in Islam—3
- WMST 3500 Global Gender Issues—3
- WMST 3650/PSCI 3052 Women and Politics in Latin America—3
- WMST 3670 Immigrant Women in the Global Economy—3
- WMST/GEOG 3672 Gender and Global Economy—3
- WMST 3730 Third World Women and the Politics of International Development—3
- WMST 4300 Sex, Power, Politics: International Perspectives—3
- WMST 4500 Gender Politics and Global Activism—3

### **Upper-division Electives**

- ARTH 3209 Art, Culture, and Gender Diversity: 1400–1600—3
- ENGL 3217 Topics in Gender Studies—3
- FILM 3013 Women and Film—3
- HIST 3016 Seminar in the History of Gender and Science—3

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> [Scandinavian \(now Nordic Studies\)](#)

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> [Theatre and Dance](#)

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ITAL 4730 Italian Feminisms: Culture, Theory, and Narratives of Difference—3

- WMST 3000 Gender, Work, and Public Policy—3
- WMST/SOCY 3016 Marriage and the Family in the United States—3
- WMST 3020 Methods of Inquiry in Gender, Race, Class, and Sexuality—3
- WMST 3090 Critical Thinking in Feminist Studies—3
- WMST/PHIL 3110 Feminist Practical Ethics—3
- WMST/JWST 3200 Religion and Feminist Thought—3
- WMST/ENGL 3267 Women Writers—3
- WMST/INVS 3302 Facilitating Peaceful Community Change—3
- WMST/PSCI 3311 Gender and U.S. Politics—3
- WMST/SOCY 3314 Violence against Women and Girls—3
- WMST/GRMN 3601 German Women Writers—3
- WMST 3800 Advanced Writing in Feminist Studies—3
- WMST/THTR 4041 Women and Theatre of the 20th and 21st Centuries—3
- WMST/HIST 4063 Women in Victorian England—3
- WMST/THTR 4073 Performing Voices of Women—3
- WMST/SOCY 4086 Family and Society—3
- WMST/ENGL 4277 Topics in Women's Literature—3
- WMST/RUSS 4471 Women in 20th Century Russian Culture—3
- WMST/HIST 4614 Women and Society in Industrial Europe—3
- WMST/HIST 4616 History of Women in the U.S. to 1890—3
- WMST/HIST 4626 History of Women in the U.S. since 1890—3

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### **Honors**

Students may take up to 6 credits of honors hours in WMST; credits apply to upper-division electives in the major.

- WMST 4950 Honors Research—3
- WMST 4999 Senior Honors Thesis—1-3

### **Internship**

Students may take up to 6 credits of internship hours in WMST; credits apply to upper-division electives in the major.

- WMST 3930 Women and Gender Studies Internship—1-6

### **Special Topics**

Students may take up to 6 credit hours in WMST topics courses; course topics vary each semester. Ask the women and gender studies advisor or department about how each course applies to major cognates.

- WMST 3700 Topics in Gender and Sexuality Studies—3
- WMST 3710 Topics in Global Gender and Sexuality Studies—3
- WMST 4000 Advanced Topics in Gender and Sexuality Studies—3

## *Graduating in Four Years*

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Consult the Four-Year Guarantee Requirements for more information on eligibility. The concept of “adequate progress” as it is used here only refers to maintaining eligibility for the four-year guarantee; it is not a requirement for the major. To maintain adequate progress in women and gender studies, students should meet the following requirements:

- Declare major by the beginning of the second semester.
- Complete WMST 2000 and WMST 2600 and 8 additional credit hours of major requirements by the end of the fourth semester.
- Complete WMST 3100 and 27 total credit hours of major requirements by the end of the sixth semester.
- Complete WMST 4800 and one additional 3-credit course of the major requirements by the end of the eighth semester.

## *Minor Program*

A minor program in women and gender studies is offered. Declaration of a minor is open to any student enrolled at CU-Boulder, regardless of college or school.

Students must complete a minimum of 21 approved WMST credit hours with a grade of C- or better, 12 credits of which must be upper-division (3000 or 4000 level).

### **Required Courses and Semester Credit**

#### **Required (9 credit hours)**

- WMST 2000 Introduction to Feminist Studies—3
- WMST 2600 Gender, Race, and Class in a Global Context—3
- WMST 3100 Feminist Theories—3

#### **Electives (12 credits)**

Students must take at least two courses (6 credits) from two of the three following cognate areas: gender/sexuality; race/ethnicity; global/transnational. Three of the remaining 6 credits can be any upper-division approved WMST course (those listed under cognate areas or upper-division electives), and 3 can be either a lower or upper-division approved WMST course. Internships and independent study credits may apply, as well as special topics courses (WMST 3700 and 3710); see advisor or department for more information.

#### **Cognate Areas (6 credit hours from two areas)**

##### **Gender/Sexuality**

- LING 2400 Language and Gender—3
- LGBT 3796 Queer Theory—3
- WMST/SOCY 3046 Topics in Sex and Gender—3
- WMST 3300/PSCI 3301 Gender, Sexuality, and U.S. Law—3
- WMST 4010/SOCY 4000 Gender, Genocide, and Mass Trauma—3
- WMST/SOCY 4016 Sex, Gender, and Society 2—3
- WMST/LGBT 4287 Studies in Lesbian, Gay, Bisexual, and Transgender Literature—3
- WMST/HIST 4636 Lesbian and Gay History—3
- WRTG 3020 Topics in Writing: Gender and Sexuality—3

##### **Race/Ethnicity**

- ETHN 3026 Women of Color: Chicanas in U.S. Society—3
- WMST/SOCY 3044 Race, Class, Gender, and Crime—3
- WMST 3135/ETHN 3136 Chicana Feminisms and Knowledges—3
- WMST 3210/ETHN 3213 American Indian Women—3
- WMST 3505/ETHN 3502 Historical and Contemporary Issues of African American Women—3
- WMST 3600 Latinas: History, Culture, and Social Activism—3
- WMST 3900/ETHN 3905 Asian American Women: Historical and Contemporary Issues—3
- WMST/JOUR 4331 Gender, Race, Class, and Sexuality in Popular Culture—3
- WMST/HIST 4619 Women in Asian History—3

### **Global/Transnational**

- WMST/SOCY 3012 Women and Development—3
- WMST 3220 Women in Islam—3
- WMST 3500 Global Gender Issues— 3
- WMST 3650/PSCI 3052 Women and Politics in Latin America—3
- WMST 3670 Immigrant Women in the Global Economy—3
- WMST/GEOG 3672 Gender and Global Economy—3
- WMST 3730 Third World Women and the Politics of International Development—3
- WMST 4300 Sex, Power, Politics: International Perspectives— 3
- WMST 4500 Gender Politics and Global Activism—3

### **Lower-division Electives**

- LING 2400 Language and Gender—3
- LGBT/ENGL 2707 Introduction to Lesbian, Bisexual, and Gay Literature—3
- WMST/SOCY 1006 Social Construction of Sexuality or WMST/SOCY 1016 Sex, Gender, and Society 1—3
- WMST/ENGL 1260 Introduction to Women's Literature—3
- WMST 2020 Femininities, Masculinities, Alternatives—3
- WMST 2030/LGBT 2000 Introduction to Lesbian, Gay, Bisexual, and Transgender Studies—3
- WMST 2050 Gender, Sexuality, and Popular Culture—3
- WMST 2200 Women, Literature, and the Arts—3
- WMST 2400/HIST 2636 Women of Color and Activism—3
- WMST/PSYC 2700 Psychology of Contemporary American Women—3

### **Upper-division Electives**

- ARTH 3209 Art, Culture, and Gender Diversity: 1400–1600—3
- ENGL 3217 Topics in Gender Studies—3
- FILM 3013 Women and Film—3
- HIST 3016 Seminar in the History of Gender and Science—3
- ITAL 4730 Italian Feminisms: Culture, Theory, and Narratives of Difference—3
- WMST 3000 Gender, Work, and Public Policy—3
- WMST/SOCY 3016 Marriage and the Family in the U.S.—3
- WMST 3020 Methods of Inquiry in Gender, Race, Class, and Sexuality—3
- WMST 3090 Critical Thinking in Feminist Studies—3

- WMST/PHIL 3110 Feminist Practical Ethics—3
- WMST/JWST 3200 Religion and Feminist Thought—3
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- WMST/SOCY 3314 Violence against Women and Girls—3
- WMST/GRMN 3601 German Women Writers—3
- WMST 3800 Advanced Writing in Feminist Studies—3
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- WMST/SOCY 4086 Family and Society—3
- WMST/ENGL 4277 Topics in Women's Literature—3
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- WMST/HIST 4616 History of Women in the U.S. to 1890—3
- WMST/HIST 4626 History of Women in the U.S. since 1890—3

## *Certificate Program*

### Graduate Certificate in Women and Gender Studies

The Graduate Certificate in Women and Gender Studies is designed to provide graduate students with opportunities to think in an interdisciplinary fashion about women and gender, and is available to students currently enrolled in a graduate disciplinary degree or professional degree program.

Requirements are 9 semester hours of course work in Women and Gender Studies and one additional course equaling 3 semester hours to be approved by the women and gender studies graduate advisor, for a total of 12 semester hours.

For more information, visit [wgst.colorado.edu/graduate](http://wgst.colorado.edu/graduate).

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## Writing and Rhetoric, Program for

The Program for Writing and Rhetoric (PWR) is a free-standing unit in the College of Arts and Sciences responsible for campus-wide instruction in expository writing. The program coordinates and oversees all writing curricula and instruction intended to meet college and campus requirements, including efforts in specific disciplines and targeted campus programs.

The program is committed to training students to think critically about the texts they read and the writing they produce, and to enable them to shape and express ideas with clarity and grace in any context: academic, professional, or civic. Classes are generally conducted as intensive writing workshops, placing a premium on thoughtful, substantive revision.

The program offers both lower-division and upper-division courses, as well as some graduate seminars. Certain undergraduate courses fulfill the College of Arts and Sciences written communication requirement, and some also fulfill graduation requirements in other colleges. Students should check with their advisors to be sure that they are taking the right course to fulfill their requirement.

For information about specific classes and their instructors, students should visit [www.colorado.edu/pwr](http://www.colorado.edu/pwr).

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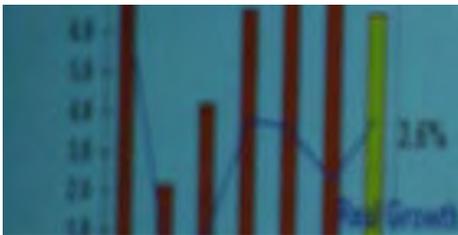
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# College of Architecture & Planning



314 UCB • phone: 303-492-7711 • fax: 303-492-6163  
college website: [www.colorado.edu/envd](http://www.colorado.edu/envd)

THE COLLEGE OF ARCHITECTURE AND PLANNING at the the University of Colorado Boulder prepares students for careers in **architecture, urban and regional planning, landscape architecture design, and urban design**. The college offers undergraduate education in these fields in an environment ideally suited to the needs of undergraduate students. With a diverse faculty committed to excellence in teaching, research, scholarship, and creative and professional work, the college provides students with a varied range of learning opportunities.

Individual classes are delivered jointly by three departments: **architecture studies, landscape studies, and planning studies**. These courses of study prepare students for careers in one of the professions responsible for shaping the designed environment. In addition to these pre-professional emphases, the college also offers an interdisciplinary option: design studies. This program prepares students for other careers that value the special qualities that an education emphasizing design thinking and design practice offers.

Many students intending to enter the design and planning professions complete the college's undergraduate degree at CU-Boulder as preparation for entry into the college's graduate-level professional programs at the University of Colorado Denver Downtown Campus, where they may receive advanced standing in those graduate programs as an outcome of the work they have done in the ENVD program. Graduate-level professional programs are offered by a wide range of schools and programs nationally, and students graduating from the college's undergraduate program often receive advanced standing in those graduate programs as a result of the courses they will have completed as undergraduates in Boulder.

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# Overview of the College

## The College's Vision

The faculty has adopted a vision for the college that focuses on the concept of Integrative Design. This vision asserts that the creation of meaningful and beautiful environments involves:

- focusing on real world relevance, stressing technical, environmental, economic, social, cultural, aesthetic, and ethical concerns;
- creating and using a knowledge base for design and planning decisions;
- fostering a multidisciplinary culture of individuals who are each expert in one of the core designing and planning disciplines; and
- seeking and supporting a rich diversity of ideas and people to support the diverse communities served.

This vision positions the college to confront the significant challenges that will affect the design professions in the next few decades. A common concern shared by the departments is that digital technology has dramatically transformed the way we represent and model design projects and solutions. Consequently, students receive training in the most innovative computer-aided-design programs and are exposed to the technologies of 3-dimensional visualization, rapid prototyping, and computer-guided fabrication.

## The Design Professions

Students thinking about studying design in an undergraduate setting as a way to prepare for a career in one of the design professions should have a strong overall high school academic background, including four years of English and math and at least three years of natural science (including physics and/or biology) and social science. Extra course work in math, social studies, and the arts and humanities is recommended.

The discipline of design and its fields of architecture, planning, and landscape architecture deal with formulating solutions to many of the problems people face in their homes and cities, as well as suburban and natural environments. Architecture focuses on the design of buildings, while planning is concerned with the formulations of policies guiding the development of neighborhoods, cities, and regions. Landscape architecture focuses on both of these scales.

The college's undergraduate program, located on the Boulder campus, offers the only pre-professional education in the fields of architecture and planning in the state of Colorado. Graduate professional degrees in architecture, landscape architecture, urban and regional planning, and urban design are offered by the college on the university's Denver Campus.

To prepare for graduate professional study in architecture, landscape design, or planning/urban design, students may choose an undergraduate emphasis in one of these disciplinary areas. An individually structured emphasis in design studies is also available. All four of these emphases—

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architecture, landscape design, planning/urban design, and design studies—lead to the award of the bachelor of environmental design degree (BEnvd) as preparation for entry into graduate professional degree programs and the workplace.

## Undergraduate Program

The college has taken a broad and integrated view of the design professions in developing its undergraduate curriculum and emphases. In recent years the problems and opportunities facing the design professions have changed dramatically, and demand a broader educational experience than the individual professions traditionally have supplied.

To prepare students for the constantly evolving nature of the design professions, the college asks them to enroll in a wide range of courses in the humanities, the arts, and the natural and social sciences so that they can view the world and contemporary culture from a variety of viewpoints.

Unlike undergraduate education in many other fields, students in architecture, planning, and design learn by doing. They experience design under the guidance of the college's exceptional faculty, and from practicing designers in the Denver/Boulder metropolitan area. From the first day of the freshman year, students actively integrate and synthesize the knowledge gained in lectures and related course activities in their hands-on design classes.

The college's required core classes throughout the entire curriculum are taught communally so that students from all design disciplines study shared problems together. Architects, landscape architects, urban and regional planners, urban designers, technologists, and environmental designers need to understand each other's perspectives, and increasingly work together to find solutions to the complex issues involved in the design of the built environment.

The undergraduate program in environmental design promotes the development of a body of knowledge that allows each student to understand and appreciate:

- the major theoretical perspectives used to inform the way we design our physical environments and the significance of the designed environment in the evolution of human culture;
- the different methodologies and processes used to give shape to our spaces, buildings, gardens, neighborhoods, towns, cities, and landscapes;
- the complex interactions that take place between the physical, ecological, social, cultural, behavioral, and historical factors that influence the form and quality of designed environments;
- the ethical perspectives that inform the way we work to design environments and settings that are healthy, sustainable, appropriate, and beneficial; and
- the social, cultural, historical, and professional contexts within which environmental design is learned, practiced, and perfected.

In addition, the program supports the development of a range of methods and practices that encourages students to:

- explore and use the design process as the unique way of thinking used to give shape and form to the designed environment, and to realize its value as the common process that architects, planners, and designers use to effect appropriate change in the designed environment;
- effectively and creatively design environments and settings—spaces, buildings, gardens, neighborhoods, towns, cities, and landscapes—using appropriate theories, precedents, methods, tools, and technologies;
- use verbal, visual, and written materials to communicate design intentions and

environmental outcomes so that students can work effectively as interns and professionals in the different fields that make up that group recognized as the design professions.

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# Facilities

Facilities for the college's programs in Boulder are provided in the Environmental Design building. The administrative and faculty offices, conference rooms, lecture rooms, and exhibit spaces are located on the first floor of the building.

The Visual Resource Center with its photo and portfolio labs and image collections supplement the design studios, which are located on the second and third floors of the building. Studio space is provided for all students during the academic semesters. Students in the lower-division studios and recitations typically use shared desks in the second floor studio, while upper-division studios are given access to individual desks and partitioned studio spaces in the third floor of the ENVD building and at the Center for Innovation and Creativity (CINC) facility.

Beginning and advanced computer facilities, including scanning, plotting, and printing labs, are available to students in the building. A specialized digital simulation lab on the third floor allows students to explore the cutting-edge field of digital visualization/production.

The college also offers its students access to specialized workshop, computer, and studio facilities that focus on the use of advanced technologies for design visualization, production, and simulation in the CINC facility on the CU-Boulder East Campus.

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# Careers in the Design Professions

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The college offers its undergraduate students access to unique professional opportunities through its combination of undergraduate and graduate curricula. The Boulder BEnvd degree, when combined with the Denver MArch, MURP, or MLA degrees, offers students access to an accredited professional education in architecture, urban and regional planning, or landscape architecture. ENVD graduates receive advanced standing in those graduate programs as an outcome of the work they have done in the ENVD program, and this allows them to complete the graduate degree in a shorter time—normally three to four semesters in graduate planning programs, and four to five in graduate architecture and landscape architecture programs.

## Architecture

The National Architectural Accrediting Board, which is responsible for the accreditation of all professional architecture programs in the United States, requires that accredited architecture programs publish the following statement:

*"In the United States, most state registration boards require a degree from an accredited professional degree program as a prerequisite for licensure. The National Architectural Accrediting Board (NAAB), which is the sole agency authorized to accredit U.S. professional degree programs in architecture, recognizes three types of degrees: the Bachelor of Architecture, the Master of Architecture, and the Doctor of Architecture. A program may be granted a 6-year, 3-year, or 2-year term of accreditation, depending on the extent of its conformance with established educational standards. Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree that, when earned sequentially, constitute an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree."*

The BEnvd degree awarded by the college at the end of four years of study is not accredited by the NAAB as a professional degree. However, the BEnvd degree may be combined sequentially with a NAAB accredited master of architecture degree program to become an accredited professional education in architecture as defined by the NAAB. In this sequential program of study, students completing the BEnvd will normally be asked to complete a minimum of four semesters of additional course work (60 hours of credit) after admission into an accredited MArch program, either on the college's Downtown Denver Campus, or in one of the other NAAB accredited graduate programs nationally.

## Planning

The practice of planning is currently not licensed in most states. Professional membership and

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certification is overseen by the American Planning Association (APA) and the American Institute of Certified Planners (AICP). Degrees in the field are accredited by the Planning Accreditation Board (PAB) of the Association of Collegiate Schools of Planning.

Although students interested in entry-level positions in planning may find the BEnvd degree adequate, an advanced degree (master's or PhD) is highly desirable and advisable. Students primarily interested in professional practice should obtain a master's degree in urban planning, in urban and regional planning, in urban planning and community development, or in urban design. Students interested in teaching or research in planning should complete a PhD.

Students from the undergraduate program who continue their studies in the graduate professional planning program in Denver are given advanced standing when accepted into the program. Copies of the policies relating to advanced standing are available in the college office. Though the amount of advanced standing received is directly related to the specific course work completed in the undergraduate program, undergraduate planning emphasis students who continue in the graduate planning program typically receive between 9 and 15 semester hours of credit, and complete master's-level graduate studies in two or three semesters.

## Landscape Design

To obtain a license, landscape architects should have an advanced education and work experience, as well as pass the national examination. In the United States, licensing is overseen both at the state level and nationally by the Council of Landscape Architectural Registration Boards (CLARB). Accreditation is voluntary. The Landscape Architectural Accreditation Board (LAAB) accreditation process evaluates each program and provides an assessment. The landscape architecture program offers a graduate professional degree (the Master of Landscape Architecture or MLA) on the downtown campus of UC Denver. Advanced Standing status is evaluated on a case-by-case basis and will be determined in accordance with prior academic accomplishments as demonstrated in the application portfolio and transcript.

## Design Studies

There is an increasing demand in the design, construction, and development industries for people who combine an understanding of design with a specialized understanding of related fields like computing, management, finance, or marketing. Some students may use the design studies major as general preparation for graduate study in any number of academic fields that are also concerned with the design and planning of the built environment, including anthropology, geography, sociology, psychology, historic preservation, and architectural, urban, and environmental history. Other students may use this emphasis to prepare for further graduate study in a professional field related to architecture, landscape architecture and planning, including business, law, journalism, public administration, product design, and digital design. Design thinking is increasingly recognized in the business world as a valuable expertise in the analysis of the design of corporate structures and business plans.

As the design studies curriculum is individually tailored to each student, students in this emphasis must outline and receive approval of their individual course plan by a faculty sponsor and the college dean's office before entering the design studies emphasis. Participants in this emphasis are expected to attain a competent level of understanding and skill in architecture, landscape design, or planning. They are expected to demonstrate proficiency in design thinking and design practice as these relate to architecture, landscape design, or planning/urban design by completing the requirements of the five-semester, 75-credit core. Once admitted to the design studies emphasis, students are expected to develop and demonstrate a high level of understanding and proficiency in one specialized aspect of these fields, or in one of the cognate fields. A minimum of 30 hours of course work must be completed after approval of entry into the design studies emphasis.



## Study Abroad

The College of Architecture and Planning and the Office of International Education urge design students to participate in one of the various study abroad programs offered for university credit. Study abroad opportunities are coordinated by and offered through the Office of International Education. These immersion semesters are offered to upper-division undergraduate students and are facilitated during the sixth semester of the curriculum. The study abroad program provides an academically challenging academic and cultural experience with extensive local support.

Specific architectural programs are offered in Sydney, London, Florence, Denmark (DIS), and Barcelona. These courses offer students an opportunity to study the process of design in another culture and to examine their own perceptions and attitudes toward design. For more information about the study abroad programs, contact the Office of International Education, University of Colorado Boulder, 123 UCB, Boulder, CO, 80309-0123, **303-492-6016**, or at [www.colorado.edu/oie](http://www.colorado.edu/oie).

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## College Lecture Series

The college's lecture series enables students and faculty to meet people whose work significantly contributes to the different fields that make up the design professions in America. All students registered in the College of Architecture and Planning attend convocations and special lectures throughout the year. In addition, the college sponsors an annual lecture series, with lectures at both the Boulder and Denver sites. Other professional organizations and design-related institutions in the metro area also sponsor lectures and events that are open to the college's students.

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# Academic Excellence

## Recognition of Scholarship

As a professionally oriented school, the College of Architecture and Planning provides an atmosphere for study and creative investigation in which the attainment of quality is held in the highest esteem. In recognition of high scholarship and professional attainment, the college grants scholarly honors at graduation.

## Honors at Graduation

Students achieving a grade point average of 3.500 to 3.749 (honors) and 3.750 to 4.000 (special honors) are recognized at commencement. Honors are based on course work completed at the University of Colorado.

## Scholarships, Loans, Awards, and Prizes

A wide range of scholarships, prizes, and other awards are available to the college's BEnvd undergraduate students. They are sponsored by the college, the campus, the professions, and other foundations and donors. A list of available scholarships and awards, together with application information and the application schedule for all scholarships and awards, is published at the beginning of the spring semester in the ENVD office and on the college website.

In addition to these scholarships, interested students may participate in faculty-student research projects funded by the Summer Undergraduate Research Experience (SURE) and by the Undergraduate Research Opportunities Program (UROP) programs, or in other research projects funded by one of the college's four research centers. The college does offer a substantial recruitment scholarship for incoming freshmen.

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# Academic Standards

## On This Page:

- [Student Rights and Responsibilities](#)
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- [Ethics and Academic Dishonesty](#)
- [GPA Requirements, Probation, and Scholastic Suspension](#)

## Student Rights and Responsibilities

The College of Architecture and Planning is part of an academic community whose mission requires an open learning and working environment for students, faculty, staff, and administrators. An open learning and working environment values and protects individual dignity and the integrity of human relationships, and is based upon mutual trust, freedom of inquiry, freedom of expression, and the absence of intimidation and exploitation. Any infringement upon these freedoms and rights may be cause for review by the college or by other university offices. Undergraduates in the College of Architecture and Planning are subject to the policies and procedures governing student rights and responsibilities published in this catalog. Please refer to the relevant sections outlining explicit policies governing issues of sexual harassment and discrimination, and review the full code of student conduct.

## Ethics and Academic Dishonesty

Students in the College of Architecture and Planning are subject to the Boulder campus Honor Code and are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Any act of academic dishonesty may receive sanctions from individual faculty and also be reported to the Honor Code Office. For a full description of Honor Code expectations and policies please refer to the Honor Code section of this catalog or to [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode).

## GPA Requirements, Probation, and Scholastic Suspension

A student must achieve a grade of C- or better in all courses applied toward graduation requirements, excluding general electives. A limit of six credit hours of general electives that receive a minimum grade of D- may be credited toward the degree if the student has maintained a minimum cumulative grade point average of 2.000.

As a general rule, students who fail to meet the minimum cumulative grade point requirement (2.000) are permitted to continue their studies on a probationary basis during the following semester. Scholastic records of students are reviewed as soon as possible after the close of the probationary semester, and students are informed in writing if they are to be suspended.

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When a student is suspended, the reasons for the suspension are recorded and placed in the student's file. The student is asked to define the problems and draft a plan for dealing with them in consultation with their academic advisor. It is the responsibility of the academic advisor to monitor the student's progress.

Students on suspension are not allowed to register on any campus of the University of Colorado while on suspension, except continuing education or regular campus summer sessions. A suspended student must raise his or her CU cumulative grade point to a 2.000 or higher to be eligible for readmittance into the college. Suspended students are readmitted on a case-by-case basis by review of the college.

Students in the College of Architecture and Planning who withdraw two semesters in a row will have a dean's stop placed on their registration. Summer Session is not counted as a regular semester. They will not be readmitted to return to CU-Boulder before one full academic year has elapsed (not including the semester of withdrawal).

Students suspended a second time are reinstated only under special circumstances. Students who believe that their situations warrant a departure from these normal stipulations may petition for reinstatement. The college looks with favor on such petitions only if the student has shown marked improvement in academic work or if there are unusual circumstances that have contributed to the student's academic difficulties.

## Attendance

Students are expected to attend classes regularly and to comply with the attendance regulations specified by their instructors. At the beginning of each semester, instructors inform students of policies governing grading policies and attendance in each class. Students who miss a final examination for illness or other good reason must notify the instructor or the college office no later than the end of the day on which the examination is given.

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# Admission & Enrollment Policies

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- [Credit Policies](#)
- [Residence Requirement](#)
- [Computing in the College](#)
- [Pass/Fail Credits](#)
- [Advising](#)

The College of Architecture and Planning currently offers emphases leading to specialized majors in architecture, landscape architecture, design studies, and planning/urban design within its environmental design degree program. All new students initially enter the college as environmental design majors. Completion of the 75 credit lower-division core leads to entry into one of four specialized upper-division emphases—architecture, landscape architecture, planning/urban design, and design studies. Policy questions may be directed to **303-492-7711** or [askAP@colorado.edu](mailto:askAP@colorado.edu).

## Requirements for Admission

Candidates for admission to the College of Architecture and Planning are expected to meet the general requirements for admission to the university. See [Undergraduate Admission](#) in the General Information section for specific requirements.

### *Transfer Students*

Transfer students entering the college are admitted through the University of Colorado Boulder's admission process directly into the ENVD degree program. Since the College of Architecture and Planning has a limited enrollment, all qualified students are not guaranteed admission. A college GPA of 2.750 or higher is required. Preference is given to students who have taken college-level courses in the areas of architecture, planning, or environmental studies. Completion of courses in related fields of social science, natural science, fine arts, or humanities is also considered in admission review. All course work except the last term, if in progress, must be completed and must be listed on the official transcript sent for admission consideration.

Students are encouraged to transfer as early as possible in their undergraduate career due to the large amount of design- and planning-related course work required by the different ENVD curricula. All transfer students, like freshmen, enter the college as environmental design (ENVD) students into the five semester sequence of work, and then apply for admission to one of the four emphasis majors—architecture, landscape design, planning/urban design, or design studies—in the final semester of their junior year. While transfer students are admitted for the fall and spring terms each year, it is important to note that the core curriculum is a fall semester start. All transfer students are required to take a minimum of 30 semester hours in the College of Architecture and Planning.

A maximum of 60 semester hours taken at a two-year college may be applied toward the baccalaureate degree. In general, credits in vocational-technical courses are not accepted for transfer by the college. Transfer agreements between the University of Colorado and all Colorado community colleges outline approximately one year of prescribed general education courses that may be

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completed as preparation for transfer into the College of Architecture and Planning. As noted above, students should plan to transfer to the University of Colorado as soon as possible to start the sequential curriculum. See [Undergraduate Admission](#) under General Information in this catalog for admission standards for transfer.

Transfer students from other universities offering pre-professional or accredited professional degree programs in one of the college's areas of emphasis who enter CU-Boulder may be admitted to the ENVD degree program with advanced standing. A portfolio review will be required for these students. Please contact the ENVD Advising Office for information. In order for transfer credit to meet core degree requirements, a grade of B or better is required in the transferring class.

### *Intrauniversity Transfer (IUT)*

University of Colorado students in good standing who are interested in pursuing a design education may apply for transfer into the college. IUT meetings are held for interested students several times each semester. Students should contact the college offices for the dates of meetings and deadlines for application review for specific semesters. Completion of specified introductory courses may be required before an IUT application for transfer into the college can be considered. Due to the curriculum requiring a fall semester start, prospective IUT students must complete specified courses in the fall semester. Students who apply for IUT into the college will be notified in early January, following the posting of fall semester grades. Because of the limited number of spaces available in the program, admission is competitive and grade point average plays a significant role in the application process. It may also serve as a basis for entry to introductory courses required for IUT application. All IUT students are admitted as ENVD open option students, and must select an upper-division emphasis following the processes described in the ENVD curriculum section that follows.

## Credit Policies

### *Advanced Placement*

Advanced Placement and college credit may be granted on the basis of the College Board's Advanced Placement tests. For students who have taken Advanced Placement course work in high school and receive scores meeting university standards in the Advanced Placement examination, Advanced Placement as well as college credit is granted. Granted college credit is treated as transfer credit without a grade, but counts toward graduation and meets other specific requirements for which it is appropriate.

### *Incomplete Grades*

The college's faculty set their own policies for grading and for granting incompletes. Special conditions may be noted on class syllabi. In all cases, students must present evidence of circumstances beyond their control that prevent them from completing the class. The student and faculty member must complete a written agreement (form available in college offices) outlining the terms of course completion and submit this agreement to the dean's office.

### *Independent Study*

Ordinarily, only students at the 3000- or 4000-level of studio are permitted to obtain independent study credit. Independent study credit may not be used to substitute for any required core or design studio course.

A complete description of the scope of the independent work, a summary of how it will be carried out, and a definition of the intended outcomes must be submitted to the supervising faculty member no later than five days after the official beginning of a semester. Approval of the description must be by the faculty member and the faculty member appointed by college administration before permission is granted for enrollment in the independent study course. Students should make arrangements for the independent study course details during registration or well before the semester begins.

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Typically, only students who have at least a 3.000 GPA are permitted to register for independent study. Additional requirements might be established depending on the proposed topic. Not more than 3 hours of independent study credit during one semester and not more than a total of 6 are given for the entire time the student is enrolled, unless an exception is granted by the dean.

### *Other Credits*

Credits for teaching assistantships, research assistantships, internships, and for independent study are all guided by the same standards. Credits earned as a teaching assistant, research assistant, or intern are subject to a 3 credit-hour limitation. Teaching assistantships and internships are offered on a *pass/fail* basis.

### *Pass/Fail Credits*

A student may elect to take up to 6 semester hours toward the BEnvd degree on a *pass/fail* basis, but these credits must fall in the category of general electives and may not include course work taught within the College of Architecture and Planning.

Students should confer with their academic advisor regarding specific academic standards for repeating laboratory, studio, and other undergraduate courses. Credits for repeated courses are not counted toward the 120 semester hours needed for graduation.

### *ROTC Credit*

Students matriculating in the College of Architecture and Planning are eligible to participate in the ROTC programs on the Boulder campus.

Students interested in such programs should contact the professor in charge of the ROTC program of their choice (Army, Navy, Air Force) and also their academic advisor for the college for information on residence and curriculum requirements for graduation. Credit for ROTC courses may be given upon faculty recommendation to a maximum of 8 hours.

### *Transfer Credit*

Credits transferred from other institutions are limited to the number of credit hours given for similar work in regular offerings at the University of Colorado. Exceptions to this regulation may be made by the dean upon written petition.

The college does not accept vocational/technical course work in design, graphics, or construction as meeting specific course requirements of the program; nor does it consider such course work as acceptable in fulfilling the college's elective requirements. Only in exceptional circumstances may a student petition the dean of the college to request a transfer of such credits.

A grade of C- or better is required in any course for which credit is granted in transfer from another institution to the university. In order for transfer credit to meet core degree requirements, a grade of B or better is required in the transferring class. Grades earned in other institutions (excluding other campuses of the University of Colorado) are not computed with the student's CU grade point average.

For more information on transfer credit policies, see Transfer of College-Level Credit in the Admissions section.

## Residence Requirement

A student must complete a minimum of 30 course credits within the College of Architecture and Planning. Students also must complete their last semester in residence as full-time students.

## Advising

Academic advising for students presently enrolled or anticipating enrollment in the college's undergraduate program is provided in a variety of forms. High school students or prospective transfer students from other universities are encouraged to participate in "Be a CU Student for a Day" or other visitation programs co-sponsored by the college and the CU-Boulder Office of Admissions. Information on campus visitation programs may be obtained by contacting the Office of Admissions at **303-492-6301**, or [admissions.colorado.edu/undergraduate/visit](http://admissions.colorado.edu/undergraduate/visit).

Students already enrolled in Boulder campus programs who are interested in intrauniversity transfer (IUT) into the College of Architecture and Planning should contact the college office at **303-492-7711** for group meeting times focusing on the IUT transfer process.

Students enrolled in the college's undergraduate programs receive academic advising from faculty or professional staff in the college. Information on appointments and open office hours for advising is available at the college office, ENVD 168, or by calling **303-492-7711**.

## Orientation

In order to receive an overview of educational opportunities and the philosophy of the college, and to meet other new students and the faculty of the college, incoming freshman and transfer students are required to attend an orientation approximately one week prior to the beginning of each semester.

### *Retention of Student Work*

The College of Architecture and Planning may, with the student's written consent, retain student work submitted in fulfillment of class requirements for a period of time. This retained work is normally used to provide accrediting agencies with tangible evidence of performance, to serve as additional visual aid material in presentations to other students, and to contribute to possible educational exhibits and publications requested by the university community and the general public.

## Computing in the College

The College of Architecture and Planning requires that all incoming undergraduate students have and use their own computers and software applications in their studies. OIT on the Boulder campus has suggested hardware and software configurations for both desktop and notebook computers on their website at [oit.colorado.edu/recommendations](http://oit.colorado.edu/recommendations). Neither the Boulder campus nor the College of Architecture and Planning endorses or requires students to buy a computer from a particular manufacturer. The configurations suggested by OIT establish high performance requirements that can be found in many different computers. Specialized software requirements for different classes in the ENVD program appear on the syllabi for those classes, and that software is generally available through the bookstore at discounted student rates.

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# Environmental Design

Course codes for this program are: ARCH and ENVD.

## *Bachelor's Degree Program(s)*

### Bachelor's in Environmental Design (BEnvd)

#### Curriculum:

#### The Core and the Disciplinary Emphases

All students entering the college, whether as freshmen, external transfer, or intrauniversity transfer students, initially enter as environmental design majors and are enrolled in the bachelor of environmental design degree program. All students admitted into the college's undergraduate degree program graduate with the bachelor of environmental design degree with an emphasis major in architecture, landscape design, planning/urban design, or design studies.

In the core, entering ENVD students take a coordinated sequence of interdisciplinary courses that emphasize the knowledge, methods, and practices common to the fields of architecture, planning, urban design, and landscape design. As the established design professions are increasingly collaborating on complex design issues related to the designed environment, the mix of core courses reflects these interdisciplinary and integrative trends. The interdisciplinary core sequence is delivered in the first five semesters of the program.

#### *Moving into the Emphasis Majors*

After completion of the five-semester lower-division core and in the 6th semester Praxis, students choose a disciplinary emphasis in one of four specialized upper-division emphasis majors: **architecture, landscape architecture design, planning/urban design, or design studies.**

There are 30 required and elective credits in each emphasis major. Each emphasis has been carefully designed to prepare students for graduate studies, for entry into the workplace, or for both. The emphases in architecture, landscape architecture design, and planning/urban design are designed to potentially lead to accelerated programs of study in professional graduate programs. Students who elect the architecture emphasis complete 45 credits of elective courses in the arts, humanities, or sciences, in order to ensure a standard transition into a graduate program in architecture. Completing the environmental design degree may, depending on the particular requirements of graduate professional programs at other institutions, lead to advanced standing in those programs that can shorten the number of credits required to complete those programs.

#### *Environmental Design Curriculum: Thematic Structure*

The undergraduate environmental design program offered by the college has been designed to encourage interdisciplinary study and collaborative work. The program is administered collaboratively by three disciplinary undergraduate studies units: architecture studies, landscape studies, and planning/urban studies.

The first year of the core introduces students to the thematic settings, and to design thinking and

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design practice. The following three semesters focus on analysis and design in one of the disciplinary emphases. The first semester deals with the issues, ideas, and the design of urban spaces and settings. The second semester centers on the issues, ideas, and the design of landscape spaces and settings. The third semester explores architectural spaces and settings with a secondary focus on the issues surrounding the preservation and/or reuse (recycling) of buildings. The final three semesters of the curriculum, offer students the opportunity to specialize in one of the disciplines of environmental design—architecture, landscape architecture, and planning/urban design. Students wishing to pursue interdisciplinary study that crosses disciplines can choose the design studies emphasis. The sixth semester expands students' experiences into the real world with a wide range of service learning, civic engagement, participatory design, and study abroad travel opportunities.

## *General Degree Requirements*

Students must complete a minimum of 120 semester hours subject to the maximum outlined in this catalog, meet all specified major core requirements, and maintain a GPA of 2.000 or better.

Students must complete one course from each of the following General Education Requirements area. Courses must be completed with a grade of C- or better.

- **Writing**

WRTG 1150 or ARSC 1150

- **Humanities**

Choose one class from the following Arts and Sciences core areas: Human Diversity, Literature and the Arts, or Ideals and Values

- **Social Science**

Choose one class from the following Arts and Sciences core areas: Historical Context, United States Context, or Contemporary Societies

- **Math**

Choose one class from the emphasis area: *Architecture*: MATH 1150 or MATH 1300; *Planning*: MATH 2510 or SOCY 2061; *Landscape Architecture*: MATH 1150, MATH 1300, MATH 2510 or SOCY 2061

- **Natural Science**

Choose one class from the emphasis area: *Architecture*: PHYS 2010; *Planning/Landscape Architecture*: EBIO 1030 and 1050 or EBIO 1210 and 1230, CHEM 1111, PHYS 2010

## *Environmental Design Curriculum and Course Sequence*

### **Year One: Introduction**

- Semester I. The first semester of the core introduces students to the broad range of issues and forces that interact to affect the shape and form of the designed environment.
- Semester II. The second semester of year one continues the exploration of the potential of critical design theories and practices to effect change in our environments at different scales and levels of complexity.

### **Years Two and Three: Exploration**

- Semester III. The first semester of the three-semester exploratory sequence studies the disciplines in greater depth and focuses on issues surrounding sustainability in the contemporary urban environment.
- Semester IV. The second semester of the exploratory sequence addresses issues related to the appropriate design of the landscape at the scale of the house, the neighborhood, the city, and the region.
- Semester V. In the last semester of the exploratory sequence, students focus on

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construction and building technology, and how they affect design thinking and design practice at the scale of the building.

- Semester VI—Praxis. In this semester students select from a broad inventory of unique experiential course clusters. These cluster offerings represent a wide range of contextual, cultural, and experiential immersions. They include study abroad or study away, design build, internship, certificates, community outreach, civic engagement or service learning. Students participate in advising and presentation sessions in advance to prepare for their selection of an option.

## **Year Four**

Before entering the final year of the program, students decide on their primary emphasis (concentration): architecture, landscape architecture, planning/urban design or design studies. The concentrations provide students the opportunity to undertake concentrated study with disciplinary faculty in these areas. This year (30 credit hours) is intended to prepare students for advanced studies beyond their undergraduate degree or, in some cases, give them basic knowledge and skill sets necessary to enter the working public/private sectors. Students participate in advising and presentation sessions in advance to prepare for their selection of a concentration. Students are encouraged to seek specific advice from the faculty to discuss their desired concentration objectives.

### ***Required Courses and Semester Credit Hours***

#### **First Year: Core Classes**

##### ***Fall Semester***

- \*ENVD 1004 Introduction to Environmental Design Theory—3
- \*ENVD 1052 Design and Communication 1—3
- \*ENVD 2001 Social Factors and Design—3
- Writing requirement—3
- Humanities (see list of options above)—3

##### ***Spring Semester***

- \*ENVD 1102 Design and Communication 2—3
- \*ENVD 1104 Introduction to Environmental Design Methods—3
- \*ENVD 2003 Ecology and Design—3
- Science requirement (see list of options above) (Note 1)—3
- Social science (see list of options above)—3

#### **Second Year: Core Classes**

##### ***Fall Semester***

- \*ENVD 2120 Environmental Design Studio: Planning/Urban Design—6
- \*ENVD 3122 Research Issues and Methods in Planning and Design—3
- \*ENVD 3124 Issues in Planning History—3
- Math requirement (see list of options above) (Note 2)—3

##### ***Spring Semester***

- \*ENVD 2130 Intermediate Design Studio: Landscape Design—6
- \*ENVD 3003 Site Planning—3

- \*ENVD 3004 History of Landscape Architecture—3
- Non-ENVD elective (Note 3)—3

### **Third Year: Core Classes**

#### ***Fall Semester***

- ENVD 3100 Environmental Design Studio: Architectural Design—6
- ENVD 3115 Introduction to Building Materials and Systems—3
- ARCH3114 History of Architecture 1—3
- Non-ENVD elective—3

#### ***Spring Semester***

- ENVD 3300 Selected ENVD Design Studio or Practicum—6
- ENVD 3300 ENVD Seminar—3
- ENVD or open electives—6

**Required credits for core—90**

### **Fourth Year: Concentration Options**

#### ***Fall Semester***

- Selected ARCH, PLNG, LARC, ENVD Studio or core course—3-6
- ENVD Seminar—3
- ENVD or open elective—3-6
- Non-ENVD elective—3

#### ***Spring Semester***

- Selected ARCH, PLNG, LARC, ENVD Studio or core course—3-6
- ENVD Seminar—3
- ENVD or open electives—3-6
- Non-ENVD elective—3

**Required credits for concentration—30**

### ***Course Notes***

\* These are linked core courses that are corequisites and are designed to be taken together.

1 Students intending to enroll in the architecture emphasis are strongly encouraged to take a physics class.

2 Students intending to enroll in the architecture emphasis are strongly encouraged to take a pre-calculus math class.

3 Students intending to enroll in the architecture emphasis are strongly encouraged to take a total of 45 credits of general study.

## ***Dual Degree Programs***

### **Dual Degrees in Architecture and Planning**

In addition to the BEnvd degree, students may pursue a degree in another college at CU-Boulder. Past students have received the BEnvd degree concurrently with undergraduate degrees in business, engineering, and various programs offered by the College of Arts and Sciences. Typically, specific course requirements do not change in either program of a double degree; however, additional hours (varying by college) may be required. All undergraduate students must complete the general education requirements and the requirements for their specific emphasis area within the College of Architecture and Planning in addition to the other college's requirements. Students considering a

double-degree program are encouraged to speak with advisors in both colleges to determine requirements and procedures for application.

## *Certificate Program*

### Certificates and Minors

Students are encouraged to explore the opportunity of adding a certificate or minor to their studies. The following are a few certificates that the college supports towards its Praxis semester. Students interested in a certificate option for the Praxis semester, or in addition to their primary study, should contact their academic advisor to have a plan set in place prior to their junior year.

- INVST Community Studies
- Western American Studies
- Digital Media (CDM) Studies
- Sustainable Practices

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## Faculty: Architecture & Planning

Name	Title	Education
ALRUBAIY, Amir	instructor	BA, Kent State University; MLA/MArch University of Colorado Denver
AMBACH, Barbara	associate professor of architecture, clinical teaching track	BArch, BFA, Rhode Island School of Design; MArch, Southern California Institute of Architecture
AMERI, Amir	associate professor of architecture	BArch, University of California, Berkeley; MArch, PhD, Cornell University
ANDREWS, Ken	instructor in architecture	BEnvd, University of Colorado; MArch, Rice University
ARIAS, Ernesto G.	professor of planning and design emeritus	
ATTMANN, Osman	associate professor of architecture	BArch, Mirmar Sinan University; MArch, State University of New York at Buffalo; PhD, Georgia Institute of Technology
BANASIAK, Meredith	instructor of architecture	HAB, Xavier University; MArch, Arizona State University
BARBOUR, John	instructor in planning and design	BEnvd, MURP, ABD, University of New South Wales
BELLINO, Marianne	instructor	BFA, College of the Holy Cross; MArch, Washington University, St. Louis
BRINK, Lois A.	professor of landscape architecture	BA, MLA, University of Pennsylvania
CATALANO, Lori	senior instructor in landscape architecture	BLA, Iowa State University; MLA, University of Pennsylvania
CHASE, Charles	director, landscape studies; instructor in landscape architecture	BSC, Colorado State University; MSC, University of Colorado; ABD, Florida State University
CHAWLA, Louise	professor of planning and design	BA, Hunter College; MA, Bryn Mawr College; PhD, City University of New York
CLARK, Thomas A.	chair, department of planning and design; professor of planning and design	AB, Brown University; MA, PhD, University of Iowa
COLISTRA, Joe	senior instructor in	BED, Miami Ohio; MArch, University of Colorado

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	architecture	
COOK, Brian	instructor	BS, University of Colorado Boulder; MLA, University of Colorado Denver
DELANGE, Marcel	instructor in architecture	MArch, Delft Institute of Technology
FALEIDE, Ronald	senior instructor	BA, BArch, University of North Dakota; MArch, Virginia Polytechnic Institute; MDes, Harvard University
FARR, Marcus	instructor	BA, BArch, Drury University; MArch, Rice University
FLANAGAN, Robert H.	associate professor of architecture	BS, Southeastern Massachusetts University; MArch, University of Colorado. Registered architect: Colorado
GELERNTER, Mark	dean of the College of Architecture and Planning; professor of architecture	BArch, Montana State University; PhD, Bartlett School of Architecture and Planning, University College, London
GOLDSTEIN, Bruce E.	associate professor of planning	BA, Wesleyan University; MS, Yale University; PhD, University of California
HARLOW, Allen	associate dean for academic affairs; senior instructor in architecture	BArch, MArch, University of Colorado. Registered architect: Colorado
HERDT, Julee	professor of architecture	BS, Western Kentucky University; BArch, University of Tennessee; MArch, Southern California Institute of Architecture. Registered architect: Tennessee, Colorado
HOOVER, George	professor of architecture	BArch, Cornell University. Registered architect: Colorado, California, and Texas
HUTCHINSON, Martha	senior instructor	BArch, University of Kentucky; MArch, Cornell University
JELACIC, Matthew	assistant professor of architecture	BArch, Pratt Institute; MArch, Harvard
JENSON, Michael	director, architectural studies; associate professor of architecture	BS, University of Texas; MArch, Columbia University; PhD, University of Edinburgh
JUHASZ, Joseph	professor of architecture emeritus	
KAHN, David	senior instructor	BA, University of California, Santa Cruz; MArch, MLA, University of California, Berkeley
KAMBIC, Kathleen	instructor	BSArch, MLA, MArch, University of Virginia
KOMARA, Ann	chair, department of landscape architecture; assistant professor of landscape architecture	BA, Pennsylvania State University; MA, MLA, University of Virginia
KOZIOL, Christopher	associate professor of architecture	BA, University of Chicago; MArch, MURP, University of Illinois; PhD, University of Colorado Denver. Registered Architect: Colorado
KRIZECK, Kevin	director, PhD program; associate professor of planning and design	BSE, Northwestern University; MRP, UNC Chapel Hill; MSCE, PhD, University of Washington

LANGHORST, Joern	assistant professor of landscape architecture	BLA, MLA, ABD, University of Hannover
LANTERMAN, John	instructor in landscape architecture	BSC, Colorado State University; MLA, University of Colorado
LEE, Yuk	associate dean, academic affairs, Denver; professor of planning and design	Diploma, Chung Chi College, Chinese University of Hong Kong; BA, Eastern Kentucky University; MA, University of Cincinnati; PhD, Ohio State University
LOFTIN, III, Laurence K.	associate professor of architecture	BA, Princeton University; MArch, University of Virginia. Registered architect: Colorado
LONG, Tamarah	instructor in architecture	BED, University of Pennsylvania; MArch, University of Florida
MAKELA, Taisto	chair, department of architecture; associate professor of architecture	BArch, University of Oregon; MA, PhD, Princeton University
MALININ, Laura	instructor	BArch, Rice University; MEd, University of Texas
McCALL Jr., Raymond	associate professor of planning and design	BS, University of Wisconsin–Milwaukee; MS, Illinois Institute of Technology; PhD, University of California, Berkeley
MORGENTHALER, Hans R.	associate dean of academic affairs; associate professor of architecture	BA, University of Zurich; MA, PhD, Stanford University
MORRIS, Eric	senior instructor of architecture	BFA, Colorado State University; MArch, University of Houston. Registered architect: Colorado
MULLER, Brian	director, planning and design studies; associate professor of planning and design	BA, Yale University; PhD, University of California, Berkeley
NEMETH, Jeremy	director, urban design program; assistant professor of planning and design	BA, University of California, Berkeley; MS, Bartlett School of Architecture; PhD, Rutgers University
ONARAN, Korkut S.	assistant professor, adjunct, of planning	BA, MArch, Middle East Technical University, Ankara; PhD, University of Wisconsin
O'LEARY, Patricia M.	professor of architecture	BArch, MArch, Arizona State University. Registered architect: Arizona and Arkansas
PARK, Peter	associate professor of planning and design	BSAS, Arizona State University; MArch, MUP, University of Wisconsin
PERCE, Steven	instructor	BEnvd, University of Colorado Boulder; MArch, University of Colorado Denver
POLIZZI, Jade	instructor	BEnvd, University of Colorado Boulder; MArch, University of Colorado Denver
PROSSER, John M.	professor of architecture emeritus	
PYATT, Rob	instructor	BEnvd, University of Colorado Boulder; MArch, University of Colorado Denver

RENAUD, Ken	instructor	BA, New York University; MArch, University of Colorado Denver
RUZIK, Ranco	senior instructor in architecture	BArchEng, University of Croatia; MArch, University of Colorado
SANCAR, Fahriye Hazer	professor of planning and design	BArch, Middle East Technical University, Turkey; MS, PhD, Pennsylvania State University
SCHNEIDER, Peter	professor of architecture	BArch, University of Cape Town
SHEA, Matthew	instructor	BA, University of Colorado Colorado Springs; MA, New School for Social Research, New York; MArch, University of Colorado Denver
SHELLENBARGER, Melanie	senior instructor in architecture	BA, St. Mary's College; BID, Interior Design Institute, Denver; ABD, University of Colorado
SOMMERFELD, Erik	associate chair, department of architecture; senior instructor in architecture	BEnvd, MArch, University of Colorado
STEFFEL JOHNSON, Jennifer	instructor	BS, Cornell University; MArch, McGill University; PhD, University of Colorado Denver
TAVEL, Michael	senior instructor	BA, BS, University of Toledo; MArch, University of California, Berkeley
TOLDERLUND, Leila G.	instructor	BEng, University of Copenhagen, Denmark; MLA, University of Colorado Denver
VAN VLIET, Willem K. T.	director of undergraduate studies; professor of planning and design	Doctorandus, Free University of Amsterdam; PhD, University of Toronto
VLAHOS, Ekaterini	associate professor of architecture	BEnvd, MArch, University of Colorado. Registered architect: Maryland and Colorado
XU, Ping	professor of architecture	BA, MArch, Tsinghua University (PRC); MLA, University of Pennsylvania; DDesign, Harvard University

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# College of Arts & Sciences



**Steven R. Leigh, dean**

275 UCB • phone: 303-492-7294 • fax: 303-492-4944

college website: [www.colorado.edu/artssciences](http://www.colorado.edu/artssciences)

THE COLLEGE OF ARTS AND SCIENCES is the liberal arts college at CU-Boulder. Its mission is to provide an outstanding liberal arts education for its undergraduates, cutting-edge graduate education, and world-class research, scholarship, and creative work. In addition to gaining the knowledge and skills of their areas of study, students learn how new information is acquired, and they can participate in original research and creative work with individual faculty members.

The college offers a wide variety of fields of study, with nearly 50 undergraduate majors. The environment and advantages of a small liberal arts college are created through “academic neighborhoods” in which students can meet and interact with other students and faculty in small group settings. In addition, more than 60 percent of undergraduate classes are small, with 25 or fewer students.

As the liberal arts college of CU-Boulder, the College of Arts and Sciences has several goals in the education of its students:

- Educate students for careers and a productive life. Arts and sciences students gain the most current knowledge and skills in their major fields of study. In addition, they learn how to acquire new skills to contend with—and lead—the changes that will occur in the decades to come. Education for a productive life also requires that students learn how to analyze situations, solve problems, and speak and write effectively.
- Provide students with a well-rounded education. Arts and sciences students acquire a broad knowledge and an integrated understanding of art and music, great literary works, philosophy, history and politics, the social world, science, and technology. They learn how to critically evaluate and think about morals, ethics, and values. The core curriculum and breadth requirements give students a broad, liberal-arts education that develops the whole person, not just the specialist.
- Educate citizens who can think for themselves, understand the rapidly changing world, and make wise choices within a democratic system.

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- Impart a love of learning so that students can continue to grow throughout life.
- Teach ways of thinking about and approaching new problems. For some students, this will enable them to further advance knowledge and scholarship in the academy. For all students, this is important for enriching their lives.
- Prepare students to help enrich the lives of others. Arts and sciences graduates become lifelong resources for their families, neighbors, friends, and co-workers.

The college also is dedicated to outstanding graduate education. Advanced degrees are offered by nearly every academic department in the college, and the PhD is offered in approximately 30 different disciplines. In addition, an increasing number of departments offer combined bachelor's/master's degrees that can be earned in five years. Graduate training focuses on teaching and research careers as well as on professional careers in the public and private sector.

The strength of the College of Arts and Sciences comes from its outstanding faculty. In addition to being dedicated teachers, they are active scholars in disciplines throughout the arts and humanities, social and behavioral sciences, biological sciences, and physical and mathematical sciences. They are the recipients of numerous national awards and honors for their research, scholarship, and creative work. Faculty and staff of the College of Arts and Sciences join together to create an intellectual community of students and scholars to discover, critically examine, integrate, preserve, and transmit knowledge, wisdom, and values.

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# Academic Excellence

## Dean's List

Students in the College of Arts and Sciences who have completed at least 12 credit hours of CU-Boulder course work for a letter grade in any single semester with a term GPA of 3.750 or better are included on the dean's list and receive a notation on their transcript and a letter from the dean.

## Graduation with Honors

The award of honors at graduation—cum laude, magna cum laude, or summa cum laude—is determined by the Honors Program of the college and is based on several criteria, including the quality of original scholarly work. Honors are not conferred on a graduate simply by virtue of high grades. Students pursuing multiple majors or multiple degrees must complete their honors program and defend their thesis by the published deadline for the term/year in which their first major or first degree is conferred. Students intending to pursue honors must register with the Honors Program by the deadlines published on the Honors Program website. Honors requirements must be complete prior to graduation. Students “walking” in May but graduating in August must complete honors requirements, including defending the thesis, by the Honors Program deadline for May graduation. Interested students should consult the Honors Program listing in this catalog or contact the Honors Program in Norlin Library.

## Graduation with Distinction

Students will graduate “With Distinction” if they have at least 30 credit hours completed at the University of Colorado Boulder and have a grade point average of 3.750 or higher for all course work completed at the University of Colorado. The average includes all grades except *P*.

## Phi Beta Kappa

Phi Beta Kappa is the nation's oldest and most prestigious honor society. The CU-Boulder chapter was established in 1904. Upper-division students whose undergraduate academic records fulfill certain requirements are eligible for election to membership in recognition of outstanding scholastic achievement in the liberal arts and sciences. Students are notified by mail of their nomination; students do not apply for Phi Beta Kappa membership.

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# Academic Standards

## On This Page:

- [Good Academic Standing](#)
- [Academic Ethics](#)
- [Probation](#)
- [Appeals and Petitions](#)
- [Scholastic Dismissal](#)

## Good Academic Standing

Good academic standing in the college requires a cumulative grade point average of 2.000 (C) or above in all University of Colorado work. Grades earned at another institution are not used in calculating the grade point average at the University of Colorado (this includes courses taken at Metropolitan State College on the Denver campus). However, grades earned in another school or college within the University of Colorado system are used in determining a student's scholastic standing and progress toward the degree in the College of Arts and Sciences.

## Probation

Students whose cumulative grade point average falls below 2.000 are placed on probation. Those students who enroll in any term in the calendar year, excluding summers, after being placed on probation are expected to raise their grade point to a 2.000 or above overall by the end of that term. Neither CU-Boulder's summer session (including Maymester) nor enrollment through Boulder evening courses counts as a probationary semester. Students are not dismissed at the end of the summer term.

Students placed on academic probation who elect to remain out of school for a full calendar year can return to the university with a two-semester window to achieve the required cumulative GPA of 2.000 or above. Students on probation who return after a hiatus of one year are placed on a second probation at the end of the semester in which they return if their cumulative grade-point average remains below 2.000 and are dismissed from the university if they do not achieve a minimum 2.000 cumulative grade-point average by the end of the semester following the imposition of the second probation.

## Scholastic Dismissal

Students who still have a cumulative average below 2.000 after their semester of probation will be dismissed and will not be able to register for University of Colorado daytime courses on any campus during any academic year, August to May. Students dismissed from the college are eligible for readmission when they have achieved a cumulative 2.000 average by virtue of work done during the University of Colorado's summer term (any of the three campuses) and/or through the Division of Continuing Education and Professional Studies (Boulder evening or correspondence courses). Students who choose to enroll in continuing education courses to restore their good standing must maintain a 2.500 GPA or above in each term in continuing education or be dismissed from both day

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classes and continuing education classes. They also may return as transfer students when they have overcome their deficiencies by enrolling at another institution (i.e., by achieving an overall 2.000 average in the University of Colorado work plus all work taken elsewhere since dismissal). These transfer grades are used only for the purpose of readmission and do not remain in the University of Colorado cumulative grade-point average. Dismissed students pursuing this latter option have two semesters after readmission to bring their University of Colorado grade point average up to 2.000 or they are dismissed again.

## Academic Ethics

A university's intellectual reputation depends on the maintenance of the highest standards of intellectual honesty. Commitment to those standards is a responsibility of every student and faculty member at the University of Colorado. Cheating; plagiarism; illegal possession and distribution of examinations or answers to specific questions; alterations, forgery, or falsification of official records; presenting someone else's work as one's own; or performing work or taking an examination for another student are examples of acts that may lead to suspension or expulsion. Reported acts of academic dishonesty must be referred to the Honor Council. The policies and procedures governing acts of academic dishonesty can be found on the Web at [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode).

## Appeals and Petitions

The College of Arts and Sciences does not waive degree requirements or excuse students from completing degree requirements. Petitions for exceptions to the academic policies stated here may be submitted to the Appeals Committee on Academic Rules and Policies. Such petitions will be considered only if they meet all three of the following conditions:

1. The student must document that she/he has made every effort to fulfill the policy or requirement as defined and must demonstrate that no other options exist for fulfilling the requirement as defined in this catalog.
2. The student must document that she/he is prevented from fulfilling the policy or meeting the requirement as defined here for compelling reasons beyond the student's control.
3. The student must demonstrate to the satisfaction of the faculty committee that she/he has fulfilled or will fulfill the intent of the policy or the requirement through an appropriate alternative.

Students who believe that their circumstances meet the conditions to submit a petition must first consult with their academic advisor. If the advisor offers options for meeting the requirement or policy as defined here, the student must pursue those options and should not submit a petition.

The Appeals Committee on Academic Rules and Policies is located in the Academic Advising Center.



# General Credit & Enrollment

## On This Page:

- [Attendance](#)
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Students are required to follow the graduation requirements listed in this catalog at the time of their initial entry onto the Boulder campus.

## Attendance

Successful work in the College of Arts and Sciences is dependent upon regular attendance in all classes. Students who are unavoidably absent should make arrangements with instructors to make up the work missed. Failure to attend regularly may result in receipt of an *F* in a course. Students who, for illness or other legitimate reason, miss a final examination must notify the instructor or the Academic Advising Center no later than the end of the day on which the examination is given. Failure to do so may result in receipt of an *F* in the course.

## Credit Policies

### *Advanced Placement Program*

See [Undergraduate Admission](#) and the [Advanced Placement Table](#).

### *International Baccalaureate*

Any student admitted to a University of Colorado campus after June 30, 2003, who has graduated from high school having successfully completed an International Baccalaureate (IB) diploma, program will be granted 24 semester hours of college credit. No tuition will be charged for these credits. These credits will be granted, however, only if the student receives a score of 4 or better on an examination administered as part of the IB diploma program.

In addition, college credit is granted for International Baccalaureate examinations at the higher level with a score of 4 or better. For specific equivalencies, contact the Office of Admissions at **303-492-2458** or visit [www.ibo.org](http://www.ibo.org).

### *College-Level Examination Program (CLEP)*

The College of Arts and Sciences accepts a limited number of hours of CLEP credit from subject (not general) examinations toward its bachelor's degree programs (see Undergraduate Admission for subjects accepted). In addition, certain CLEP examinations may be used to meet the minimum academic preparation standards (MAPS) for admission to the university. No more than 30 total credit hours of CLEP will apply, nor may CLEP credit be used in the final 30 credit hours presented for a degree.

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CLEP tests are administered through Career Services, **303-492-5854**.

### *Cooperative Education/Internships*

Students in the College of Arts and Sciences may receive up to 9 credit hours for a department-sponsored cooperative education program or internship. A maximum of 6 of the 9 internship credits can be taken in the same department. Each internship project must be approved by the chair or associate chair of the department awarding the credit before the student enrolls in the course in order for the student to receive credit. Students are encouraged to contact their major department office or Career Services for information regarding the possibility of enrolling in a cooperative education program in their major. Many internships are graded on a *pass/fail* basis only. Participation in an internship with mandatory *pass/fail* grading does not affect the total credit hours of *pass/fail* a student may apply toward a degree. Some departments further restrict the use of internship credit toward meeting major requirements.

For further information on internship credit, visit [advising.colorado.edu](http://advising.colorado.edu).

### *Credit/No Credit*

Credit/no credit changes must occur during the schedule adjustment periods.

### *Credit Taken as a Nondegree Student*

Once a student has been admitted to a degree program, credits from the Division of Continuing Education such as ACCESS, Boulder evening credit courses, and CU-Boulder correspondence classes may be eligible to be applied toward the degree. Students will receive initial advising during orientation once they have been accepted to a degree program in the College of Arts and Sciences.

### *Credit Taken Outside the College of Arts and Sciences*

Students may apply a total of 30 credit hours from the other colleges and schools at CU-Boulder as well as specified ROTC and President's Leadership Class courses toward the fulfillment of requirements for the BA and BFA degrees. Within these 30 total hours, up to 8 credit hours in activities courses (applied music and ensembles) may be used. Transferred courses that were taught by departments considered to be outside the College of Arts and Sciences are counted as part of the allowed 30 hours. If a course has been approved to meet a core curriculum requirement and the course is taught outside the College of Arts and Sciences, the credit for this course will not be included as part of the 30 semester hour limitation.

### *Cross-Listed Courses*

Courses that are cross-listed in two or more departments are credited in the department in which the student has the most semester hours, irrespective of the department in which the student formally enrolled for the course.

### *Foreign Language Courses*

Students must receive a grade of C or better to enroll in the next level of a language sequence in Arabic, Chinese, Farsi, Hindi, Indonesian, Japanese, and Korean. Students must receive a grade of C- or better to enroll in the next level of a language sequence in American Sign Language, French, German, Greek, Hebrew, Italian, Latin, Norwegian, Polish, Portuguese, Russian, Spanish, and Swedish. Students will not receive credit for a lower level course after credit has been given for a higher level course in the same sequence. For example, students who have passed a 2000-level class will not receive credit for a 1000-level class in the same sequence. This rule applies to the following languages: American Sign Language, Arabic, Chinese, Farsi, French, German, Greek, Hebrew, Hindi, Indonesian, Italian, Japanese, Korean, Latin, Norwegian, Polish, Portuguese, Russian, Spanish, and Swedish. Consult each department for specific restrictions, requirements, and prerequisites.

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Undergraduate introductory language courses (numbered at the 1000 and 2000 level) are designed for non-native speakers. Fluent speakers of a language are prohibited from enrolling in introductory courses in the language and can be dropped from these courses by the department or by the course instructor. Fluent speakers should consult the department website and this catalog or consult with the course instructor or department language coordinator about eligibility to enroll in upper-division language courses (numbered at the 3000 and 4000 level) before enrolling in such courses. Departments can exclude fluent speakers from upper-division language courses based on course content and/or instructional resources. Speakers who have not formally studied the language but have spoken the language in their home should consult with the associate chair of the language department or the department language coordinator about appropriate placement before enrolling in a language course.

Some classes offered by foreign language departments are taught in English and require no knowledge of foreign language. Read specific course descriptions and check with the departments.

### *Incomplete Grades*

An *I* grade is given at the discretion of the course instructor only when a student has satisfactorily completed a substantial portion of a course and, for reasons beyond the student's control, is prevented from completing all work for the course within the term. Incomplete grades must be requested by the student and should not be awarded by the instructor for non-attendance. (In the case of non-attendance, the instructor should award the student the grade(s) earned.) If an incomplete grade is given, the instructor is required to document the reasons/grounds for the awarding of the incomplete grade, the specific work and conditions for completion of the course, and the time frame within which the course work must be completed. The maximum time the instructor can allow for the completion of the course work and subsequent award of a course grade is one year from the end of the term the course was taken. After one year, if no final grade is awarded, the *I* will change to the grade of *F*. A copy of the Incomplete Agreement (forms are available from the dean's office) signed by the student and instructor and accompanied by documentation of the extenuating circumstances that resulted in the awarding of an incomplete should be filed with the Assistant Dean's Office and with the instructor's department office, and a copy should be given to the student.

### *Independent Learning*

A maximum of 30 credit hours of correspondence/online learning work may count toward the degree. Arts and sciences courses offered by the CU-Boulder Division of Continuing Education carry resident credit.

### *Independent Study*

With departmental approval, students may register for independent study during the normal registration periods for each semester. Students may not register for more than 6 credit hours of independent study credit during any term. No more than 8 credit hours of independent study taken in a single department or program can be applied toward the total hours needed for graduation. A maximum of 16 hours of independent study may count toward the degree. The minimum expectation for each semester hour of credit is 25 hours of work.

A student may not use independent study projects to fulfill the college's general education requirements. Some departments further restrict the use of independent study hours toward meeting major requirements.

### *Required Hours Outside the Major*

To complete the BA degree, students are required to complete a minimum of 75 credit hours outside their major department. Exceptions are:

- Students who complete designated departmental honors courses in their major and/or in honors thesis credit can reduce the 75 credit hours required outside the major department by a

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corresponding number of credits, up to a maximum of 6.

- Students completing the bachelor of fine arts degree must complete a minimum of 53 credit hours outside of their major department.

## *Pass/Fail*

Students in the College of Arts and Sciences may not use the *pass/fail* option for courses taken to fulfill general education (core) requirements, courses used to satisfy the foreign language requirement, courses used to fulfill the Minimum Academic Preparation Standards (MAPS), courses used to complete minor requirements, or courses used to complete the minimum requirements for the major. A grade of *F* when earned in a course taken *pass/fail* will calculate into the GPA as a failing grade.

Students may take elective courses *pass/fail*, to a maximum of 6 credit hours. Courses offered only on a mandatory *pass/fail* basis are excluded from the maximum allowed. **The *pass/fail* option may be used only for elective credit.**

## *Repetition of Courses*

If a student takes a course for credit more than once, all grades are calculated into the grade point average. However, the course is only counted toward graduation once, unless a course description specifically states that it can be taken more than once for credit.

## *ROTC Credit*

The ROTC courses listed below have been certified as acceptable college-level course work by the faculty of the College of Arts and Sciences or by other colleges and schools on the Boulder campus. These courses are counted as elective credit toward the degree, subject to the 30-semester-hour limitation on course work taken outside the college for students in the BA and BFA programs. Courses not included on this list do not count toward any degree requirements. Transfer ROTC course work must be evaluated as equivalent to course work on this list to count toward degree requirements.

- AIRR 3010 and 3020
- AIRR 4010 and 4020
- MILR 1011 and 1021
- MILR 2031 and 2041 (students may not receive credit for either course if they have credit in OPMG 3000)
- MILR 4072 and 4082
- NAVR 2020
- NAVR 3030
- NAVR 3040
- NAVR 3101
- NAVR 4010 and 4020
- NAVR 4030
- NAVR 4101

## Transfer Credit

Work from another accredited institution of higher education that has been completed with a grade of C- (1.70) or better may be transferred to the University of Colorado. Categories of transfer course work not accepted by the university are outlined in the Transfer Course Work Not Accepted by the University section under General Information.

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All courses transferred from junior and community colleges carry lower-division credit. Courses transferred from four-year institutions carry credits at the level at which they were taught at the previous institution.

### *Statewide Guaranteed Transfer of General Education Courses*

Beginning in fall 2003, the two-year and four-year transfer articulation agreements among Colorado institutions of higher education were replaced by a statewide guaranteed transfer of approved general education courses taken at any Colorado public institution of higher education. Under the statewide guaranteed transfer program, up to 31–33 credits of successfully (C- or better) completed course work will automatically transfer and apply towards graduation requirements at the receiving institution. The course work must be drawn from the list of approved guaranteed transfer courses and must meet the distribution requirements of the guaranteed transfer program. Further information about the statewide transfer program, including the list of approved courses and distribution requirements, can be found at the website of the Colorado Department of Higher Education, [highered.colorado.gov/Academics/Transfers/gtPathways/default.html](http://highered.colorado.gov/Academics/Transfers/gtPathways/default.html).

Students who began their collegiate course work in fall 2003 or later at any Colorado public institution of higher education are subject to the statewide guaranteed transfer of approved general education courses. Students who began their collegiate course work prior to fall 2003 have the option of following the two-year and four-year articulation agreements in effect at the time of the student's initial matriculation at a Colorado public institution of higher education or following the conditions of the statewide guaranteed transfer program. Students who began their collegiate course work prior to fall 2003 must complete all lower-division core requirements by summer 2005 in order to remain eligible for the two-year and four-year core completion agreement.

Beginning in fall 2006, a student who graduates with an associate of arts or an associate of science degree from a Colorado community college and enters the College of Arts and Sciences will be exempt from the written communication requirement and the lower-division component of the core curriculum. Please note that students are still subject to the MAPS requirement.

Additional information on the evaluation of transfer credit of Colorado community college course work and its application in select arts and sciences major programs can also be found at [www.colorado.edu/artssciences/prospective/transfer\\_current.html](http://www.colorado.edu/artssciences/prospective/transfer_current.html).

## Withdrawal

See the General Information section of the catalog for specific [withdrawal procedures](#) and universitywide policies.

Students in the College of Arts and Sciences who withdraw two semesters in a row will have a dean's stop placed on their registration. Summer session is not counted as a regular semester. They will not be permitted to return to CU-Boulder before one full academic year has elapsed (not including their semester of withdrawal). Arts and sciences students may withdraw from all classes for a term until the last day that classes are taught by requesting withdrawal in the Office of the Registrar. Students cannot withdraw after classes have ended for a term.

These policies also apply to arts and sciences students who are enrolled in continuing education courses.

## Readmission

Arts and sciences students who request readmission to the college are always readmitted to their major of record at the time they last attended the university. Readmitted students who desire to pursue a major different from their major of record must follow the college's process for declaring a

new major (explained on the Academic Advising Center website,  
[www.colorado.edu/artssciences/aacforstudents](http://www.colorado.edu/artssciences/aacforstudents)) after they have been readmitted.

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# Undergraduate Degree Requirements

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Students are subject to the general degree requirements in effect at the time they first enter the Boulder campus of the University of Colorado and are subject to the major requirements in force at the time they declare the major. Arts and sciences students have 10 years to complete the requirements for a declared major. If the 10-year limit is exceeded, the student may be required to satisfy current major requirements. Students pursuing a major degree program identified for discontinuation by decision of the Board of Regents and the Colorado Commission on Higher Education have four years from the formal announcement of discontinuation to complete the degree program and graduate. The requirements, rules, and policies stated here apply to all students first entering the Boulder campus during the 2012–13 academic year.

Students must complete a degree within 10 years. If it has been more than 10 years since matriculation into the College of Arts and Sciences and no degree has been completed, students may be subject to new curricula in place at the time of reenrollment. Please see the Minimum Major Requirements section for additional information on major requirements. Students may contact the Academic Advising Center for further assistance.

## Academic Advising and Orientation

Students in the college are expected to assume responsibility for planning their academic program in conjunction with their academic advisor in accordance with college rules and policies and with departmental major requirements. Any questions concerning these provisions are to be directed to the student's academic advisor or to the Academic Advising Center.

The college cannot assume responsibility for problems resulting from students failing to follow the policies stated in the catalog or from incorrect advice given by someone other than an appropriate staff member of the college.

All new students are required to attend a special orientation, advising, and registration program on campus before enrolling.

### *Advising*

Academic advising is an integral part of undergraduate education. The goal of all academic advising is to help students make responsible decisions as they develop educational plans compatible with their potential and with their career and life goals. Advising is more than the sharing of information about academic courses and programs; it includes encouraging students to formulate important

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questions about the nature and direction of their education and working with them to find answers to those questions. Advisors confer with students about alternative course schedules and other educational experiences, but students themselves are responsible for selecting the content of their academic program and making progress toward an academic degree.

As students progress through their academic program, their questions and concerns change. CU-Boulder offers a system of faculty and professional academic advisors to address these ongoing and multifaceted concerns.

Students are ultimately responsible for choosing appropriate courses, for registering accurately, and for meeting all degree requirements. Academic advisors assist students in clarifying their interests, values, and goals and help students relate these to academic programs and educational opportunities. As students work with their advisors, the advisors help students develop a coherent and balanced program of study that fulfills graduation requirements and assist students in identifying and integrating into their programs educational experiences outside the classroom that enhance their personal, intellectual, and professional development. Academic advisors also assist students in understanding academic policies, requirements, procedures, and deadlines.

**Center for First-year Students.** All new first-year students entering the college are advised in the Center for First-year Students, where they receive assistance in making a successful transition to the Boulder campus, are oriented to the academic expectations of the college, and are supported in confirming their choice of major or in selecting an appropriate major.

In addition, through the Center for First-year Students, the Academic Advising Center provides comprehensive advising services to students who are undecided about their major or who are thinking of changing their major to another CU-Boulder college or school. First-year advisors are familiar with the courses and degree requirements for all majors offered at CU-Boulder and assist undecided (open option) students in exploring the degree programs related to the students' interests. While open option students are exploring majors, first-year advisors assist these students in designing programs of study that meet graduation requirements while providing them with the academic flexibility to pursue whichever degree program they ultimately choose.

Students who are interested in structured support in researching and selecting an appropriate major are encouraged to enroll in a 1 credit course, ARSC 1810 Academic Exploration and Decision Making, during their first year.

The advising center also provides preprofessional advising for all students who are preparing to pursue the study of law, medicine, or other professional health fields.

Students should refer to college, school, and departmental advising materials for specific details on their advising programs.

## *Responsibilities of Students and Advisors*

Within the advising system on the Boulder campus, both students and advisors have responsibilities.

Students are responsible for:

- knowing the requirements of their particular academic program, selecting courses that meet those requirements in an appropriate time frame, registering accurately, and monitoring their progress toward graduation;
- consulting with their academic advisor several times every term;
- scheduling and keeping academic advising appointments in a timely manner throughout their academic career, so as to avoid seeking advising only during busy registration periods;
- being prepared for advising sessions (for example, by bringing in a list of questions or

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concerns, having a tentative schedule in mind, and/or being prepared to discuss interests and goals with their advisor);

- knowing and adhering to published academic deadlines;
- monitoring their position on registration waitlists;
- reading their CU e-mail on a weekly basis.

Advisors are responsible for:

- helping students clarify their values, goals, and abilities;
- helping students understand the nature and purpose of a college education;
- providing accurate information about educational options, requirements, policies, and procedures;
- helping students plan educational programs consistent with the requirements of their degree program and with their goals, interests, and abilities;
- assisting students in the continual monitoring and evaluation of their educational progress; and
- helping students locate and integrate the many resources of the university to meet their unique educational needs and aspirations.

## Four-Year Graduation

The College of Arts and Sciences has adopted a set of guidelines to define the conditions under which a student should expect to graduate in four years. More information is available through the Academic Advising Center and major program and departmental offices.

The University of Colorado Boulder guarantees that if the scheduling of essential courses is found to have prevented a student in the College of Arts and Sciences from completing all course work necessary for a BA or BFA degree from the university by the end of the student's eighth consecutive fall and spring semester, the college will provide tuition plus any course fees for all courses required for completion of the degree requirements. Students must satisfy all the conditions described below to be eligible for this guarantee.

This guarantee extends to all students who enrolled the summer of 1994 or after into the College of Arts and Sciences as first-semester freshmen without MAPS deficiencies and who satisfy all the requirements described below. This guarantee cannot be extended to include completion of a second major, a double degree, a minor, a teaching certificate, or other certificate program. Some CU-Boulder study abroad programs may not provide a sufficient range of courses to allow students to meet the requirements and thus students who participate in study abroad are not included in this guarantee.

### *Four-Year Guarantee Requirements*

1. Students should enroll in University of Colorado Boulder course work for eight consecutive fall and spring semesters.
2. No fewer than 60 credit hours of applicable course work should be completed with passing grades by the end of the second year (24 calendar months), 90 hours by the end of the third year (36 calendar months), and 120 hours by the end of the fourth year. Students should enroll in and pass an average of 15 credit hours each semester.
3. A minimum of 30 credit hours of college core-curriculum courses should be completed by the end of the second year, including college core-curriculum courses that also meet major requirements. All remaining college core-curriculum requirements must be fulfilled by the end of the eighth semester.

4. Students should complete 45 upper-division hours by the end of the eighth semester of study.
5. A GPA of at least 2.000 must be earned each semester.
6. Grades of C- or better in all course work required for the major should be earned, and students should have a cumulative GPA of 2.000 in all major course work attempted.
7. A recommended plan of study must be started toward the major no later than the start of the second semester of study (see note below for exceptions) and thereafter students must make adequate progress toward completing the major (defined by each major). A statement of adequate progress is available from the major or departmental office at the time the major is declared.
8. The major must be declared no later than the start of the second semester of study (see note below for exceptions), and students must remain in that major until graduation.
9. Students should meet with their assigned primary advisor each semester.
10. Students must register each semester within one week of the assigned registration time.
11. Students should avoid taking courses that are in conflict with the written advice of their assigned primary advisor.
12. Students should adhere to the General Credit and Enrollment Policies and Minimum Major Requirements listed in the Arts and Sciences section.
13. Courses in conflict with major or college core curriculum requirements should be avoided.
14. The college should be notified in writing of the student's intent to graduate no later than the beginning of the seventh semester of study, and a graduation packet should be filed no later than the deadline for the appropriate graduation date (see Graduation Deadlines section).
15. Documentation should be kept proving that these requirements were satisfied (e.g., records of advising meetings attended, advising records and instructions, etc.).

The recommended plan of study for the following majors must be started in the first semester of study to be eligible for this guarantee: BA in biochemistry; chemistry; ecology and evolutionary biology; Japanese; integrative physiology; molecular, cellular, and developmental biology; geology; physics; and all majors that require foreign language course work when student proficiency falls below the entry-level language course of that major. Students seeking a BFA in dance or theatre must start the recommended plan of study for the corresponding BA program in the first semester of study and qualify for admission into the BFA program by the end of the third semester. Students seeking a BFA in film studies or fine arts must start the recommended plan of study for the corresponding BA program in the first semester of study and qualify for admission into the BFA program by the end of the fourth semester. If a student changes majors, the primary advisor, in consultation with the College of Arts and Sciences assistant dean's office, will review the courses taken to date to determine whether the college will continue to extend the four-year guarantee.

## General Graduation Requirements

Arts and sciences students must fulfill the following requirements for graduation:

1. Pass a total of 120 hours.
2. Maintain a 2.000 (C) grade point average in all University of Colorado work and a 2.000 (C) in all major course work attempted. (Some majors may require a higher minimum grade point average.)
3. Pass 45 credit hours of upper-division work (courses numbered in the 3000s and 4000s).
4. Arts and sciences students must complete a minimum of 45 credit hours in University of Colorado courses on the Boulder campus. Of these 45 credits, a minimum of 30 credits must

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be in arts and sciences upper-division credit hours completed as a matriculated student in the College of Arts and Sciences at the University of Colorado Boulder and at least 12 of these upper-division hours must be in the major. A maximum of 6 credit hours taken at other University of Colorado campuses (UC Denver and CU-Colorado Springs) can be counted toward the minimum 45 credits required on the Boulder campus. Courses taken while on CU-Boulder study abroad programs, through CU-Boulder continuing education, or CU-Boulder correspondence courses are considered to be in residence.

5. For the bachelor of arts degree, students must complete a minimum of 75 hours outside their major department. Students who complete designated departmental honors courses in their major department and/or in honors thesis credit can reduce the 75 hours required outside the major department by a corresponding number of credits, up to a maximum of 6.
6. For the bachelor of fine arts degree, students must complete a minimum of 53 credit hours outside of their major.
7. Complete a major offered by the College of Arts and Sciences. Students are subject to the major requirements in force when they declare the major. See the sections Majors and Other Areas of Interest and Minimum Major Requirements in this section.
8. Complete the general education (college core curriculum) and MAPS requirements with the following limitations:
  - Although a single course may be listed in more than one core area, a student may use it to meet only one area requirement.
  - Neither independent study nor pass/fail courses may be used to meet MAPS -deficiencies, core requirements, minor requirements, or the minimum major requirements.
  - A single course may be used to meet both MAPS and core requirements as long as the course is applicable to both requirements. For example, a student admitted with a MAPS deficiency in English composition may take WRTG 1150, First-Year Writing and Rhetoric, to satisfy both the MAPS requirement and the core curriculum lower-division written communication requirement.

This policy only applies to college level course work (CU or accepted transfer credit). If a student is exempt from a given core area, this does not exempt the student from fulfilling a MAPS deficiency in that area. A description of the College of Arts and Sciences MAPS requirements can be found in the General Information section.

Beginning in fall 2010, the Minimum Academic Preparation Standards for mathematics for the College of Arts and Sciences will be 4 units including 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions. This will apply to students graduating from high school in spring 2010 and after.

If it has been more than 10 years since matriculation into the College of Arts and Sciences and no degree has been completed, students may be subject to new curricula in place at time of reenrollment. See the Minimum Major Requirements section for additional information on major requirements. Students may contact the Academic Advising Center for further assistance.

## Core Curriculum

The mainstay of the general education requirements is the College of Arts and Sciences core curriculum. The core curriculum requirements are divided into two parts: skills acquisition and content areas of study. The following sections provide descriptions of the individual requirement areas, their underlying educational philosophies and goals, and the list of approved courses. The updated list of approved core courses is located on the college's website at [www.colorado.edu/artssciences/students/undergraduate/core.html](http://www.colorado.edu/artssciences/students/undergraduate/core.html).

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## Exemptions

Selected majors and the ecology and evolutionary biology minor are exempt from portions of the core curriculum, as core course work is considered equivalent to course work in the major. Students who graduate with more than one exempt major may apply their exemptions cumulatively.

## Skills Acquisition

These requirements are designed to assure that each student has attained a minimum level of competency in each of the areas listed: foreign language, quantitative reasoning and mathematical skills, and written communication.

Although a single course may appear in several areas, students may use it to meet only one core requirement.

**1. Foreign Language.** All students are required to demonstrate, while in high school, third-level proficiency in a single modern or classical foreign language. Students who have not met this requirement at the time of matriculation will have a MAPS deficiency. They may make up the deficiency only by passing an appropriate third-semester college course or by passing a CU-Boulder approved proficiency examination. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

Students who are under the core curriculum, but not subject to MAPS, must complete the foreign language requirement to meet degree requirements.

Questions about placement should be referred to the appropriate foreign language department.

The goal of the language requirement is to encourage students to confront the structure, formal and semantic, of another language, significant and difficult works in that language, and one or more aspects of the culture lived in that language. This enables students to understand their own language and culture better, analyze texts more clearly and effectively, and appreciate more vividly the dangers and limitations of using a translated document. The language requirement is a general education requirement and so concentrates on reading. In some languages other abilities may be emphasized as well. Understanding what it means to read a significant text in its original language is essential for general education according to the standards of this university.

CU-Boulder courses that satisfy this requirement include the following:

- \*ARAB 2110-3 Second Year Arabic 1
- CHIN 2110-5 Intermediate Chinese 1
- \*CLAS 2114-4 Intermediate Latin 1
- CLAS 3113-3 Intermediate Classical Greek 1
- \*FREN 2110-3 Second-Year French Grammar Review and Reading 1
- FRSI 2110-4 Intermediate Farsi 1
- \*GRMN 2010-4 Intermediate German 1
- GRMN 2030-5 Intensive Intermediate German
- \*HEBR 2110 (3-4) Intermediate Hebrew I
- HIND 2110-5 Intermediate Hindi 1
- INDO 2010-4 Intermediate Indonesian 1
- \*ITAL 2110-3 Intermediate Italian Reading, Grammar, and Composition 1
- JPNS 2110-5 Intermediate Japanese 1
- KREN 2110-5 Second-Year Intermediate Korean 1
- \*NORW 2110-4 Second-Year Norwegian Reading and Conversation 1

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\*PORT 2110-3 Second-Year Portuguese 1

- \*RUSS 2010-4 Second-Year Russian 1
- SLHS 2325-4 American Sign Language 3
- \*SPAN 2110-3 Second-Year Spanish 1
- \*SPAN 2150-5 Intensive Second-Year Spanish
- \*SWED 2110-4 Second-Year Swedish Reading and Conversation 1

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**2. Quantitative Reasoning and Mathematical Skills (QRMS) (3–6 semester hours).** Liberally educated people should be able to think at a certain level of abstraction and to manipulate symbols. This requirement has two principal objectives. The first is to provide students with the analytical tools used in core curriculum courses and in their major areas of study. The second is to help students acquire the reasoning skills necessary to assess adequately the data which will confront them in their daily lives. Students completing this requirement should be able to: construct a logical argument based on the rules of inference; analyze, present, and interpret numerical data; estimate orders of magnitude as well as obtain exact results when appropriate; and apply mathematical methods to solve problems in their university work and in their daily lives.

Students can fulfill the requirement by passing one of the courses or sequences of courses listed below or by passing the CU-Boulder QRMS proficiency exam. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

- ECEN 1500-3. Sustainable Energy
- ECON 1078-3 Mathematical Tools for Economists 1
- \*MATH 1012-3 Quantitative Reasoning and Mathematical Skills (same as QRMS 1010)
- MATH 1110-3 and 1120-3 The Spirit and Uses of Mathematics 1 and 2
- MATH 1130-3 Mathematics From the Visual Arts (same as QRMS 1130)
- \*MATH 1150-4 Precalculus Mathematics
- \*MATH 1410-3 Mathematics for Secondary Educators
- \*MATH 2380-3 Mathematics for the Environment (same as QRMS 2380)
- PHYS 1010-3 Physics of Everyday Life 1
- PHYS 1020-4 Physics of Everyday Life 2
- PHYS 1220-3 Physics for Future Presidents
- PSCI 2075-3 Quantitative Research Methods
- PSCI 3105-3 Designing Social Inquiry
- Any 3-credit math module: MATH 1011-3, MATH 1071-3, or MATH 1081-3.
- Any 3 credits of mathematics courses numbered \*MATH 1300 and above or applied mathematics courses numbered \*APPM 1350 and above.

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**3. Written Communication (3 lower-division and 3 upper-division semester hours).** Writing is a skill fundamental to all intellectual endeavors. While some college courses require more writing than others, good writing is recognized as a necessary means of communication in every scholarly discipline. The core curriculum promotes the principle that ideas do not exist apart from language, and thus content cannot be isolated from style. For ideas to flourish, they must be expressed clearly and

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gracefully, so that readers take pleasure while taking instruction. Students may meet the lower-division component of this requirement by first passing one of the approved lower-division courses or by receiving a score of 4 or 5 on the English Language and Composition Advanced Placement exam. Students may then complete the upper-division component of this requirement by passing one of the approved upper-division courses or by passing the written communication proficiency exam. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

### Lower-division Courses

- ARSC 1080-4 College Writing and Research
- ARSC 1150-3 Writing in Arts and Sciences
- CLAS 1020-3 Argument from Evidence: Critical Writing about the Ancient World
- EBIO 1950-3 Introduction to Scientific and Academic Writing
- ENGL 1001-3 Freshman Writing Seminar
- IPHY 1950-3 Introduction to Scientific Writing in Integrative Physiology
- PHIL 1500-3 Reading, Writing, and Reasoning
- \*WRTG 1100-4 Extended First-Year Writing and Rhetoric
- \*WRTG 1150-3 First-Year Writing and Rhetoric
- WRTG 1250-3 Advanced First-Year Writing and Rhetoric

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

### Upper-division Courses

- ARSC 3100-3 Multicultural Perspective and Academic Discourse
- CHIN/JPNS 3200-3 Advanced Writing on Topics in Chinese and Japanese Literature and Civilization
- EBIO 3940-3 Argument in Scientific Writing
- ENV5 3020-3 Advanced Writing in Environmental Studies
- GEOL 3090-3 Developing Scientific Writing Skills
- \*HONR 3220-3 Advanced Honors Writing Workshop
- IPHY 3700-3 Scientific Writing in Integrative Physiology
- ITAL 3025-3 Introduction to Literary Writing: Advanced Composition 2
- PHIL 3480-3 Critical Thinking and Writing in Philosophy
- \*PHYS 3050-3 Writing in Physics: Problem Solving and Rhetoric
- RLST 3020-3 Advanced Writing in Religious Studies
- WMST 3800-3 Advanced Writing in Feminist Studies
- SOCY 3010-3 Sociology Capstone Course: Professional Writing
- SPAN 3010-3 Advanced Rhetoric and Composition
- \*WRTG 3007-3 Writing in the Visual Arts
- WRTG/NRLN 3020-3 Topics in Writing
- \*WRTG 3030-3 Writing on Science and Society
- \*WRTG 3035-3 Technical Communication and Design
- WRTG 3040-3 Writing on Business and Society

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education,

## *Content Areas of Study*

**4. Historical Context (3 semester hours).** Courses that fulfill this requirement enable students to study historical problems or issues and to develop an understanding of earlier ideas, institutions, and cultures.

Courses explore the times and circumstances in which social, intellectual, artistic, or other developments occurred. The purpose of this exploration is to analyze subjects in their context, that is, to investigate both the processes and the meanings of change. Among the educational aims of these courses are the following: to contribute to historical perspectives that may help to clarify issues that arise today or will arise tomorrow, to arouse the curiosity of students concerning historical conditions that may be relevant to subjects studied in other courses, and to expand the imagination by generating an awareness of the diverse ways in which our common humanity has expressed itself.

Students may choose to meet this 3-hour requirement by passing any course listed below. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

- ANTH 1180-3 Maritime People: Fishers and Seafarers
- ANTH 1190-3 Origins of Ancient Civilizations
- ANTH/CLAS 2009-3 Modern Issues, Ancient Times
- ARAB 3230-3 Islamic Culture and Iberian Peninsula
- ARTH/CLAS 1509-4 Trash and Treasure, Temples and Tombs: Art and Archaeology of the Ancient World
- ARTH/CLAS 2019-3 Pompeii and the Cities of Vesuvius
- ASIA 1000-3 Introduction to South and Southeast Asian Civilizations
- \*CEES /HIST 2002-3 Introduction to Central and East European Studies
- CLAS 1030/\*PHIL 1010-3 Introduction to Western Philosophy: Ancient
- CLAS/\*HIST 1051-3 The World of Ancient Greeks
- CLAS/\*HIST 1061-3 The Rise and Fall of Ancient Rome
- \*CLAS 1140-3 Bread and Circuses: Society and Culture in the Roman World
- ECON 4514-3 Economic History of Europe
- ENGL 3164-3 History and Literature of Georgian England
- ENGL 4113-3 History and Culture of Medieval England
- GRMN 2301-3 Inside Nazi Germany: Politics, Culture, and Everyday Life in the Third Reich
- \*HIST 1010-3 Western Civilization 1: Antiquity to the 16th Century
- HIST 1018-3 Early Latin America
- \*HIST 1020-3 Western Civilization 2: 16th Century to the Present
- HIST 1028-3 Modern Latin America
- \*HIST/JWST/GSLL 1108-3 Introduction to Jewish History
- HIST 1113-3 Introduction to British History to 1660 (formerly HIST 2103)
- HIST 1123-3 Introduction to British History since 1660 (formerly HIST 2123)
- \*HIST 1208-3 Sub-Saharan Africa to 1800
- HIST 1228-3 Introduction to Sub-Saharan African History since 1800
- HIST 1308-3 Introduction to Middle Eastern History
- \*HIST 1408-3 Introduction to South Asian History
- \*HIST 1608-3 Introduction to Chinese History

- \*HIST 1708-3 Introduction to Japanese History
- HIST 2100-3 Revolution in History
- HIST 2112-3 Early Modern Societies (1450–1700)
- HIST 2220-3 History of War and Society (formerly HIST 2222)
- HIST 2629-3 China in World History
- HIST 4190/IAFS 3500-3 French Connections: Contemporary France and America in Historical Context
- HONR 2251-3 Introduction to the Bible
- JWST/RLST 3100-3 Judaism
- LIBB 1700-3 The History of Communication from Caves to Cyberspace
- \*PHIL 1020-3 Introduction to Western Philosophy: Modern
- PHIL 3000-3 History of Ancient Philosophy
- PHIL 3010-3 History of Modern Philosophy
- PHIL 3410-3 History of Science: Ancients to Newton
- PHIL 3430-3 History of Science: Newton to Einstein
- RLST 3000-3 The Christian Tradition
- RUSS 2211-3 Introduction to Russian Culture
- RUSS 2221-3 Introduction to Modern Russian Culture
- \*RUSS 2471-3 Women in Russian Culture: From Folklore to the 19th Century
- RUSS 3601-3 Russian Culture Past and Present
- RUSS 4301-3 American-Russian Cultural Relations
- SCAN 2202-3 The Vikings

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**5. Human Diversity (3 semester hours).** Courses fulfilling this requirement increase the student's understanding of the world's diversity and pluralism through the study of two broad and interrelated areas: (1) the nature and meaning of diversity and the experience of marginalized groups; and (2) cultures other than those of Europe and the United States. This requirement explicitly identifies an awareness and understanding of pluralism as essential to a liberal education.

**(1) Gender, Ethnic, and Social Diversity.** Courses in this area are designed to expand the range of each student's understanding of the experience of individuals and groups who, because of such fundamental components of identity as race, ethnicity, gender, or other characteristics, have been historically marginalized by society and placed outside of the mainstream. Generally courses will explore the ways in which marginalization has occurred and the reasons for this marginalization. The intent is to expand understanding of these social groups with the goal of identifying the way social categories shape human thought and experience.

**(2) Non-Western Cultures.** These courses are designed to expand the range of the student's understanding of cultures that are not derived principally from the western experience. A comparative perspective introduces students to the commonality and diversity of cultural responses to universal human problems. Each course seeks to cultivate insight into and respect for diversity by requiring students to explore a cultural world quite different from their own.

Courses satisfying this requirement are intended to portray culture in the most integrated sense, including aspects of material adaptation, social pattern, ideas and values, and aesthetic achievement.

Students are required to pass 3 hours of course work from any course listed below. Students who

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take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher. Students who graduate with a major in ethnic studies are exempt from completing the human diversity requirement.

- \*ANTH 1100-3 Exploring a Non-Western Culture: The Tamils
- ANTH 1105-3 Exploring a Non-Western Culture: Tibet
- ANTH 1110-3 Exploring a Non-Western Culture: Japan
- ANTH 1115-3 The Caribbean in Post-Colonial Perspective
- ANTH 1120/ETHN 1123-3 Exploring a Non-Western Culture: Hopi and Navajo (formerly AIST 1125/ANTH 1120)
- ANTH 1135-3 Exploring a Non-Western Culture: TBA
- ANTH 1140-3 Exploring a Non-Western Culture: The Maya
- ANTH 1145-3 Exploring a Non-Western Culture: The Aztecs
- ANTH 1150-3 Exploring a Non-Western Culture: Regional Cultures of Africa
- ANTH 1160-3 The Ancient Egyptian Civilization
- ANTH 1170-3 Exploring Culture and Gender through Film
- ANTH 4560/ ETHN 4563-3 North American Indian Acculturation (formerly AIST 4565/ANTH 4560)
- ARAB 1011-3 Introduction to Arab and Islamic Civilizations
- ARSC 3001-3 Social Engagement and Human Rights: The South Africa Model
- ARTH 3209-3 Art, Culture, and Gender Diversity, 1400–1600: Renaissance Art Out of the Canon
- ARTH/CLAS 4269-3 Art and Archaeology of the Ancient Near East
- ARTH/WMST 4769-3 Gender Studies in Early Modern Visual Culture
- \*ASIA 1000-3 Introduction to South and Southeast Asian Civilizations
- ASTR 2000-3 Ancient Astronomies of the World
- CHIN 1012-4 Introduction to Chinese Civilization
- CHIN 1061-3 Boudoirs, Books, Battlefields: Voices and Images of Chinese Women
- CLAS/WMST 2100-3 Women in Ancient Greece
- \*CLAS/WMST 2110-3 Women in Ancient Rome
- COMM 2400-3 Discourse, Culture, and Identities
- COMM 3410-3 Intercultural Communication
- ECON 4626-3 Economics of Inequality and Discrimination
- EDUC 3013-(3-4) School and Society
- ENGL/WMST 1260-3 Introduction to Women's Literature
- ENGL 1800-3 American Ethnic Literatures
- ENGL/JWST 3677-3 Jewish-American Literature
- ETHN 1022-3 Introduction to Africana Studies (formerly ETHN 2002)
- ETHN 1023-3 Introduction to American Indian Studies (formerly ETHN 2003)
- ETHN 1025-3 Introduction to Asian American Studies (formerly AAST 1015)
- ETHN 2013-3 Critical Issues in Native North America (formerly AIST 2015)
- ETHN 2215-3 The Japanese American Experience (formerly AAST 2210)
- ETHN 2232-3 Contemporary African American Social Movements (formerly BLST 2200)
- \*ETHN 2242-3 African American Social and Political Thought (formerly BLST 2210)
- ETHN 2432/HIST 2437-3 African American History (formerly BLST/HIST 2437)
- ETHN 2536-3 Survey of Chicana and Chicano History and Culture (formerly CHST/HIST 2537)
- ETHN 2546-3 Chicana and Chicano Fine Arts and Humanities (formerly ETHN 1036)

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- ETHN 3136/WMST 3135-3 Chicana Feminisms and Knowledges (formerly CHST/WMST 3135)
  - ETHN 3201/INVS/LDSP 3100 (3-4) Multicultural Leadership: Theories, Principles and Practices (formerly ETHN 3200/INVS 3100)
  - ETHN 3213/WMST 3210-3 American Indian Women (formerly AIST/WMST 3210)
  - ETHN 3671-3 People of Color and Social Movements (formerly ETHN 3675)
  - FARR/LDSP 2400-3 Understanding Privilege and Oppression in Contemporary Society
  - FILM 3013-3 Women and Film
  - \*FREN/ITAL 1400-3 Medieval/Renaissance Women Writers in Italy and France
  - FREN 3800-3 France and the Muslim World
  - GEOG/WMST 3672-3 Gender and Global Economy
  - GEOG 3822-3 Geography of China
  - GRMN/JWST 3501-3 Jewish-German Writers: Enlightenment to Present Day
  - GRMN/WMST 3601-3 German Women Writers
  - GRMN/WMST 4301-3 Gender, Race, and Immigration in Germany and Europe
  - HEBR/JWST 2350-3 Introduction to Jewish Culture
  - HEBR/JWST 3202-3 Women, Gender, and Sexuality in Jewish Texts and Traditions
  - HIND 1011-3 Introduction to South Asian Civilizations
  - HIND 3811-3 The Power of the Word: Subversive and Censored 20th Century Indo-Pakistani Literature (formerly HNDI 3811)
  - \*HIST 2616-3 U.S. Women's History
  - HONR 1810-3 Honors Diversity Seminar
  - HONR/WMST 3004-3 Women in Education
  - HONR 3270-3 Journey Motifs in Women's Literature
  - HONR 4025-3 Heroines and Heroic Tradition
  - HUMN 2145-3 African America in the Arts
  - HUMN/ITAL 4150-3 The Decameron and the Age of Realism
  - HUMN/ITAL 4730-3 Italian Feminisms: Culture, Theory, and Narratives of Difference
  - IAFS/JWST 3600-3 Global Secular Jewish Societies
  - ITAL 4300-3 Multiculturalism in Italy
  - JPNS 1012-4 Introduction to Japanese Civilization
  - KREN 1011-3 introduction to Korean Civilization
  - \*LGBT 2000/WMST 2030-3 Introduction to Lesbian, Gay, Bisexual, and Transgender Studies
  - \*LIBB 1600-3 Gender and Film
  - LING 2400-3 Language and Gender
  - LING 3220-3 American Indian Languages in Social-Cultural Context
  - MUEL 2772-3 World Musics
  - PHIL 2270-3 Philosophy and Race
  - PHIL/WMST 2290-3 Philosophy and Women
  - PSCI 3101-3 Black Politics (formerly PSCI 3101/ETHN 3012)
  - PSCI 3301/WMST 3300-3 Gender, Sexuality, and U.S. Law
  - PSCI 4131-3 Latinos and the U.S. Political System (formerly PSCI 4131/ETHN 4136)
  - PSYC/WMST 2700-3 Psychology of Contemporary American Women
  - RLST 2700-3 American Indian Religious Traditions (formerly ETHN 2703/RLST 2700)
  - \*RLST/WMST 2800-3 Women and Religion
  - RUSS/WMST 4471-3 Women in 20th Century Russian Culture
  - SCAN 3206-3 Nordic Colonialisms

- SCAN/WMST 3208-3 Women in Nordic Society: Modern States of Welfare
- \*SOCY/WMST 1016-3 Sex, Gender, and Society 1
- SOCY/WMST 3012-3 Women and Development
- SPAN 3270-3 Barcelona: Understanding Local and Immigrant Cultures
- WMST 2000-3 Introduction to Feminist Studies
- WMST 2020-3 Femininities, Masculinities, and Alternatives
- WMST 2050-3 Gender, Sexuality, and Popular Culture
- WMST 2200-3 Women, Literature, and the Arts
- WMST 3670-3 Immigrant Women in the Global Economy

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**6. United States Context (3 semester hours).** Courses fulfilling the United States Context requirement explore important aspects of culture and society in the United States. They stimulate critical thinking and an awareness of the place of the United States in the world by promoting an understanding of the world views that the environment, culture, history, and values of the United States have fostered. They are required to include some discussion of the realities and issues related to matters of ethnic and racial diversity that characterize the nation's ongoing experience. These courses familiarize students with the United States and enable them to evaluate it critically.

These courses teach an appreciation of United States culture while inviting students to ask probing questions about values and ideals that are understood to be an integral part of the United States. Some of the questions that might be addressed in these courses are: How have citizens and other residents of the United States derived a sense of identity from geography, language, politics, and the arts? How do people in the United States view and influence the world beyond the nation's borders? How have the rights and responsibilities of citizenship changed over time? How have U.S. citizens and residents in the United States dealt with opposing values? Completing this requirement, students will develop both a better understanding of the United States, present and past, and a considerable interest in the nation's future.

This 3-hour requirement may be fulfilled by passing any course listed below. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

- ANTH 3170-3 America: An Anthropological Perspective
- ARTH 3509-3 American Art (formerly AMST 3509)
- BAKR 1500-3 Colorado: History, Ecology, and Environment
- \*CAMW 2001-3 The American West
- ECON 4524-3 Economic History of the U.S.
- ECON 4697-3 Industrial Organization and Regulation
- ETHN 2004-3 Themes in American Culture 1 (formerly AMST 2000)
- ETHN 2013-3 Critical Issues in Native North America (formerly AIST 2015)
- ETHN 2014-3 Themes in American Culture 2 (formerly AMST 2010)
- ETHN 2432/HIST 2437-3 African American History (formerly BLST/HIST 2437)
- ETHN 2536-3 Survey of Chicana and Chicano History and Culture (formerly CHST/HIST 2537)
- ETHN 3015-3 Asian Pacific American Communities (formerly AAST 3013)
- ETHN 4504-3 American Autobiography (formerly AMST 4500)
- \*HIST 1015-3 History of the United States to 1865

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\*HIST 1025-3 History of the United States since 1865

- \*HIST 2015-3 The History of Early America
- HIST 2126-3 Modern U.S. Politics and Diplomacy
- HIST 2166-3 The Vietnam Wars
- HIST 2316-3 History of American Popular Culture
- \*HIST 2326-3 Issues in American Thought and Culture
- HIST 2516-3 America through Baseball
- \*HIST 2636/WMST 2400-3 Women of Color and Activism
- HUMN 2145-3 African America in the Arts
- \*INVS 1523-3 Civic Engagement: Democracy as a Tool for Social Change
- ITAL 4350-3 Wops and Dons to Movers and Shakers: The Italian-American Experience
- LIBB 2800-3 Horror Films and American Culture
- LING 1000-3 Language in U.S. Society
- MUEL 2752-3 Music in American Culture
- \*PHIL 1200-3 Philosophy and Society
- PHIL 2220-3 Philosophy and Law
- \*PSCI 1101-3 American Political System
- PSCI 3011-3 The American Presidency
- PSCI 3021-3 U.S. Campaigns and Elections
- PSCI 3054-3 American Political Thought
- PSCI 3061-3 State Government and Politics
- PSCI 3071-3 Urban Politics
- PSCI 3163-3 American Foreign Policy
- PSCI 3171-3 Government and Capitalism in the U.S.
- RLST 2500-3 Religion in the United States
- RLST 3050-3 Religion and Literature in America
- RUSS 4301-3 American-Russian Cultural Relations
- \*SOCY 1021-3 U.S. Race and Ethnic Relations
- SOCY/WMST 3016-3 Marriage and the Family in U.S. Society
- SOCY 3151-3 Self in Modern Society
- WMST 3900-3 Asian American Women (formerly ETHN 3905/WMST 3900)

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higherred.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](https://higherred.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**7. Literature and the Arts (6 semester hours, 3 of which must be upper division).** These courses promote a better understanding of fundamental aesthetic and cultural issues. They sharpen critical and analytical abilities so that students may develop a deeper appreciation of works of art. The goal of this requirement is to enhance the student's ability to read critically, to understand the elements of art, and to grasp something of the complex relations between artist and public, and between art work and cultural matrix. The emphasis in courses which fulfill this requirement is on works that are generally recognized as central to and significant for one's cultural literacy and thereby enhance the student's understanding of our literary and artistic heritage.

Courses stress literary works as well as the history and criticism of literature and the arts. They may utilize creative projects as a means of arriving at a better understanding of the art form, but students may not use studio or performance classes to satisfy this requirement.

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Students are required to pass 6 hours of course work in literature and the arts, of which at least 3 hours must be upper division, unless either HUMN 1010 or 1020 is completed. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

If students graduate with a major dealing in depth with literature and the arts (Chinese, classics, dance, English, fine arts, French, Germanic studies, humanities, Italian, Japanese, Portuguese, Russian, Spanish, or theatre), they are exempt from this requirement.

Courses offered at CU-Boulder that satisfy this requirement include the following:

### **Lower-division Courses**

- \*ARTH 1300-3 History of World Art 1
- \*ARTH 1400-3 History of World Art 2
- ARTH/CLAS 1509-4 Trash and Treasure, Temples and Tombs: Art and Archaeology of the Ancient World
- ARTH 1709-3 Freshmen Seminar: Critical Introduction to Art History
- \*ARTH 2409-3 Introduction to Asian Arts
- CHIN 1051-3 Masterpieces of Chinese Literature in Translation
- \*CHIN 2441-3 Film and the Dynamics of Chinese Culture
- CLAS 1100-3 Greek Mythology
- CLAS 1110-3 Masterpieces of Greek Literature in Translation
- CLAS 1115-3 Honors: Masterpieces of Greek Literature in Translation
- \*CLAS 1120-3 Masterpieces of Roman Literature in Translation
- COMR 1800-3 Visual Literacy: Images and Ideologies
- \*DNCE 1027-3 Introduction to Dance and Culture (formerly DNCE 1029)
- ENGL 1500-3 Masterpieces of British Literature
- ENGL 1600-3 Masterpieces of American Literature
- FARR 2002-3 Literature of Lifewriting
- FREN 1200-3 Medieval Epic and Romance
- FREN 1610-3 How to Be French 1: The Ancien Regime
- FREN 1620-3 How to Be French 2: Modernity
- FREN 1900-3 Modern Paris in Literature, Photographs, Paintings, and Movies
- GRMN 1602-3 Metropolis and Modernity
- GRMN 2501-3 20th Century German Short Story
- \*GRMN 2503-3 Fairy Tales of Germany
- \*GRMN/HUMN 2601-3 Kafka and the Kafkaesque
- HEBR/JWST 2551-3 Secular Jewish Literature, Modern to Contemporary Jews Coming of Age
- HONR 2860-3 The Figure of Socrates
- HUMN 1010-6 Introduction to Humanities 1
- HUMN 1020-6 Introduction to Humanities 2
- HUMN 2100-3 Arts, Culture, and Media
- ITAL 1600-3 Strategies of Fear: Introduction to Italian Fantastic Literature
- JPNS 1051-3 Masterpieces of Japanese Literature in Translation
- MUEL 1832-3 Appreciation of Music
- MUEL 2852-3 Music in the Rock Era
- MUEL 2862-3 American Film Musical, 1926–1954

- \*RUSS 2231-3 Fairy Tales of Russia
- SCAN 1202-3 Tolkien's Nordic Sources and The Lord of the Rings
- \*SPAN 1000-3 Cultural Difference through Hispanic Literature
- \*THTR 1009-3 Introduction to Theatre
- \*THTR 1011-3 Development of Theatre 1: Classical Theatre and Drama
- WMST 2200-3 Women, Literature, and the Arts

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higherred.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higherred.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

## Upper-division Courses

- ARTH/CLAS 3039-3 Greek Art and Archaeology
- ARTH/CLAS 3049-3 Roman Art and Architecture
- ARTH 4329-3 Modern Art 1
- ARTH 4759-3 17th Century Art and the Concept of the Baroque
- CHIN/HUMN 3341-3 Literature and Popular Culture in Modern China
- CHIN 3351-3 Reality and Dream in Traditional Chinese Literature
- CLAS/HUMN 4110-3 Greek and Roman Epic
- CLAS/HUMN 4120-3 Greek and Roman Tragedy
- CLAS/HUMN 4130-3 Greek and Roman Comedy
- DNCE 4017-3 History and Philosophy of Dance
- DNCE 4037-3 Looking at Dance (formerly DNCE 3027)
- ENGL 3000-3 Shakespeare for Nonmajors
- ENGL 3060-3 Modern and Contemporary Literature for Nonmajors
- FILM/RUSS 3211-3 History of Russian Cinema
- FILM 3402-3 European Film and Culture
- FILM/HUMN 3660-3 The Postmodern
- FILM/HUMN 4135-3 Art and Psychoanalysis
- FREN 3200-3 Introduction to Literary Theory and Advanced Critical Analysis
- FREN 4300-3 Theatre and Modernity in 17th Century France
- GRMN 3502-3 Literature in the Age of Goethe
- GRMN/HUMN 3702-3 Dada and Surrealist Literature
- GRMN/HUMN 3802-3 Politics and Culture in Berlin, 1900–1933
- GRMN/HUMN 4504-3 Goethe's *Faust*
- HEBR/JWST 4301-3 Venice: The Cradle of European Jewish Culture
- HUMN/ITAL 4140-3 The Age of Dante: Readings from *The Divine Comedy*
- HUMN/ITAL 4150-3 *The Decameron* and the Age of Realism
- HUMN/RUSS 4811-3 19th Century Russian Literature in Translation
- HUMN/RUSS 4821-3 20th Century Russian Literature and Art
- ITAL 4145-3 The Age of Dante in Italian
- ITAL 4147-3 Visualizing Dante's *Inferno*: A Global Seminar in Florence, Italy
- ITAL 4600-3 Once Upon a Time in Italy
- MUEL 3822-3 Words and Music
- MUEL 3832-3 Music in Literature
- RUSS 4831-3 Contemporary Russian Literature

- SCAN 3202-3 Old Norse Mythology
- SCAN 3203-3 19th and 20th Century Nordic Literature
- SCAN 3204-3 Medieval Icelandic Sagas
- SCAN 3205-3 Scandinavian Folk Narrative
- SCAN 3506-3 Scandinavian Drama
- SPAN 3800-3 Latin American Literature In Translation
- THTR 3011-3 Development of American Musical Theatre

**8. Natural Science (13 semester hours, including a two-course sequence and a laboratory or field experience).**

These courses study the nature of matter, life, and the universe. They enhance literacy and knowledge of one or more scientific disciplines, and enhance those reasoning and observing skills that are necessary to evaluate issues with scientific content. Courses are designed to demonstrate that science is not a static list of facts, but a dynamic process that leads to knowledge. This process is one of subtle interplay between observation, experimentation, and theory, enabling students to develop a critical view toward the conclusions and interpretations obtained through the scientific process.

Through a combination of lecture courses and laboratory or field experiences, students gain hands-on experience with scientific research. They develop observational skills of measurement and data interpretation and learn the relevance of these skills to the formation and testing of scientific hypotheses.

The goal of this requirement is to enable students to understand the current state of knowledge in at least one scientific discipline, with specific reference to important past discoveries and the directions of current development; to gain experience in scientific observation and measurement, in organizing and quantifying results, in drawing conclusions from data, and in understanding the uncertainties and limitations of the results; and to acquire sufficient general scientific vocabulary and methodology to find additional information about scientific issues, to evaluate it critically, and to make informed decisions.

The natural science requirement, which consists of passing 13 hours of approved natural science course work, includes one two-semester sequence of courses and at least 1 credit hour of an associated lab or field experience. No more than two lower-division courses may be taken from any single department (1-credit-hour lab/field experience courses are excepted). Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

Students who graduate with a major in the natural sciences (astrophysical and planetary sciences, biochemistry, chemistry, ecology and evolutionary biology, geology, integrative physiology, molecular, cellular and developmental biology, or physics) or students who graduate with a minor in ecology and evolutionary biology are exempt from completing the natural science requirement.

Courses offered at CU-Boulder that satisfy this requirement include the following:

**Two-semester Sequences**

*(Note: Although not recommended, the first semester of a sequence may be taken as a single course. Also, some sequences have included, corequisite, or optional laboratories.)*

- \*ANTH 2010-3 and \*2020-3 Introduction to Physical Anthropology 1 and 2 (optional labs \*ANTH 2030, \*2040)
- ASTR 1000-3 and 1020-4 The Solar System and Introductory Astronomy 2 (ASTR 1000 formerly ASTR 1110) (does not include a lab)
- ASTR 1010-4 and 1020-3 Introductory Astronomy 1 and 2 (lab included in ASTR 1010)

- ASTR 1030-4 and 1040-4 Accelerated Introductory Astronomy 1 and 2 (lab included in ASTR 1030)
- \*ATOC 1050-3 and 1060-3 Weather and the Atmosphere and Our Changing Environment: El Niño, Ozone, and Climate (optional lab ATOC 1070)
- \*CHEM 1011-3 and 1031-4 Environmental Chemistry 1 and 2 (lab included in CHEM 1031)
- \*CHEM 1113-4 and \*1133-4 General Chemistry 1 and 2 (corequisite labs CHEM 1114 and 1134)
- CHEM 1251-5 and 1271-5 General Chemistry 1 and 2 for Chemistry and Biochemistry Majors (lab included)
- CHEM 1351-5 and 1371-5 Honors General Chemistry 1 and 2 (lab included) (formerly CHEM 1151 and 1171)
- EBIO 1030-3 and 1040-3 Biology: A Human Approach 1 and 2 (optional lab EBIO 1050)
- \*EBIO 1210-3 and \*1220-3 General Biology 1 and 2 (optional labs \*EBIO 1230, \*1240)
- \*GEOG 1001-4 and \*1011-4 Environmental Systems 1 and 2: Climate and Vegetation, Landscapes and Water (lab included)
- \*GEOL 1010-3 and 1020-3 Introduction to Geology and Introduction to Earth History (optional lab \*GEOL 1030)
- \*GEOL 1010-3 and 1040-3 Introduction to Geology and Geology of Colorado (optional lab \*GEOL 1030)
- \*GEOL 1010-3 and 1060-3 Introduction to Geology and Global Change—An Earth Science Perspective (optional lab \*GEOL 1030)
- MCDB 1111-4 and 2150-3 Biofundamentals: The Evolutionary, Molecular, and Cellular Basis of Life and Principles of Genetics (lab included in MCDB 1111)
- \*MCDB 1150-3 and \*2150-3 Introduction to Cell and Molecular Biology and Principles of Genetics (optional labs MCDB \*1151, \*2151)
- \*PHYS 1010-3 and 1020-4 Physics of Everyday Life 1 and 2 (lab included in PHYS 1020)
- \*PHYS 1110-4 and \*1120-4 General Physics 1 and 2 (optional lab \*PHYS 1140)
- \*PHYS 2010-5 and \*2020-5 General Physics 1 and 2 (lab included)

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

### Nonsequence Courses

- ANTH 3000-3 Primate Behavior
- ANTH 3010-3 The Human Animal
- ASTR 1200-3 Stars and Galaxies (formerly ASTR 1120)
- ASTR 2000-3 Ancient Astronomies of the World
- ASTR 2010-3 Modern Cosmology: Origin and Structure of the Universe
- ASTR 2020-3 Introduction to Space Astronomy
- ASTR 2030-3 Black Holes
- ATOC/GEOL 3070-3 Introduction to Oceanography
- ATOC 3300/GEOG 3301-3 Analysis of Climate and Weather Observations
- ATOC 3500/CHEM 3151-3 Air Chemistry and Pollution (formerly ATOC/CHEM 3500)
- ATOC/ENVS 3600/GEOG 3601-3 Principles of Climate
- ATOC 4700-3 Weather Analysis and Forecasting
- ATOC 4750-3 Desert Meteorology and Climate
- \*CHEM 1021-4 Introductory Chemistry (lab included)

- CHEN 1000-3 Creative Technology
- EBIO 3180-3 Global Ecology
- EBIO 3190-3 Tropical Marine Ecology
- ENVS 1000-4 Introduction to Environmental Studies
- ENVS/PHYS 3070-3 Energy and the Environment
- GEOG 3511-4 Introduction to Hydrology
- GEOG/GEOL 4241-4 Principles of Geomorphology (lab included)
- GEOL 2100-3 Environmental Geology
- GEOL 3040-3 Global Change: The Recent Geological Record
- GEOL 3720-3 Evolution of Life: The Geological Record
- GEOL 3950-3 Natural Catastrophes and Geologic Hazards
- IPHY 2420-3 Nutrition for Health
- IPHY 3660-3 The Dynamics of Motor Learning
- \*MCDB 1030-3 Plagues, People, and Microorganisms
- \*MCDB 1041-3 Fundamentals of Human Genetics
- MCDB 3150-3 Biology of the Cancer Cell
- MCDB 3330-3 Evolution and Creationism
- PHIL 1400-3 Philosophy and the Sciences
- PHIL 3430-3 History of Science: Newton to Einstein
- PHYS 1230-3 Light and Color for Non-Scientists
- \*PHYS 1240-3 Sound and Music
- PHYS 1300-3 Experiment in Physics
- \*PSYC 2012-3 Biological Psychology 1
- SLHS 2010-3 Science of Human Communication

### One-credit-hour Lab/Field Courses

*(NOTE: Each course below has a prerequisite or corequisite.)*

- \*ANTH 2030-1 Lab in Physical Anthropology 1
- \*ANTH 2040-1 Lab in Physical Anthropology 2
- \*ATOC 1070-1 Weather and the Atmosphere Laboratory
- CHEM 1114-1 Lab in General Chemistry 1
- CHEM 1134-1 Lab in General Chemistry 2
- EBIO 1050-1 Biology: A Human Approach Lab
- \*EBIO 1230-1 General Biology Lab 1
- \*EBIO 1240-1 General Biology Lab 2
- \*GEOL 1030-1 Introduction to Geology Lab 1
- \*MCDB 1151-1 Introduction to Cell and Molecular Biology Lab
- \*MCDB 2151-1 Principles of Genetics Lab
- \*PHYS 1140-1 Experimental Physics 1

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**9. Contemporary Societies (3 semester hours).** All individuals function within social frameworks. Courses in contemporary societies introduce students to the study of social groups, including social

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institutions and processes, the values and beliefs shared by their members, and the forces that mold and shape social groups. They prepare students to approach social phenomena of all kinds in an informed and critical way, and to describe, analyze, compare, and contrast them. Such study also provides students with new vantage points from which to view their own socio-cultural assumptions and traditions.

These courses, which treat contemporary societies, study an individual society or compare several societies. All explicitly attempt to deepen the students' understanding of the cultural, political, economic, or social contexts that shape people's lives. Their scope may be global or specific, but all courses that fulfill this requirement address social processes, institutions, values, forces, and beliefs.

Students who graduate with a major in anthropology, economics, international affairs, political science, psychology, or sociology are exempt from the contemporary societies requirement. Students may satisfy this 3-hour requirement by passing any course listed below. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

- ANTH 1200-3 Culture and Power
- ANTH 4560/ETHN 4563-3 North American Indian Acculturation (formerly AIST 4565/ANTH 4560)
- BAKR 1600-3 Creating a Sustainable Future
- COMM 1210-3 Perspectives on Human Communication
- ECON 1000-4 Introduction to Economics
- ECON 2010-4 Principles of Microeconomics
- ECON 2020-4 Principles of Macroeconomics
- ECON 3403-3 International Economics and Policy
- ECON 3535-3 Natural Resource Economics
- ECON 3545-3 Environmental Economics
- EDUC 3013 (3-4) School and Society
- ETHN 1025-3 Introduction to Asian American Studies (formerly AAST 1015)
- ETHN 2232-3 Contemporary African American Social Movements (formerly BLST 2200)
- ETHN 2242-3 African American Social and Political Thought (formerly BLST 2210)
- ETHN 3015-3 Asian Pacific American Communities (formerly AAST 3013)
- FARR/LDSP 2400-3 Understanding Privilege and Oppression in Contemporary Society
- GEOG 3742-3 Place, Power, and Contemporary Culture
- GRMN 1601-3 Germany Today
- HIST 2126-3 Modern U.S. Politics and Diplomacy
- HIST 2166-3 The Vietnam Wars
- HUMN 4835-3 Literature and Social Violence
- \*IAFS 1000-4 Global Issues and International Affairs
- INVS 3000 (3-4) Innovative Approaches to Contemporary Issues through Service Learning
- INVS 3304-3 Human Rights: Promotion and Protection, an NGO Perspective
- INVS 4302/PSCI 4732-3 Critical Thinking in Development
- \*ITAL 1500-3 "That's Amoré": Introduction to Italian Culture
- ITAL 4290-3 Italian Culture through Cinema
- LING 1000-3 Language in U.S. Society
- \*PRLC 1820-3 Community Issues in Leadership
- \*PSCI 1101-3 American Political System
- \*PSCI 2012-3 Introduction to Comparative Politics

- \*PSCI 2223-3 Introduction to International Relations
- PSCI 3022-3 Russian Politics
- PSCI 3032-3 Latin American Political Systems
- PSCI 3074-3 Dimensions of Citizenship in the U.S. and the EU
- PSCI 3082-3 Political Systems of Sub-Saharan Africa
- PSCI 3143-3 Problems in International Relations
- PSCI 4002-3 Western European Politics
- PSCI 4012-3 Global Development
- PSCI 4062-3 Emerging Democracies of Central and East Europe
- PSCI 4272-3 The Political Economy of Advanced Industrial Democracies
- \*PSYC 2606-3 Social Psychology
- RLST 1850-3 Ritual and Media
- RLST 2400-3 Religion and Contemporary Society
- RUSS 2501-3 Russia Today
- RUSS 4831-3 Contemporary Russian Literature
- SCAN 2201-3 Introduction to Modern Scandinavian Culture and Society
- SCAN 3201-3 Contemporary Nordic Society and Culture
- SLHS 1010-3 Disabilities in Contemporary American Society
- \*SOCY 1001-3 Introduction to Sociology
- SOCY 4024-3 Juvenile Delinquency
- \*WMST 2600-3 Gender, Race, and Class in a Global Context

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

**10. Ideals and Values (3 semester hours).** Ideals and values have usually been determined by long-standing traditions and fixed social practices. In our modern world, the interaction of different cultures, movement from place to place, electronic media, and the rapidity of change, even within a given society, have combined to generate new constellations of ideals and hard choices among values.

Courses meeting the ideals and values requirement inquire into some specific sphere of human value (e.g. moral, religious, intellectual, aesthetic, environmental, etc.). In these courses students are encouraged to reflect upon fundamental ideals and values, their own and others, and the sources from which those value orientations derive. Such inquiry demands the development of the critical skills which help students identifying the assumptions and ramifications of value structures. It also requires consideration of approaches by which value systems are constructed, justified, and applied, especially in regard to the personal, societal, and in some cases cross-cultural contexts.

Students may complete this 3-hour requirement by passing any course listed below. Students who take approved CU-Boulder course work to fulfill this requirement must take the course for a letter grade and receive a passing grade of *D-* or higher.

- ARSC/NRLN 2000-3 Constructions of Knowledge in the Academy and Beyond
- CLAS/PHIL 2610-3 Paganism to Christianity
- CWCV 2000-3 The Western Tradition
- ENGL/JWST 3312-3 The Bible as Literature
- ENVIS/PHIL 3140-3 Environmental Ethics
- FARR 2510/FILM 2613-3 Exploring Good and Evil Through Film (formerly FARR/FILM 2510)

- FARR 2660/HONR 2250-3 The Ethics of Ambition
- FREN 4860-3 War, Trauma, and Memory (formerly FREN 4000)
- GRMN/HUMN 1701-3 Nature and Environment in German Literature and Thought
- GRMN/JWST 2502-3 Representing the Holocaust
- GRMN 2603-3 Moral Dilemmas in Philosophy and Literature (formerly GRMN 1603)
- GRMN/HUMN 3505-3 The Enlightenment: Tolerance and Emancipation
- GRMN/HUMN 4502-3 Nietzsche: Literature and Values
- HUMN 4155-3 Philosophy, Art, and the Sublime
- \*INVS 1000-4 Responding to Social and Environmental Problems through Service Learning
- JWST/\*RLST 2600-3 Judaism, Christianity, and Islam
- LDSP 1000-3 The Foundations of 21st Century Leadership
- LIBB 1500-3 The Dialogue of Art and Religion
- LIBB 2013-3 Film and the Quest for Truth (formerly FILM 2013)
- \*PHIL 1000-3 Introduction to Philosophy
- \*PHIL 1100-3 Ethics
- \*PHIL 1200-3 Philosophy and Society
- \*PHIL 1600-3 Philosophy and Religion
- PHIL 2200-3 Major Social Theories
- PHIL 3100-3 Ethical Theory
- PHIL/WMST 3110-3 Feminist Practical Ethics
- PHIL 3160-3 Bioethics
- PHIL 3190 (3-4) War and Morality
- PHIL 3200-3 Social and Political Philosophy
- PHIL 3260-3 Philosophy and the International Order
- PHIL 3600-3 Philosophy of Religion
- PRLC 1810-3 Ethical Leadership
- \*PSCI 2004-3 Survey of Western Political Thought
- PSCI 3054-3 American Political Thought
- PSCI 3064-3 Environmental Political Theory
- RLST 1620-3 The Religious Dimension in Human Experience
- RLST 2500-3 Religion in the United States
- \*RLST 2610-3 Religions of South Asia
- \*RLST 2620-3 Religions of East Asia
- RLST 2700-3 American Indian Religious Traditions (formerly ETHN 2703/RLST 2700)
- RUSS 3701-3 Slavic Folk Culture: Ideals and Values in the Contemporary World
- RUSS 4221-3 Cultural Mythologies of Russian Communism
- SEWL 2000-3 America, the Environment, and the Global Economy
- SLHS 1010-3 Disabilities in Contemporary American Society
- \*SOCY 1004-3 Deviance in U.S. Society
- SOCY 1022-3 Ethics and Social Issues in U.S. Health and Medicine
- \*SOCY 2031-3 Social Problems
- SOCY 2077-3 Environment and Society
- SOCY 3151-3 Self in Modern Society
- SOCY 4121-3 Sociology of Religion

\*Note: This course is approved for the Colorado statewide guaranteed transfer program. Further information about the

## Majors and Other Areas of Interest

To be eligible for the four-year guarantee, a student must begin the program of study and declare the major by the start of the second semester or earlier for some select majors. For complete information, see the Four-Year Graduation Requirements in this section.

All arts and sciences students pursuing a bachelor's degree must enter a degree-granting major by the end of their sophomore year (i.e., the semester in which they will complete 60 semester hours of work, including transfer work).

College academic advisors are responsible for advising students and also for certifying the completion of those students' programs for graduation. The college can assume no responsibility for difficulties arising out of a student's failure to establish and maintain contact with their assigned academic advisor.

### *Minimum Major Requirements*

The following minimum requirements are specified by the college. In many cases departmental requirements may be higher than the minimums listed here.

1. A minimum of 30 credit hours in the major area (for the BFA, a minimum of 50 hours).
2. Thirty semester hours in the major area, all with grades of C- (1.700) or higher (no pass/fail credits can be applied to the major).
3. Eighteen credit hours of upper-division courses in the major, all with grades of C- (1.700) or higher.
4. Twelve hours of upper-division course work in the major on the CU-Boulder campus.
5. A 2.000 (C) overall grade point average in all major work attempted.
6. Special requirements as stipulated by the major department.
7. No more than 8 credit hours of independent study.

Students are subject to those major requirements in effect at the time they formally declare the major. All College of Arts and Sciences students have 10 years to complete the requirements for a declared major. If this 10-year limit is exceeded, students may be required to satisfy the current major requirements. Students with further questions should consult a major advisor.

### *Open Option*

"Open option" (OPNO) is a major designation, but it is not a degree program. Open option offers a structured advising program that provides students with the necessary support and strategies to investigate and compare academic disciplines so they can make informed decisions about the degree programs they will pursue. Students can explore any major available in the college while completing course requirements toward a baccalaureate degree. To ensure that students graduate in a timely manner, open option majors are required to enter a specific degree program by the time they have completed 60 credit hours (approximately the end of the sophomore year). Students must declare and enter a degree-granting major by the start of the second semester (or earlier for certain majors) to maintain eligibility for the four-year guarantee.

Every open option student is assigned to a specific academic advisor with whom the student works until she or he declares and enters a degree-granting major.

## *Double Majors*

Students pursuing either the BA or BFA degree may graduate with more than one major within the degree (e.g., economics and French) by completing all requirements for both majors. A minimum of 120 total credit hours is required for double majors within the College of Arts and Sciences.

## *Minors*

A number of departments and programs in the College of Arts and Sciences offer minor programs. Participation in a minor program is optional for students pursuing a bachelor's degree. Course work applied to a minor also may be applied toward general education (core curriculum or college list) and major requirements. Students may not earn a major and a minor in the same program of study. All requirements for the minor must be completed by the time the BA or BFA is conferred.

Departments and programs with approved minor programs currently include applied mathematics; astrophysical and planetary sciences; atmospheric and oceanic sciences; chemistry and biochemistry; Chinese; classics; dance; ecology and evolutionary biology; economics; English—creative writing; ethnic studies; French; geography; geological sciences; Germanic studies; history; Italian; Japanese; linguistics; mathematics; Nordic studies; philosophy; physics; political science; religious studies; Russian studies; Spanish and Portuguese—Portuguese; theatre; and women's studies. Minors are also available in business offered by the Leeds School of Business and in computer science offered by the College of Engineering and Applied Science. Interested students can find further information at [advising.colorado.edu](http://advising.colorado.edu).

Although the structure of specific minor programs may differ, all minors offered in the College of Arts of Sciences must have the following restrictions or minimum requirements:

1. A minimum of 18 credit hours must be taken in the minor area, including a minimum of 9 upper-division hours.
2. All course work applied to the minor must be completed with a grade of C- or better (no pass/fail work may be applied). The grade point average for all minor degree course work must be equal to 2.000 (C) or higher.
3. Students pursuing a major in distributed studies or an individually structured major are not eligible to earn a minor.
4. Students are allowed to apply no more than 9 credit hours, including 6 upper-division credit hours, of transfer work toward a minor.
5. Students may earn no more than two minors.
6. Students must complete all requirements for a minor by the time they graduate.

## *Areas of Interest*

The college sponsors programs—but not undergraduate majors—in the areas of interest below. Course work in these areas is open to all interested students. Contact the Office of the Dean for more information.

- African American Studies
- American Indian Studies
- Asian American Studies
- Bibliography
- Chicano Studies
- Honors
- International and National Voluntary Service Training
- Museum

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## *Certificate Programs*

The college also sponsors undergraduate certificate programs in a number of fields of study. Completion of specified course work in the certificate programs below entitles students to a certificate issued by the dean of the college. Students interested in these programs should contact the director of the appropriate program.

- Actuarial Studies and Quantitative Finance
- British and Irish Studies
- Central and Eastern European Studies
- Cognitive Sciences
- Foundations of Western Civilization
- International Media
- Jewish Studies
- Lesbian, Gay, Bisexual, and Transgender Studies
- Medieval and Early Modern Studies
- Neurosciences and Behavior
- Peace and Conflict Studies
- Western American Studies

## Multiple Degrees

### *Double Degrees*

Two different degrees (i.e., a BA and BFA from the College of Arts and Sciences, or two degrees from different schools or colleges) may be earned from CU-Boulder if the following conditions are fulfilled:

1. The student meets the residency requirements of, and is enrolled in, both the College of Arts and Sciences and the college or school granting the second degree.
2. The student presents a total of at least 145 credit hours passed. If the second college sets a higher number of minimum credits for a double degree, then the higher minimum must be met.
3. For the BA and BFA degrees, 90 credit hours of arts and sciences course work are required (courses from outside arts and sciences that have been approved for the arts and sciences core curriculum will apply toward the 90 credit hours).
4. The student has completed all general education and major requirements of the College of Arts and Sciences.
5. Both degrees must be awarded at the same time.

### *Second Baccalaureate Degrees*

A student who has been awarded a baccalaureate degree, either from this college or elsewhere, may be granted a second baccalaureate degree provided the following conditions have been fulfilled:

1. All general requirements for the degree to be awarded by the College of Arts and Sciences have been met. (Students are subject to the general degree requirements in effect the semester they enter the second baccalaureate degree program.)
2. The major in the BA or BFA is different from the major in the first degree earned.
3. Arts and sciences students must complete a minimum of 45 credit hours in University of Colorado courses on the Boulder campus toward the second degree after admission to the second degree program. Of these 45 credits, a minimum of 30 credits must be in arts and

sciences upper-division credit hours completed as a matriculated student in the second degree in the College of Arts and Sciences at the University of Colorado Boulder and at least 12 of these upper-division hours must be in the major. Courses taken as a nondegree student do not count in these minimum requirements.

## *Graduation Deadlines*

Arts and sciences seniors must meet appropriate application deadlines in order to graduate. To apply for graduation, students must submit an application online via the student portal, must consult with their primary advisor, and must complete a graduation packet. Students must submit the complete graduation packet to the main office of the Academic Advising Center by one of the deadlines listed below.

Dates are subject to change. Students should verify current deadlines on the Academic Advising Center website ([advising.colorado.edu](http://advising.colorado.edu)).

Students are responsible for monitoring their CU e-mail for notification of new procedures and deadlines.

Students who intend to complete their degree in August and who want their names to appear in the May commencement program should request that their degree be conferred in August, but must submit their August graduation application by the deadline for May commencement.

Students who apply to graduate but who fail to fulfill all degree requirements by the deadline for that term/year must submit a new application online to change their graduation date to a future term/year in order for the college to confer the degree once all remaining requirements are completed.

**Commencement in May**, date due: February 1

**Commencement in August**, date due: June 1 (Students intending to participate in the May ceremony must apply by February 1 to have their names appear in the program.)

**Commencement in December**, date due: October 1

In order for arts and sciences students to be certified as having completed all degree requirements, all credits and grades (including transfer credits and Continuing Education credits and grades) must be posted to the student records system by the college deadline. The deadline varies from term to term. Visit the Academic Advising Center website for specific dates.

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## Graduate Study

Curricula leading to advanced degrees are offered by most of the departments in the College of Arts and Sciences. Students should consult the [Graduate School](#) section of this catalog for admission and degree requirements of the Graduate School. Curricula for graduate programs are listed alphabetically in this section.

For information about enrollment in graduate course work while still an undergraduate, see [Admission of Seniors](#) in the Graduate School section.

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# Programs of Special Interest

## Honors Program

The Honors Program is designed to provide special educational opportunities for highly motivated students. It is open to well-prepared freshmen, as well as to sophomores and upper-division students in all schools and colleges. The Honors Program offers thoughtful advising, close contact with faculty and with other honors students, and an opportunity to write an honors thesis. Honors offers over 70 courses per year in a wide variety of areas. In any academic year about one-fourth of all Honors courses are offered under the HONR designation; the remainder are offered as seminars under departmental designations (CHEM, ENGL, HIST, IPHY, and so on). Course offerings for each semester are listed, with detailed descriptions, on the Honors Program web page at [www.colorado.edu/honors/courses](http://www.colorado.edu/honors/courses). Honors courses are limited to an enrollment of approximately 15 students.

Faculty members teaching honors seminars are carefully selected for special interests and enthusiasm, for teaching excellence in small discussion classes, and for insistence on high academic standards. Honors seminars are designed for the student who welcomes challenge, knows that the mind expands only with effort, and actively seeks academic and intellectual challenges. Honors courses encourage students to think creatively. Many honors courses are interdisciplinary; all encourage students to read widely and critically.

The Honors Council, consisting of faculty from all participating academic departments, is responsible for deciding which students merit the award of the bachelor's degree with the Latin honors designations: *cum laude*, *magna cum laude*, and *summa cum laude*. These awards are made on the basis of special honors work and not simply on the basis of grades earned in courses.

Students may graduate with departmental honors or general honors, or both. Departmental honors may require a junior or senior honors seminar, an independent research project, and/or directed readings. All departments require an honors thesis. Each department has information pertaining to its own particular program. General honors, supervised and administered directly by the Honors Program and its core faculty, permits students to pursue interests and ultimately to write theses that cross disciplinary and departmental boundaries. To graduate with general honors, students must have a cumulative GPA of 3.50 or higher, have completed 12 credit hours of required honors courses, and have written a thesis on an interdisciplinary topic.

The Honors Residential Academic Program (HRAP) is the optional residential component of the program. HRAP, open to a limited number of qualified freshmen and sophomores, consists of small classes offered in the Arnett and Smith residence halls as well as opportunities to participate in extracurricular activities. (There is an additional charge for the Honors Residential Academic Program. See below for more information.)

Detailed information concerning the Honors Program may be obtained in the Honors office in Norlin Library. Qualified students may register for courses. Course offerings and call numbers can be found on the Honors Program website.

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Freshmen are invited to join the Honors Program based on their high school GPA and test scores. Transfer students must have a 3.300 GPA from their previous school. Students currently enrolled are accepted on the basis of academic achievement at CU-Boulder. While honors students are expected to have a GPA of at least 3.300, it should be emphasized that no student who shows ability and promise is excluded from consideration. This is a program of excellence and commitment in which the best teaching faculty is committed to serve the most highly motivated students for the benefit of those students, the university, and the larger society.

## Miramontes Arts and Sciences Program

The Miramontes Arts and Sciences Program (formerly the Minority Arts and Sciences Program) is a community of diverse scholars dedicated to academic excellence. MASP provides assistance to members in their successful matriculation, retention, and graduation from the College of Arts and Sciences at CU-Boulder. For students interested in science and mathematics, MASP emphasizes study leading to the BA degree in selected fields including biology, chemistry/biochemistry, integrative physiology, mathematics, physics, and applied mathematics. MASP also supports underrepresented students interested in pursuing humanities and social sciences degrees, including history, theatre, fine arts, and other disciplines within the College of Arts and Sciences.

MASP facilitates the often-difficult transition from achieving excellence in high school to achieving excellence in the college learning environment. It provides a personally supportive community and intense academic instruction, and helps develop a strong sense of group cohesiveness and spirit.

MASP provides scholarships to its promising students. Grade point average (GPA), financial need, and other academic indicators assist in determining scholarship eligibility and amounts. MASP also provides mentoring, academic advising and clustering, academic co-seminars and seminars, the Summer Program for Excellence in Academics and Community (PEAC) for incoming CU freshmen, self-management and leadership workshops, and a MASP networking and study center.

For more information, call the MASP office at **303-492-8229**.

## Norlin Scholars Program

Norlin Scholars is an interdisciplinary intellectual community in which students receive an education personally tailored to fit their interests and goals in any of CU-Boulder's undergraduate colleges or schools. Geared toward students seeking a liberal education or preparing for graduate or professional schools, the program offers academic challenge, breadth of experience, and close work with faculty. Each Norlin Scholar receives a merit-based award of \$4,000 per year. Students who enter the program as freshmen receive a four-year award, contingent upon academic progress; students who enter as rising juniors receive a two-year award, contingent upon academic progress. Applicants should demonstrate excellent academic and/or creative ability. More information and application details can be found at [enrichment.colorado.edu/norlinscholars](http://enrichment.colorado.edu/norlinscholars) or call **303-735-6802**.

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# Residential Academic Programs (RAPs)

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## Baker Residential Academic Program

The Baker Hall Residential Academic Program (RAP) is designed primarily for freshman and sophomore students who are interested in the natural sciences and environmental studies. The program provides courses that satisfy various core curriculum requirements in the College of Arts and Sciences and in majors such as ecology and evolutionary biology, environmental studies, integrative physiology, geography, geology, and chemistry. Courses are typically limited to 25 students and are taught in classrooms located in Baker Hall. Baker RAP offers access to academic advising, career counseling, student internships, guest speakers, field trips, and close faculty contact. The combination of small classes, a group of students who take many of the same classes together, and frequent field trips and special lectures creates a small-college atmosphere while offering the advantages of studying at a major research university.

Baker RAP offers courses in anthropology, biology, chemistry, economics, environmental studies, expository writing, geography, geology, history, mathematics, philosophy, and political science. The curriculum is designed to maximize the opportunities for students to satisfy core curriculum requirements in the College of Arts and Sciences. Upper-division courses are presented in biology and environmental studies. Upper-division credit is available through independent study and research. Students usually take one or two of the above courses each semester. Baker RAP also reserves seats for its students in certain high-demand courses taught outside the program, including introductory biology and chemistry laboratories.

The Baker RAP curriculum is augmented through experiential learning outside of the classroom. Undergraduate research plays an important role in these experiences. Interested students are encouraged to participate in research projects as early as their first year. Baker RAP instructors work closely with the Undergraduate Research Opportunities Program (UROP) to facilitate matching Baker RAP students with faculty members with similar research interests.

Baker RAP cocurricular activities offer social and educational opportunities for students in the

program. These activities include a kick-off picnic at the beginning of the school year, local hikes, a day of cross-country skiing, and a spring-time service-oriented activity emphasizing environmental conservation. Guest lecturers are invited to speak about scientific or environmental themes.

There is a fee for participation in Baker RAP in addition to regular tuition, fees, and room and board. Students eligible for financial aid may request that their budget be adjusted to include the program fee. Their eligibility for aid will then be increased by an amount equal to the Baker RAP fee. Students interested in the program should visit [bakerrap.colorado.edu](http://bakerrap.colorado.edu). Inquiries to the program can be by e-mail, [bakerrap@colorado.edu](mailto:bakerrap@colorado.edu); phone, **303-492-3188**; or mail, Baker Hall Residential Academic Program, University of Colorado Boulder, 176 UCB, Boulder, CO 80309-0176.

## Communication and Society Residential Academic Program

Buckingham Hall's Communication and Society Residential Academic Program (COMM RAP) is a living-learning environment for 200 students designed around the theme of Communication and Society. It offers students an opportunity to engage with faculty and other students in a small college atmosphere within a major research university. Students explore the complex social problems and challenges of communication in contemporary society in seminar-sized courses. They also have opportunities to participate in co-curricular activities that stress civic engagement. The many opportunities for outreach and collaboration with the Boulder community provide an excellent venue for learning by doing.

A unique feature of the program is its integration of courses from its three supporting areas, the Department of Communication, Journalism and Mass Communication, and the Program for Writing and Rhetoric. These courses emphasize the role of participation, deliberation, and collaboration in shaping and resolving public problems and problems in daily life. Its offerings also include opportunities for upper-division courses on topics germane to communication and society.

In addition to communication offerings, the curriculum includes courses that satisfy the writing and core requirements in Arts and Sciences. Across the year, guest lectures and seminars provide opportunities to interact on civic engagement and societal participation with leading experts on the CU faculty and distinguished visitors to the university.

The COMM RAP is open to students with an interest in communication and society, regardless of major. A fee is charged for participation in the program. For more information, call **303-492-1996**.

## Farrand Residential Academic Program

Farrand's small seminar courses in the liberal arts are taught by award-winning faculty especially selected to help create a close intellectual and social community. As the Humanities and Cultural Studies Residential Academic Program, Farrand focuses on the study of the humanities within the larger frame of culture and society. Farrand also offers high-demand courses from all areas of the curriculum. These include service-learning classes, which provide a deeper cultural understanding by applying classroom learning to service to the community.

Each semester, every Farrand student takes a Farrand course that provides a shared academic experience. For many students, this course will be a humanities course, such as Greek Mythology, Introduction to Ethics, or the interdisciplinary Introduction to the Humanities, reflecting a commitment to the humanities that is central to Farrand's identity.

Because helping others contributes to the learning experience as well as to the whole community, Farrand offers several service-learning classes each semester. Service learning gives students the chance to apply what they study in their classes to real-life situations, such as a homeless shelter, a

humane society, or a tutoring program. These classes include Gandhian Philosophy; Nutrition, Health, and Performance; and Global Women Writers. The Farrand curriculum also offers a wide range of popular core curriculum classes taught by faculty known for their teaching skills. Ethics, Calculus, and Introduction to American Government are just a few examples.

Farrand's many cocurricular opportunities include a wide variety of events and performances, active and well-supported student governance (Farrand Community Council), and group projects benefiting the community and the environment.

The program is designed primarily for students in the College of Arts and Sciences. Interested students in other colleges should contact the Farrand program for special admission procedures. It is administered by academic directors selected from the faculty and a hall director experienced in the operation of a large residence hall. There is a charge for the program in addition to regular tuition, fees, and room and board.

Inquiries concerning any aspect of the academic program may be directed to the Farrand Academic Program, University of Colorado Boulder, 180 UCB, Boulder, CO 80309-0180, **303-492-8848**.

## Global Studies Residential Academic Program

The Global Studies Residential Academic Program (G-RAP) promotes the recognition of global interdependence, encourages the study of foreign languages and international affairs, and emphasizes the value of international education. This year-long program, housed in the newly renovated Smith Residence Hall in the Kittredge Complex, provides 200 first- and second-year students with the foundational tools needed to serve as effective global citizens.

G-RAP combines multidisciplinary, internationally focused courses with co-curricular activities, service learning opportunities, and short-term study abroad programs. Students select from a diverse selection of course offerings each semester, including courses in anthropology, economics, philosophy, environmental studies, and international affairs. The majority of the courses fulfill requirements from the arts and sciences core curriculum. Classes range in size from 15 to 18 students, and the instructors hold office hours in Smith to ensure enhanced accessibility for G-RAP students.

By participating in G-RAP, students gain access to staff and faculty with extensive and unique international experience and interests, as well as access to each other as a group of like-minded, globally conscious individuals. Additionally, the program offers participants access to student fellows, a group of outstanding former G-RAP students who hold office hours in the dorm each week to assist with course work, study sessions, paper writing, or language tutoring.

The Global Studies RAP is open to all students seeking to add an international component to their academic program, regardless of major. G-RAP is proud to be a leader in the effort to globalize the campus.

A fee is charged for participation in G-RAP. Interested students should visit [globalstudiesrap.colorado.edu](http://globalstudiesrap.colorado.edu) to read more, view current course offerings, and browse co-curricular opportunities. For additional information, call **303-735-3189** or e-mail [GRAP@colorado.edu](mailto:GRAP@colorado.edu).

## Health Professions Residential Academic Program

The Health Professions Residential Academic Program (HP RAP) will take residence in the newly renovated Kittredge West Hall in fall 2013, accommodating approximately 225 students. Joining our living/learning community is an excellent choice for students interested in exploring majors and careers in healthcare. These career paths may include, but are not limited to: chiropractic medicine, dentistry, naturopathic medicine, nursing, occupational therapist, optometry, osteopathic, medical

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doctor, pharmacy, physical therapy, physician's assistant, podiatry, public health, veterinary medicine. Students of all colleges and schools are welcome, although the curriculum may not lend itself to some engineering majors.

HP RAP provides students with highly desirable introductory courses, taught by expert teachers in a supportive atmosphere in which each individual is valued. HP RAP students will take at least one course offered by the program each semester. The courses are taught on-site within the HP residence hall, with an average of only 20 students per class. These courses range from basic science courses to courses on bioethics, global health policy, writing, and the social sciences. As part of the HP RAP experience, faculty provide co-curricular activities enhancing the learning environment and integrating the health professions theme through experiences such as field trips and guest speakers.

The Health Professions RAP faculty and staff provide meaningful experiences that will prove valuable as students move towards their academic and career aspirations. Students with clinical and research experience, community service, and leadership roles will be very desirable to future employers and graduate school admissions committees. Through collaboration with the Pre-Health Advising Office and programming provided by the Health Professions RAP, students will be presented with opportunities in these cornerstone areas.

The Health Professions RAP will make each student's first year at CU a rewarding adventure and will serve as a gateway to opportunities on campus and beyond. For more information about the program fee, application process, course offerings, and more, visit [hprap.colorado.edu](http://hprap.colorado.edu). The program can be reached a 303.492.4537 or [hprap@colorado.edu](mailto:hprap@colorado.edu).

## Honors Residential Academic Program

The Honors Residential Academic Program (Honors RAP) is the residential component of the Honors Program of the College of Arts and Sciences. It is open to approximately 300 honors-qualified first-year and continuing honors-qualified students. Participants live in Arnett Hall and Smith Hall East Wing.

The Honors Residential Academic Program promotes and sustains academic excellence within a lively community setting. Each semester the program offers a variety of honors courses in Arnett's state-of-the-art seminar rooms. The great majority of these courses satisfy arts and sciences core curriculum requirements. Each seminar is taught by an experienced faculty member, emphasizes discussion and writing, and ordinarily enrolls about 15 students. Beyond the classroom, Honors RAP fosters a variety of student-led activities, including evening events each week and a monthly lecture series that brings students into contact with leading teachers and researchers from the university community.

Members of the Honors RAP draw on a rich variety of academic, advising, and informational resources made available by the program's joint sponsors, the College of Arts and Sciences, the Honors Program, and Housing & Dining Services. The Honors Program associate director who supervises Honors RAP's daily functioning maintains an office in Arnett Hall for academic advising, acts as liaison to the rest of campus, and lives in a faculty apartment in Smith Hall East Wing.

**Eligibility:** Beginning each December, the Honors Program of the College of Arts and Sciences invites approximately 10 percent of all admitted students to participate in honors courses during their first year on campus; these invitations are issued on the basis of high school grade averages and scores on the Scholastic Aptitude Test (SAT) or American College Test (ACT). All students receiving an honors invitation are eligible to become members of the Honors Residential Academic Program on a first-come, first-served basis. Students who wish to participate in Honors RAP beyond the first year must maintain a University of Colorado GPA of 3.300 or above. Like participants in all other residential academic programs, Honors RAP members pay a participation fee in addition to the

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standard charges for tuition, fees, and room and board.

Students interested in the program should visit [www.colorado.edu/hrap](http://www.colorado.edu/hrap) for further information. Inquiries can be addressed by e-mail to [hrap@colorado.edu](mailto:hrap@colorado.edu); by telephone to the program office at **303-492-3695**; and by postal mail to the Honors Residential Academic Program, University of Colorado Boulder, 33 UCB, Boulder, CO 80309-0033.

## Leadership Residential Academic Program at Williams Village

This Leadership RAP is located at Williams Village and is dedicated to developing community, civic, and global leaders for a culturally diverse and democratic society. When a student enrolls in the Leadership RAP they select one of two academic programs.

The Ethnic Living and Learning Community (ELLC) Leadership Studies Program provides students with a multicultural living and learning experience while studying leadership from a cultural and multidisciplinary perspective.

The Chancellor's Leadership Studies Program (CLSP) offers leadership development and an understanding of how institutions and communities solve problems. Students learn different leadership styles needed to work effectively in those settings.

Students in both of these programs take leadership courses offered each semester that meet core requirements in the College of Arts and Sciences and may be applied toward graduation as well as toward a Certificate in the Study and Practice of Leadership. Students from all schools and colleges on the Boulder campus are eligible to participate.

There is a program participation fee of \$850. Scholarships are available to cover the cost of the fee for those with financial need. Contact the Leadership RAP at Williams Village, University of Colorado Boulder, 452 UCB, Boulder, CO 80309-0452, phone **303-735-1987**, e-mail [leadership@colorado.edu](mailto:leadership@colorado.edu), or visit [LeadershipRAP.colorado.edu](http://LeadershipRAP.colorado.edu).

For additional information on this program, see the Other Academic Programs section.

## Libby Residential Academic Program

The Libby Arts Residential Academic Program (LRAP) is the first program on campus to unite the arts under one umbrella. LRAP is designed for first-year and second-year students residing in Libby Hall who have an interest in the arts as a major, or who see arts courses as a corollary to a major in arts and sciences, business, or engineering. Classes satisfy core and major requirements or offer elective credit.

LRAP provides a unique living and learning experience with classes that are offered in specially equipped classrooms and studios in the Libby Residence Hall. These classes are taught by regular faculty from various departments as well as faculty with demonstrated excellence in teaching. Past courses include Beginning Painting, World Art History, Introduction to Dance and Culture, Introduction to Theatre, Introduction to Film Studies, and Appreciation of Music. In addition, a range of popular core curriculum classes are offered each year. Students need not have a previous background in any of the disciplines offered. The program is limited to approximately 300 students, and class sizes are usually limited to 18–22 students. Thus, with students taking several classes together and living in the same residence hall, there is the opportunity to foster a small community within the larger university setting. Students enrolling in the program are required to take at least one course in the hall each semester. The director of the program and the office staff, located in Libby Hall, provide academic assistance to students in planning their CU careers.

Residents are introduced to the diversity of the arts through community events and other co-curricular activities. Regular meetings are held during each semester to expose students to the breadth of the performing and visual arts, with opportunities to meet artists of both regional and national stature, as well as to view films of historical and contemporary significance. Other activities that meet students' interests and needs may also be organized.

Any arts and sciences major may enter the program. There is an annual nonrefundable charge for participation. There are a limited number of scholarships available. Students eligible for financial aid may request their budget be adjusted to include the program fee.

Students interested in the program may contact the program by writing to LRAP, University of Colorado, 175 UCB, Boulder, CO 80309-0175; by e-mailing [LibbyRAP@colorado.edu](mailto:LibbyRAP@colorado.edu); by telephoning **303-735-4211**; or by visiting [www.colorado.edu/lrap](http://www.colorado.edu/lrap).

## Sewall Residential Academic Program

The Sewall Residential Academic Program (SRAP) is a program for first-year students enrolled in the College of Arts and Sciences who have an interest in the study of history and culture. Citizenship in the 21st century requires the ability to engage complex connections between the present and past, between local places and our global society, and between the arts and sciences. SRAP combines classes ranging from history and biology to economics and English, with co-curricular activities (such as lectures, films, and field trips) and local community outreach to help students recognize and think about these connections.

Limited to 330 students, SRAP provides the opportunity to enjoy the advantages of a small liberal arts college within the broader context of a large research university. The program offers a selection of small seminar-style classes (limited to approximately 18 students) that meet in the Sewall residence hall. Classes encourage active student participation and emphasize analytical thought through intensive reading, discussion, and writing. Most SRAP courses also fulfill College of Arts and Sciences core requirements.

Each semester all SRAP students must take a 3-credit course at Sewall. All students are further required to take SEWL 2020 either fall or spring semester. In addition, students have the opportunity to take the lower-division writing course (WRTG 1150) at Sewall in either fall or spring semester.

SRAP facilitates a successful transition from high school to the university. Sewall courses are taught by faculty with a demonstrated excellence in teaching and a commitment to working closely with first-year students. Faculty members have offices conveniently located in Sewall Hall, which helps foster communication between students and faculty. Participants in the Sewall program are also fully involved in regular campus life, take the majority of their classes with the rest of the university, and are encouraged to join in all university activities.

The SRAP director, associate director, and program assistant are readily available to help students with planning schedules, making sense of the rules of the University and the College of Arts and Sciences, and choosing majors. They can refer students to other university resources for specialized counseling when necessary, and the housing department office offers free tutoring in many subject areas.

Interested first- and second-year students who are admitted into the College of Arts and Sciences should indicate Sewall Hall as their first choice on the housing application form and return it to the Housing Reservation Center as early as possible. Students are admitted on a first-come, first-served basis, determined by date of receipt of the housing application form. There is an extra charge for participating in the program in addition to regular tuition, fees, and room and board. Some scholarships are available; please contact the academic program office for details.

Students who have questions about the program should address them to the Director, Sewall Residential Academic Program, University of Colorado Boulder, 353 UCB, Boulder, CO 80309-0353; visit the program online at [srap.colorado.edu](http://srap.colorado.edu); or call the SRAP office at **303-492-6004**.

## Social Entrepreneurship for Equitable Development and Sustainability Residential Academic Program

Student participants in the Social Entrepreneurship for Equitable Development and Sustainability Residential Academic Program (SEEDS RAP) are housed in the only LEED Platinum residence hall on campus, Williams Village North. The program is uniquely inter- and multi-disciplinary, seeking a critical engagement of students in the diversity of global challenges, from resource depletion to climate change to poverty and economic instability. Teaching faculty include professors in architecture, engineering, political science, writing, anthropology, business, and sociology. The courses offered in the residence hall for RAP students vary each term but always include a choice of core curriculum courses and electives from the College of Arts and Sciences as well as other campus offerings.

SEEDS courses challenge the status quo and emphasize collaborative problem-solving and social innovation—through design, debate, planning, project development, writing, and creative enterprise. In small classes of no more than 22 students, and through RAP activities and events (using a state-of-the-art kitchen, computer lab, facilities, and grounds at Williams Village and through field trips), students develop a strong knowledge base, entrepreneurial savvy, communications skills, technology literacy, and compassionate understanding. SEEDS is one Residential Academic Programs with its own Faculty in Residence and the only one with resident graduate student Teaching Resident Assistants (TRAs) who live in the building and assist with RAP classes. As a result, mentoring, academic staff, and informal support are close at hand for all RAP students. Participants will work closely with their peers in the Sustainable by Design (SbD) RAP, also located at Williams Village North. SEEDS is an empowering, pro-active, skills-based program for students concerned about sustainability and innovation issues who want to participate in developing solutions while earning credits toward their degree in any of the Arts and Sciences departments and other colleges on campus.

Enrollment in the program includes an additional fee. Contact [wvrap@colorado.edu](mailto:wvrap@colorado.edu) or call **303-735-1330**. See the website for more information: [seedsrap.colorado.edu](http://seedsrap.colorado.edu).

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<a href="#">Applied Mathematics</a>	BA, MS, PhD
<a href="#">Art and Art History</a>	BA, BFA, MA, MFA
<a href="#">Asian Languages and Civilizations</a>	BA, MA, PhD
<a href="#">Asian Studies</a>	BA
<a href="#">Astrophysical and Planetary Sciences</a>	BA, IBA, MS, PhD
<a href="#">Atmospheric and Oceanic Sciences</a>	MS, PhD
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<a href="#">Chemical Physics</a>	PhD
<a href="#">Chemistry and Biochemistry</a>	BA, IBA, MS, PhD
<a href="#">Classics</a>	BA, MA, PhD
<a href="#">Cognitive Science Studies</a>	
<a href="#">Communication</a>	BA, MA, PhD
<a href="#">Comparative Literature Graduate Program</a>	MA, PhD
<a href="#">Distributed Studies Program</a>	BA
<a href="#">Ecology and Evolutionary Biology</a>	BA, IBA, MA, PhD
<a href="#">Economics</a>	BA, MA, PhD
<a href="#">English</a>	BA, MA, MFA, PhD
<a href="#">Environmental Studies</a>	BA, IBA, MS, PhD
<a href="#">Ethnic Studies</a>	BA
<a href="#">Film Studies</a>	BA, BFA

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Germanic and Slavic Languages and Literatures	BA, MA, PhD
History	BA, MA, PhD
Humanities	BA
Integrative Physiology	BA, IBA, MS, PhD
International Affairs	BA
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Mathematics	BA, MA, PhD
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Museum and Field Studies	MS
Philosophy	BA, MA, PhD
Physics	BA, IBA, MS, PhD
Political Science	BA, MA, PhD
Psychology and Neuroscience	BA, IBA, MA, PhD
Religious Studies	BA, MA
Sociology	BA, MA, PhD
Spanish and Portuguese	BA, MA, PhD
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## Faculty: Anthropology

Name	Working Title	Description
BAMFORTH, Douglas B.	professor	BA, University of Pennsylvania; MA, PhD, University of California, Santa Barbara
BRETERNITZ, David A.	professor emeritus.	
CAMERON, Catherine M.	professor	BA, University of California, Berkeley; MA, University of New Mexico; PhD, University of Arizona
CORDELL, Linda S.	professor emerita	
COVERT, Herbert H.	department chair; professor	BA, University of Massachusetts; MA, Arizona State University; PhD, Duke University
DUFOUR, Darna L.	associate dean for faculty and administrative affairs, College of Arts and Sciences; professor	BS, Northeastern University; MA, PhD, State University of New York, Binghamton
EDDY, Frank W.	associate professor emeritus	
GOLDSTEIN, Donna M.	associate professor	BS, Cornell University; EdM, Harvard Graduate School of Education; PhD, University of California, Berkeley
GREENE, David Lee	professor emeritus	
GUTIÉRREZ, Gerardo	assistant professor	BA, The National School of Anthropology and History, Mexico; MA, El Colegio de México, Mexico; PhD, Pennsylvania State University
HALL, Kira	associate professor of linguistics; associate professor attendant rank	BA, Auburn University; MA, PhD, University of California, Berkeley
HESTER, James J.	professor emeritus	
JONES, Carla	associate professor	BA, MA, University of California, Berkeley; PhD, University of North Carolina at Chapel Hill
JOYCE, Arthur A.	professor	BA, University of Delaware; MA, PhD, Rutgers University
KASCHUBE, Dorothea V.	professor emerita	

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KELSO, Alec J.	professor emeritus	
LANG, Gottfried O.	professor emeritus	
LEKSON, Steven H.	professor; curator of museum studies	BA, Case Western Reserve University; MA, Eastern New Mexico University; PhD, University of New Mexico
LOUDON, James E.	instructor	BS, Central Washington University; MA, University of Calgary; PhD, University of Colorado Boulder
McCABE, J. Terrence	professor	BA, University of Notre Dame; MA, PhD, State University of New York at Binghamton.
McGILVRAY, Dennis B.	professor	BA, Reed College; MA, PhD, University of Chicago
McGOODWIN, James Russell	professor emeritus	
McGRANAHAN, Carole M.	associate professor	BA, Colgate University; MA, PhD, University of Michigan
NISHIKAWA, Richard Y.	assistant dean for curricular affairs, College of Arts and Sciences; assistant professor attendant rank	AB, University of California, Santa Cruz; PhD, University of Washington
ROLAND, L. Kaifa	assistant professor	BA, Oberlin College; MA, Howard University; PhD, Duke University
SAUTHER, Michelle L.	associate professor	BA, Montana State University; MA, Arizona State University; PhD, Washington University
SHANKMAN, Paul	professor	BA, University of California, Santa Barbara; PhD, Harvard University
SHANNON, Jennifer	assistant professor	BA, Bowdoin College; MA, University of Chicago; PhD, Cornell University
SHEETS, Payson D.	professor of distinction	BA, MA, University of Colorado; PhD, University of Pennsylvania
SPONHEIMER, Matt	associate professor	BA, Bucknell University; MA, PhD, Rutgers University
VAN GERVEN, Dennis P.	professor	BA, University of Utah; MA, PhD, University of Massachusetts Amherst
WALKER JR., Deward E.	professor emeritus	

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## Faculty: Applied Mathematics

Name	Title	Education
ABLOWITZ, Mark J.	distinguished professor	BS, University of Rochester; PhD, Massachusetts Institute of Technology
BEBERNES, Jerrold	professor emeritus	
BEYLKIN, Gregory	professor	BS, MS, University of Leningrad; PhD, Courant Institute of Mathematical Sciences, New York University
BHAT, Y. Sujeet	instructor	BS, PhD, University of Florida; MS University of Texas at Dallas
BORTZ, David	assistant professor	BA, Rice University; MS, PhD, North Carolina State University
CORCORAN, Jem	associate professor	BS, Colorado State University; MS, Purdue University; PhD, Colorado State University
CURRY, James H.	department chair; professor	BA, MA, PhD, University of California, Berkeley
DOUGHERTY, Anne	associate chair; senior instructor	BS, Texas Christian University; MS, Oregon State University; PhD, University of Wisconsin
DUKIC, Vanja M.	associate professor	BS, Bryant University; MS, PhD, Brown University
EASTON, Robert	professor emeritus	
FORNBERG, Bengt	professor	BS, PhD, Uppsala University
JULIEN, Keith	professor	BS, Kings College, University of London; PhD, Churchill College, Cambridge University
KLEIBER, Will	assistant professor	BS, University of Iowa; PhD, University of Washington at Seattle
LI, Congming	professor	BS, University of Science and Technology of China; MS, Institute of System Sciences; PhD, Courant Institute of Mathematical Science, New York University
LLADSER, Manuel E.	assistant professor	BS, Universidad de Chile; MS, University of Wisconsin; PhD, Ohio State University

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MANTEUFFEL, Thomas	professor	BS, University of Wisconsin; MS, PhD, University of Illinois
MARTINSSON, Per-Gunnar	associate professor	Diploma and Licentiate degree, Chalmers University of Technology in Gothenburg; PhD, University of Texas at Austin
McCORMICK, Steven	professor	BA, San Diego State College; PhD, University of Southern California
MEISS, James D.	graduate chair; professor	BS, University of Washington; MA, PhD, University of California, Berkeley
NELSON, Mary	senior instructor	BS, Marquette University; MS, George Mason University; PhD, University of Colorado
NORRIS II, J. Adam	instructor	BS, University of Colorado; MS, Massachusetts Institute of Technology; PhD, University of Colorado
RESTREPO, Juan	assistant professor	BS, MS, Universidad de los Andes; PhD, University of Maryland
SEGUR, Harvey	professor	BS, Michigan State University; MS, PhD, University of California, Berkeley
WILLIAMSON, John	professor emeritus	

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> [Political Science](#)



## Faculty: Art and Art History

Name	Title	Education
ALHADEFF, Albert	associate professor	AB, Columbia University; MA, PhD, New York University
AMBROSE, Kirk	associate professor	BA, Oberlin College; MA, PhD, University of Michigan, Ann Arbor
AMERIKA, Mark	professor	BA, University of Florida; MFA, Brown University
BROWN, Marilyn	professor	BA, Birmingham-Southern College; MA, PhD, Yale University
CHAMBERLIN, H. Scott	professor	BA, San Francisco State University; MFA, New York State College of Ceramics at Alfred University
CHONG, Albert	professor	BFA, School of Visual Arts, New York; MFA, University of California, San Diego
CLINE, Clinton C.	professor emeritus	
CÓRDOVA, James	assistant professor	BA, New Mexico State University; MA, PhD, Tulane University
DAY, Robert E.	professor emeritus	
DICKEY, Kim	professor	BFA, Rhode Island School of Design; MFA, New York State College of Ceramics at Alfred University
DURÉESÉ, Françoise	assistant professor	BFA, BA, Wayne State University; MFA, Temple University
EADES, Luis E.	professor emeritus	
ECKER, Robert R.	professor emeritus	
FARAGO, Claire J.	professor	BA, Wellesley College; MA, Brown University; PhD, University of Virginia
FORSMAN, Charles S.	professor emeritus	
FOSTER, Suzanne R.	assistant professor	

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	emerita	
GECK, Francis J.	professor emeritus	
GREGORIO, Alvin	assistant professor	BFA, California Sate University, Fullerton; MFA, Claremont Graduate University
HAYNES, Deborah J.	professor	BFA, MFA, University of Oregon; MTS, Harvard Divinity School; PhD, Harvard University
IWAMASA, Ken	associate professor emeritus	
KUNKEL, Jerry W.	professor emeritus	
LIL, Kira Van	assistant professor	BA, MA, PhD, Ludwig-Maximillans-Universität, Munich
MILLER, Kay	professor emerita	
MINOR, Vernon H.	professor emeritus	
NAUMAN, Robert	senior instructor	BME, Central Missouri State University; MMus, MA, University of Colorado Boulder; PhD, University of New Mexico
PARK, Jong Phil	assistant professor	BA, Seoul National University, Korea; MA, PhD, University of Michigan
POTTER, Thomas J.	professor emeritus	
QUALLEY, Charles A.	professor emeritus	
QUINN, Jeanne	associate professor	BA, Oberlin College; MFA, University of Washington
RIVERA, George	professor	BA, MA, University of Houston; PhD, State University of New York
ROOTS, Garrison	chair; professor	BFA, Massachusetts College of Art; MFA, Washington University, St. Louis
ROTH, Yumi Janairo	associate professor	BA, Tufts University; BFA, School of Musuem of Fine Arts, Boston; MFA, State University of New York
SAMPSON, John Franklin	professor emeritus	
SAXTON, Richard	assistant professor	BFA, University of Nebraska; MFA, Indiana University
STEVENS, C. Maxx	assistant professor	AA, Haskell Indian Junior College; BFA, Wichita State University; MFA, Indiana University

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SWEETMAN, Alex J.	associate professor	New York University; MFA, State University of New York at Buffalo
VALDOVINO, Luis	professor	BFA, Ohio University; MFA, University of Illinois
VANDERSALL, Amy L.	professor emerita	
WALKER, Melanie	associate professor	BA, San Francisco State University; MFA, Florida State University, Tallahassee
WILSON, John B.	professor emeritus	
WOLFE, Lynn Robert	professor emeritus	
WOMACK, Michael	assistant professor	BFA, University of Georgia; MFA, Pratt Institute
WOO, Joo Yeon	assistant professor	BFA, MFA, Kyungpook National University, Korea; MFA, Pennsylvania State University
WOODMAN, Elizabeth A.	professor emerita	
WOODMAN, George E.	professor emeritus	
YAZZIE, Melanie	associate professor	BA, Arizona State University, Tempe; MFA, University of Colorado Boulder

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- > [Law](#)
- > [Music](#)
- > [Other Academic Programs](#)



## Faculty: Asian Languages and Literatures

Name	Title	Education
BAHOORA, Haytham	assistant professor	BA, University of Michigan; MA, PhD, New York University
BROWN, Janice	department chair; professor of Japanese	BA, MA, PhD, University of British Columbia
BRUECK, Laura	assistant professor of Hindi	BA, Smith College; MA, PhD, University of Texas at Austin
CASS, Victoria B.	associate professor emerita	
CHEN, Jin	instructor of Chinese	BA, Yunnan Normal University; MA, University of Colorado Boulder
D'ISILVA, Patrick	instructor of Arabic	BA, Macalester College; MA, Harvard Divinity School
FAROKHFAL, Reza	instructor of Farsi	BA, Pahlavi University, Iran; MA, Concordia University
HSU, Chuan-Ling	instructor in Chinese	BA, Soochow University, Taiwan; MEd, University of Wisconsin-River Falls
KIM, Sangbok	instructor of Korean	BA, Korea University; MA, California State University, Long Beach; PhD, University of California, Los Angeles
KIMBROUGH, Randle Keller	associate professor of Japanese	BA, Colorado College; MA, Columbia University; MA, PhD, Yale University
KLEEMAN, Faye Yuan	associate professor of Japanese	BA, Soochow University, Taiwan; MA, Ochanomizu University, Japan; PhD, University of California, Berkeley
KLEEMAN, Terry F.	associate professor of Chinese	BA, University of Miami; MA, University of British Columbia; PhD, University of California, Berkeley
KROLL, Paul W.	professor of Chinese	BA, MA, PhD, University of Michigan
MATSUNAGA, Yumiko	Senior instructor of Japanese	BA, Kagawa University; MA, PhD University of Wisconsin, Madison
RICHTER, Antje	assistant professor of Chinese	PhD, Munich University
RICHTER, Matthais	assistant professor of Chinese	PhD, Hamburg University

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RODD, Laurel Rasplica	professor of Japanese	BA, DePauw University; MA, PhD, University of Michigan
SHIMAZAKI, Satoko	assistant professor of Japanese	BA, Keio University; MA, PhD, Columbia University
SHIMIZU, Hideko	senior instructor of Japanese	BA, MA, University of Colorado Denver; PhD, University of Denver
SON, Suyong	Assistant professor of Chinese	BA, Yonsei University; MA, University of Illinois, Urbana-Champaign; PhD, University of Chicago
STUCKY, G. Andrew	assistant professor of Chinese	BA, Colgate University; MA, PhD, University of California, Los Angeles
TAKAHARA, Kumiko	associate professor emerita	BA, MA, University of the Sacred Heart; MA, University of Edinburgh; PhD, University of London
WANG, Chiung-Yao	senior instructor of Chinese	BBA, FengChia University; MS, Connecticut State University; PhD, Michigan State University
WILLIS, Donald Sigurdson	professor emeritus	

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Name	Title	Education
BAHOORA, Haytham	assistant professor	BA, University of Michigan; MA, PhD, New York University
BROWN, Janice	department chair; professor of Japanese	BA, MA, PhD, University of British Columbia
BRUECK, Laura	assistant professor of Hindi	BA, Smith College; MA, PhD, University of Texas at Austin
CASS, Victoria B.	associate professor emerita	
CHEN, Jin	instructor of Chinese	BA, Yunnan Normal University; MA, University of Colorado Boulder
D'ISILVA, Patrick	instructor of Arabic	BA, Macalester College; MA, Harvard Divinity School
FAROKHFAL, Reza	instructor of Farsi	BA, Pahlavi University, Iran; MA, Concordia University
HSU, Chuan-Ling	instructor in Chinese	BA, Soochow University, Taiwan; MEd, University of Wisconsin-River Falls
KIM, Sangbok	instructor of Korean	BA, Korea University; MA, California State University, Long Beach; PhD, University of California, Los Angeles
KIMBROUGH, Randle Keller	associate professor of Japanese	BA, Colorado College; MA, Columbia University; MA, PhD, Yale University
KLEEMAN, Faye Yuan	associate professor of Japanese	BA, Soochow University, Taiwan; MA, Ochanomizu University, Japan; PhD, University of California, Berkeley
KLEEMAN, Terry F.	associate professor of Chinese	BA, University of Miami; MA, University of British Columbia; PhD, University of California, Berkeley
KROLL, Paul W.	professor of Chinese	BA, MA, PhD, University of Michigan
MATSUNAGA, Yumiko	Senior instructor of Japanese	BA, Kagawa University; MA, PhD University of Wisconsin, Madison
RICHTER, Antje	assistant professor of Chinese	PhD, Munich University
RICHTER, Matthais	assistant professor of Chinese	PhD, Hamburg University

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RODD, Laurel Rasplica	professor of Japanese	BA, DePauw University; MA, PhD, University of Michigan
SHIMAZAKI, Satoko	assistant professor of Japanese	BA, Keio University; MA, PhD, Columbia University
SHIMIZU, Hideko	senior instructor of Japanese	BA, MA, University of Colorado Denver; PhD, University of Denver
SON, Suyong	Assistant professor of Chinese	BA, Yonsei University; MA, University of Illinois, Urbana-Champaign; PhD, University of Chicago
STUCKY, G. Andrew	assistant professor of Chinese	BA, Colgate University; MA, PhD, University of California, Los Angeles
TAKAHARA, Kumiko	associate professor emerita	BA, MA, University of the Sacred Heart; MA, University of Edinburgh; PhD, University of London
WANG, Chiung-Yao	senior instructor of Chinese	BBA, FengChia University; MS, Connecticut State University; PhD, Michigan State University
WILLIS, Donald Sigurdson	professor emeritus	

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# Faculty: Astrophysical and Planetary Sciences

Name	Title	Education
ARMITAGE, Phillip	associate professor	BA, MA, PhD, University of Cambridge
AYRES, Thomas R.	research professor	AB, Harvard College; PhD, University of Colorado
BAGENAL, Frances	professor	BSc, University of Lancaster, England; PhD, Massachusetts Institute of Technology
BAKER, Daniel	professor	BA, MS, PhD, University of Iowa
BALLY, John	professor	BS, University of California, Berkeley; MS, PhD, University of Massachusetts Amherst
BARTH, Charles A.	professor emeritus	
BEGELMAN, Mitchell C.	departmental chair; professor	AB, AM, Harvard University; PhD, Cambridge University
BRAIN, David	assistant professor	BA, Rice University; MS, PhD, University of Colorado Boulder
CASH, Webster C.	professor	BS, Massachusetts Institute of Technology; PhD, University of California, Berkeley
CONTI, Peter S.	professor emeritus	
DARLING, Jeremiah K.	assistant professor	BS, California Institute of Technology; PhD, Cornell University
DULK, George A.	professor emeritus	
DUNCAN, Douglas K.	senior instructor	BS, California Institute of Technology; PhD, University of California, Santa Cruz
ELLINGSON, Erica	associate professor	BS, Massachusetts Institute of Technology; PhD, University of Arizona
ERGUN,	professor	BS, MS, Cornell University; PhD, University of California, Berkeley

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Robert		
ESPOSITO, Larry W.	professor	BS, Massachusetts Institute of Technology; PhD, University of Massachusetts
FRONING, Cynthia S.	assistant research professor	BS, MA, PhD, University of Texas
GLENN, Jason	associate professor	BS, University of New Mexico; PhD, University of Arizona
GREEN, James	professor	BS, Stanford University; MA, PhD, University of California, Berkeley
HALVERSON, Nils	associate professor	BS, Stanford University; MS, PhD, California Institute of Technology
HAMILTON, Andrew J. S.	professor	BA, St. Catherine's College, Oxford; MSc, Liverpool University and Queen Mary College, London University; PhD, University of Virginia
HINDMAN, Bradley W.	assistant research professor	BA, University of Puget Sound; PhD, University of Colorado Boulder
HORNSTEIN, Seth	senior instructor	BA, Virginia Polytechnic Institute & State University; MS, PhD, University of California, Los Angeles
LINSKY, Jeffrey	research professor emeritus	
MALVILLE, J. McKim	professor emeritus	
McCRAY, Richard A.	distinguished professor emeritus	
PERNA, Rosalba	associate professor	BA, University of Salerno; MA, PhD, Harvard University
RAST, Mark P.	associate professor	BA, University of California, Davis; BA, University of California, Santa Cruz; PhD, University of Colorado
SCHNEIDER, Nicholas	associate professor	BS, Dartmouth College; PhD, University of Arizona
SHULL, J. Michael	professor	BS, California Institute of Technology; MA, PhD, Princeton University
SNOW Jr., Theodore P.	professor	BA, Yale College; MS, PhD, University of Washington
SPEISER, Theodore W.	professor emeritus	
STOCKE, John T.	professor	AB, Princeton University; PhD, University of Arizona

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THOMAS, Gary E.	professor emeritus	
TOOMRE, Juri	professor	BS, MS, MSc, Massachusetts Institute of Technology; PhD, Trinity College, Cambridge University
WARWICK, James W.	professor emeritus	

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- > [Journalism & Mass Communication Program](#)

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- > [Law](#)

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- > [Music](#)

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- > [Other Academic Programs](#)

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# Faculty: Atmospheric and Oceanic Sciences

Name	Title	Education
ALEXANDER, Joan	professor adjoint	BS, Purdue University; MS, PhD, University of Colorado Boulder
AVALLONE, Linnea	professor; director, Miramontes Arts and Sciences Program	BS, Massachusetts Institute of Technology; MA, PhD, Harvard University
CASSANO, John	associate chair; associate professor	BS, Montana State University; MS, University of Wisconsin-Madison; PhD, University of Wyoming
FORREST, Betsy	instructor	BS, Metropolitan State College of Denver; BA, University of North Carolina; PhD, University of Colorado Boulder
FOX-KEMPER, Baylor	assistant professor	BA, Reed College; MA, Brandeis University; PhD, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution
FRIEDRICH, Katja	assistant professor	Abitur, Thomas-Gymnasium, Leipzig; MS, Leipzig University; PhD, Ludwig-Maximilians University, Munich
HAN, Weiqing	associate professor	BS, Nanjing Institute of Meteorology; MS, Chinese Academy of Meteorological Sciences; PhD, Nova SE University
HART, John E.	professor emeritus	
KEEN, Richard A.	instructor emeritus	
LOVENDUSKI, Nicole	assistant professor	BS, Washington University in St. Louis; MS, PhD, University of California, Los Angeles
LUNDQUIST, Julie	assistant professor	BS, Trinity University; MS, PhD, University of Colorado Boulder
NOONE, David	associate professor	BS, PhD, University of Melbourne
PIELKE SR., Roger A.	senior research associate	BA, Towson State College; MS, PhD, Pennsylvania State University
PILEWSKIE, Peter	professor	BS, Pennsylvania State University; MS, PhD, University of Arizona

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RANDALL, Cora E.	chair; professor	BA, State University of New York, College at Purchase; MS, PhD, University of California, Santa Cruz
SOLOMON, Susan	professor adjoint	BS, Illinois Institute of Technology; MS, PhD, University of California, Berkeley
TOOHEY, Darin W.	professor	BA, BS, California State University, Fullerton; MS, PhD, Harvard University
TOON, Owen Brian	professor	AB, University of California, Berkeley; PhD, Cornell University
WEISS, Jeffrey B.	associate professor	BS, University of Illinois; MA., PhD, University of California, Berkeley

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# Faculty: Baker RAP

Name	Title	Education
BARLOW, Lisa	senior instructor	BA Smith College, MA, PhD University of Colorado
CAREY, Cynthia	director; professor of integrative physiology	AB, MA, Occidental College; PhD, University of Michigan
DIDOMENICO, Randolph	senior instructor	BA, PhD, University of Colorado
KEARNS, Carol	senior instructor	BS, Southampton College; MS University of New Hampshire; PhD, University of Maryland
OLIVERAS, Diana	instructor	BA, Dickinson College, MA, PhD University of New Mexico

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## Faculty: Chemistry and Biochemistry

Name	Title	Education
AHN, Natalie	professor	BS, University of Washington; PhD, University of California, Berkeley
ASIRVATHAM, Margaret R.	senior instructor	BSc, MSc, University of Madras, India; PhD, Kansas State University
BATEY, Robert T.	associate professor,	BS, University of California, Irvine; PhD, Massachusetts Institute of Technology
BIERBAUM, Veronica M.	professor	BA, Catholic University of America; PhD University of Pittsburgh
BIRKS, John W.	professor emeritus	
CARUTHERS, Marvin H.	distinguished professor	BS, Iowa State University; PhD, Northwestern University
CECH, Thomas R.	distinguished professor	BA, Grinnell College; PhD, University of California, Berkeley
DAMRAUER, Niels	professor	BS, University of Pennsylvania; PhD, University of California, Berkeley
DePAY, Charles H.	professor emeritus	
DUKOVIC, Gordana	assistant professor	BA, Rutgers University; PhD, Columbia University
EATON, Bruce	professor	BS, MS, University of Oregon; PhD, University of California, Berkeley
EAVES, Joel	assistant professor	BS, University of Wisconsin–Madison; PhD, Massachusetts Institute of Technology
ELLISON, G. Barney	professor	BS, Trinity College; PhD, Yale University
FALKE, Joseph J.	professor	BA, Earlham College; PhD, California Institute of Technology
FALL, R. Ray	professor emeritus	
FELDHEIM, Daniel	professor	BA, San Jose State University; PhD, Colorado State University.
GEORGE,	professor	BS, Yale University; PhD, University of California, Berkeley

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Steven M.		
GIN, Douglas L.	professor	BSc, University of British Columbia; PhD, California Institute of Technology
GOODRICH, James A.	professor	BS, University of Scranton; PhD, Carnegie Mellon University
HANNA, Melvin	professor emeritus	
HENDRICKSON, Susan	senior instructor	BA, Bates College; PhD, Colorado State University
HYNES, James T.	professor	BA, Catholic University of America; PhD, Princeton University
JIMENEZ, Jose Luis	associate professor	BS, Universite de Technologie Compiegne; MS, Universidad de Zaragoza; PhD, Massachusetts Institute of Technology
JIMENEZ, Ralph	associate professor adjunct	BA, Cornell University; PhD University of Chicago
JONAS, David M.	professor	BS, University of California, Berkeley; PhD, Massachusetts Institute of Technology
KING, Edward L.	professor emeritus	
KNIGHT, Rob	assistant professor	BSc, University of Otago; PhD, Princeton University
KOCH, Tad H.	interim department chair, professor	BS, Ohio State University; PhD, Iowa State University
KOVAL, Carl Anthony	professor	BS, Juniata College; PhD, California Institute of Technology
KUCHTA, Robert	professor	BA, Cornell University; PhD, Brandeis University
KUGEL, Jennifer	assistant research professor	BA, St. Olaf College; PhD, University of Colorado
LINEBERGER, W. Carl	distinguished professor	BEE, MSEE, PhD, Georgia Institute of Technology
LIU, Xuedong	professor	BS, Shandong University, Jinan; MS, Chinese Academy of Sciences; PhD, University of Wisconsin–Madison
McHENRY, Charles	professor	BS, Purdue University; PhD, University of California, Santa Barbara
MICHL, Josef	professor	MS, Charles University; PhD, Czechoslovak Academy of Sciences
NESBITT, David J.	professor adjoint	BA, Harvard College; PhD, University of Colorado
NOZIK, Arthur	professor adjoint	BChE, Cornell University; MS, PhD, Yale University
OLD, William	research assistant professor	BS, University of Texas at Austin; PhD, University of Colorado Boulder
PALMER, Amy	associate professor	BA, Dartmouth College; MA, PhD, Stanford University
PARDI, Arthur	professor	AB, University of California, San Diego; PhD, University of

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		California, Berkeley
PARSON, Robert P.	professor	ScB, Brown University; MS, PhD, University of Michigan
PETERS, Kevin	professor emeritus	
PIERPONT, Cortlandt G.	professor	BS, Columbia University; PhD, Brown University
ROY, Kristen C.	instructor	
RUDOLPH, Johannes	senior instructor	BS, University of Washington; PhD, Massachusetts Institute of Technology
SAMMAKIA, Tarek	professor	BS, University of North Carolina; PhD, Yale University
SIEVERS, Robert E.	director, environmental program; professor	BChem, University of Tulsa; MS, PhD, University of Illinois
SKODJE, Rex T.	professor	BA, Harvard University; PhD, University of Minnesota
SOUSA, Marcelo C.	associate professor	PharmD, PhD, University of Buenos Aires
TAATJES, Dylan J.	associate professor	BS, Calvin College; PhD, University of Colorado Boulder
TAN, Zhongping	assistant professor	BS, Peking University; PhD, Columbia University
TOLBERT, Bert Mills	professor emeritus	
TOLBERT, Margaret	distinguished professor	AB, Grinnell College; MS, University of California, Berkeley; PhD, California Institute of Technology
VAIDA, Veronica	professor	BS, Brown University; PhD, Yale University
VOLKAMER, Rainer	assistant professor	BSc, PhD, Ruprecht-Karis University
WALBA, David M.	professor	BS, University of California, Berkeley; PhD, California Institute of Technology
WANG, Xiang	assistant professor	BS, University of Science and Technology of China; PhD, Boston University
WEBER, Mathias	associate professor	Diploma, PhD, University Kaiserslautern
WILSON, Irwin B.	professor emeritus	
WISE, Matthew	instructor	BS, Ohio University; PhD, University of Colorado Boulder
WUTTKE, Deborah S.	professor	BS, University of Rochester; PhD, California Institute of Technology
YIN, Hang	assistant professor	BS, Peking University; PhD, Yale University

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ZHANG, Wei

assistant professor

BS, Peking University; PhD, University of Illinois

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# Faculty: Classics

Name	Title	Education
CAIN, Andrew J.	associate professor	BA, University of South Carolina; MA, PhD, Cornell University
CONLIN, Diane A.	associate professor	BA, State University of New York at Stony Brook; MA, PhD, University of Michigan
DANIELL, Brian	senior instructor emeritus	
DUSINBERRE, Elspeth R. M.	associate professor	AB, Harvard University; PhD, University of Michigan
ELLIOTT, Jacqueline M.	assistant professor	BA, University College, Oxford. MA, MPhil, PhD, Columbia University
EVJEN, Harold D.	professor emeritus	
FREDRICKSMEYER, Ernst A.	professor emeritus	
GIBERT, John C.	associate professor	BA, Yale University; PhD, Harvard University
HUNT, Peter	department chair; professor	BA, Swarthmore College; MA, University of Colorado Boulder; PhD, Stanford University
JAMES, Sarah	assistant professor	BA, MA, University of Toronto; PhD, University of Texas, Austin
JONES, Stanley E.	professor emeritus	
KING, Joy K.	associate professor emerita	
KNOX, Peter E.	professor	AB, Harvard College; PhD, Harvard University
LENSKI, Noel E.	associate professor	BA, Colorado College; MA, PhD, Princeton University
NEWLANDS, Carole	professor	PhD, University of California, Berkeley
ORLEBEKE, Alison	instructor	BA, Carleton College; MA, PhD, Princeton University

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REITZAMMER, Laurialan B.	assistant professor	BA, Brown University; MA, PhD, University of California, Berkeley
SCHÜTRUMPF, Eckart E. W.	professor	PhD, University of Marburg; Habilitation in Classics, University of Marburg
TZAVELLA-EVJEN, Terpsichori H.	professor emerita	

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# Faculty: Communication

Name	Title	Education
ASHCRAFT, Karen	professor	BA, California State University, Hayward; PhD, University of Colorado Boulder
BANNING, Marla Elizabeth	assistant professor	BS, MS, PhD, University of Utah
BOROMISZA-HABASHI, David	assistant professor	MA, Pazmany Peter Catholic University of Hungary; MA, State University of New York, Albany; PhD, University of Massachusetts
BOWERS, John Waite	professor emeritus	
BURGESS, Heidi	Instructor	BA, PhD, University of Colorado
BURGESS, Guy	instructor	BA, PhD, University of Colorado
CAMPBELL, Kathleen G.	senior instructor emerita	
CRAIG, Robert T.	professor	BA, University of Wisconsin; MA, PhD, Michigan State University
DARNELL, Donald K.	professor emeritus	
DEETZ, Stanley A.	professor	BS, Manchester College; MA, PhD, Ohio University
FREY, Lawrence R.	professor	BS, Northwestern University; MA, PhD, University of Kansas
HAUSER, Gerard A.	professor	BA, Canisius College; MA, PhD, University of Wisconsin
JACKSON, John P.	associate professor	BA, Iowa State University; PhD, University of Minnesota
JACKSON, Michele H.	associate professor	BA, Macalester College; MA, PhD, University of Minnesota
KUHN, Timothy R.	associate professor	BA, MA, University of Minnesota; PhD, Arizona State University

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MALESH, Patricia M.	assistant professor	BA, MA, Salisbury State University; PhD, University of Arizona
SIMONSON, Peter	associate professor	AB, AM, Stanford University; PhD, University of Iowa
SKERSKI, Jamie	instructor	BA, Eastern Illinois University; MA, Colorado State University; PhD, Indiana University
SPRAIN, Leah	assistant professor	BA, Pacific Lutheran University; MA, PhD, University of Washington
TAYLOR, Bryan C.	department chair; professor	BA, University of Massachusetts Amherst; MS, PhD, University of Utah
TOMPKINS, Elaine V.	senior instructor emerita	
TOMPKINS, Phillip K.	professor emeritus	
TRACY, Karen	professor	BS, Pennsylvania State University; MA, Bowling Green State University; PhD, University of Wisconsin
WHITE, Cindy H.	associate professor	BA, MA, Texas Tech University; PhD, University of Arizona

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# Faculty: Communications RAP

Name	Title	Education
GALE, Kendra	instructor	BA, St. Olaf College; MA, PhD, University of Minnesota
HAUSER, Gerard	director; professor of communication	BA, Canisius College; MA, PhD, University of Wisconsin

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## Faculty: Comparative Literature

Name	Title	Education
ACEVEDO-MUÑOZ, Ernesto	associate professor of film studies	BA, University of Puerto Rico; MA, PhD, University of Iowa
BRAIDER, Christopher	professor of French and Italian	BA, PhD, Trinity College, Dublin
COX, Jeffrey	associate vice chancellor for faculty affairs; professor of humanities and English	BA, Wesleyan University; PhD, University of Virginia
FARAGO, Claire	professor of art and art history	BA, Wellesley College; MA, Brown University; PhD, University of Virginia
FERME, Valerio	associate professor of Italian	BA, Brown University; MA, Indiana University; PhD, University of California, Berkeley
FERRIS, David	professor of humanities	BA, University of Leeds, England; PhD, State University of New York at Buffalo
GÓMEZ, Leila G.	associate professor of Spanish	Licenciature, Universidad Nacional de Tucumán, Argentina; MA, PhD, Johns Hopkins University
GORDON, Paul	professor of humanitites	BA, State University of New York at Buffalo; PhD, Yale University
GREANEY, Patrick	associate professor of German	BA, Yale College; MA, PhD, Johns Hopkins University
GREEN, Jeremy	associate professor of English	BA, Oxford University; PhD, Cambridge University
HAUSER, Gerard	professor of communication	BA, Canisius College; MA, PhD, University of Wisconsin
HEYDT-STEVENSON, Jillian	associate professor of English	BA, University of Colorado Boulder; MA, University of Iowa; PhD, University of Colorado Boulder
JACOBS, Karen	associate professor of English	BA, Washington University; PhD, University of California, Berkeley
KRAUEL, Javier	assistant professor of Spanish	MA, University of North Carolina at Chapel Hill; PhD, Duke University

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KROLL, Paul	professor of Chinese	BA, MA, PhD, University of Michigan
LANDEIRA, Ricardo	director; professor of Spanish	BA, MA, Arizona State University; PhD, Indiana University
LEIDERMAN, Mark N.	professor of Russian	BA, MA, PhD, Ural State University
MAS, Ruth	assistant professor of religious studies	BA, MA, Concordia University; PhD, University of Toronto
MOTTE, Jr., Warren F.	professor of French and Italian	BA, University of Pennsylvania; Maitrise des Lettres, Universite de Bordeaux; MA, PhD, University of Pennsylvania
MULLER-SIEVERS, Helmut	professor of German; director, center for humanities and the art	BA equivalent, University of Düsseldorf; MA, Free University of Berlin; PhD, Stanford University
OSTERMAN, Laura	associate professor of Russian	BA, State University of New York; MA, Indiana University; PhD, Yale University
PECKERAR, Robert Adler	assistant professor of European Jewish Studies	BA, Brandeis University; PhD, University of California, Berkeley
PICKFORD, Henry	assistant professor of German	BA, Dartmouth University; MA, Stanford University; MA, University of Pittsburg; PhD, Yale University
RIVERS, JR, J. E.	professor of English	AB, Davidson College; MA, PhD, University of Oregon
SIMONSON, Peter	associate professor of communication	AB, AM, Stanford University; PhD University of Iowa
SLATER, John	assistant professor of Spanish and Portuguese	BA, Earlham College, Indiana; PhD, Brandeis University
STIMILLI, David	associate professor of humanities and German	BA, Laurea, University of Pisa; MA, PhD, Yale University
WEBER, Beverly	assistant professor of German	BA, Gustavus Adolphus College; MA, Pennsylvania State University; PhD, University of Massachusetts Amherst
WHITE, Eric	associate professor of English	BA, Columbia University; MA, Cambridge University; MA, PhD, University of California, Berkeley
WINOKUR, Mark	associate professor of English	BA, Brandeis University; MA, PhD, University of California, Berkeley
ZEMKA, Sue	associate professor of English	BA, Saint Louis University; PhD, Stanford University

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# Faculty: Ecology and Evolutionary Biology

Name	Title	Education
ADAMS III, William	professor	BA, MA, University of Kansas; PhD, Australian National University
ARMSTRONG, David M.	professor emeritus	
BARGER, Nichole	assistant professor	BS, The Evergreen State College; MS, University of California, Berkeley; PhD, Colorado State University
BASEY, John M.	senior instructor	BA, California State University, Stanislaus; MS, PhD, University of Nevada
BEKOFF, Marc	professor emeritus	
BOCK, Carl L E.	professor emeritus	
BOCK, Jane H.	professor emerita	
BONDE, Erik K.	professor emeritus	
BOWERS, M. Deane	professor	BA, Smith College; PhD, University of Massachusetts
BOWMAN, William	professor	BA, University of Colorado; MS, San Diego State University; PhD, Duke University
BREED, Michael D.	professor	BA, Grinnell College; MA, PhD, University of Kansas
CARPENTER, Harrison	senior instructor	BS, Ferris State University; MS, PhD, Michigan Technological University
COLLINGE, Sharon K.	professor (joint with Environmental Studies Program)	BA, Kansas State University; MS, University of Nebraska at Lincoln; PhD, Harvard University
CRUMPACKER, David W.	professor emeritus	
CRUZ, Alexander	professor	BS, City College of New York; PhD, University of Florida
CUNDIFF, Milford F.	associate professor	BA, PhD, University of Colorado

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DAVIES, Kendi	assistant professor	BSc, PhD, Australian National University
DEMMIG-ADAMS, Barbara	professor	BA, PhD, Dr. rer. nat. habil., Universität Würzburg, Germany
DIGGLE, Pamela K.	professor	BA, University of California, Santa Barbara; MS, University of California, Riverside; PhD, University of California, Berkeley
FIERER, Noah	associate professor	BA, Oberlin College; PhD, University of California, Santa Barbara
FLAXMAN, Samuel M.	assistant professor	BS, PhD, Cornell University
FRIEDMAN, William E.	professor	AB, Oberlin College; PhD, University of California, Berkeley
GRANT, Michael C.	associate vice chancellor for undergraduate education; director, Norlin Scholars Program; professor	BA, MA, Texas Tech University; PhD, Duke University
GURALNICK, Robert	associate professor	BA, PhD, University of California, Berkeley
JOHNSON, Pieter T. J.	assistant professor	BS, Stanford University; PhD, University of Wisconsin
KEARNS, Carol	senior instructor	BS, Southampton College; MS University of New Hampshire; PhD, University of Maryland
KOCIOLEK, J. Patrick	professor	BS, St. Mary's College of Maryland; MS, Bowling Green State University; PhD, University of Michigan
LEWIS, Jr., William M.	director, Center for Limnology (CIRES); professor	BS, University of North Carolina; PhD, Indiana University
LINHART, Yan B.	professor emeritus	
LYNCH, Carol B.	professor emerita	
MARTIN, Andrew	professor	BS, University of Arizona; MS, PhD, University of Hawaii
MAYER, Stephanie S.	senior instructor	BS, Stanford University; MS, University of California, Davis; PhD, University of California, Berkeley
McCAIN, Christy	assistant professor	BS, Humboldt State University; PhD, University of Kansas
McKENZIE, Valerie	assistant professor	BS, MS, University of Connecticut; PhD, University of California, Santa Barbara
MEDEIROS, Daniel	assistant professor	BS, University of Hawaii; PhD, California Institute of Technology
MELBOURNE, Brett A.	assistant professor	BSc, PhD, Australian National University
		BA, University of Connecticut; PhD, State

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MITTON, Jeffry B.	professor	University of New York at Stony Brook
MONSON, Russell K.	professor emeritus	
NICHOLS, Harvey	professor emeritus	
SAFRAN, Rebecca	assistant professor	BS, University of Michigan; MS, Humboldt State University; PhD, Cornell University
SCHMIDT, Steven K.	department chair. professor	BS, Boise State University; MS, Colorado State University; PhD, Cornell University
SEASTEDT, Timothy R.	professor	BA, University of Montana; MS, University of Alaska; PhD, University of Georgia
SMITH, Hobart M.	professor emeritus	
SOUTHWICK, Charles H.	professor emeritus	
STOCK, David	associate professor	BS, Texas A&M University; PhD, University of Illinois
TOWNSEND, Alan	professor	BA, Amherst College; PhD, Stanford University
WESSMAN, Carol A.	professor	BS, Colorado State University; MS, PhD, University of Wisconsin–Madison
WINDELL, John T.	professor emeritus	
WINSTON, Paul W.	professor emeritus	

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## Faculty: Economics

Name	Title	Education
ALSTON, Lee	professor	BA, Indiana University; MA, PhD, University of Washington
ANTMAN, Francisca	assistant professor	BA, Harvard University; MA, PhD, Stanford University
BARANOV, Oleg	assistant professor	BS, Moscow State University; MS, Moscow State University; MA, New Economic School, Moscow; PhD, University of Maryland
BARHAM, Tania	assistant professor	BA, McGill University; MA, University of British Columbia; PhD, University of California, Berkeley
BOILEAU, Martin	associate professor	BS, MS, Université du Québec à Montréal; PhD, Queen's University at Kingston
CADENA, Brian	assistant professor	BA, Northwestern University; MA, PhD, University of Michigan
CARLOS, Ann M.	professor	BA, MA, University College Dublin; PhD, University of Western Ontario
CHEN, Yongmin	professor	BS, Zhejiang Institute of Technology; MA, People's University of China; PhD, Boston University
de BARTOLOMÉ, Charles	professor	BA, Cambridge University; MBA, Wharton Graduate School, University of Pennsylvania; PhD, University of Pennsylvania
DEMIREL, Ufuk Devrim	assistant professor	BA, Bilkent University; MA, PhD, University of Virginia
DUGAN, James E.	professor emeritus	
FALLY, Thibault	assistant professor	BA, Ecole Supérieure; MA, PhD, EHESS, Paris School of Economics
FLORES, Nicholas E.	department chair; professor	BA, University of Texas at Austin; MA, MS, PhD, University of California, San Diego
GLAHE, Fred R.	professor emeritus	
GRAVES,	professor	BA, Indiana University; MA, PhD, Northwestern University

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Phillip E.		
GREENWOOD, Michael J.	professor	BA, De Paul University; MA, PhD, Northwestern University
HOWE, Charles W.	professor emeritus	
HSIAO, Frank S. T.	professor emeritus	
HUGHES, Jonathan	assistant professor	BS, Duke University; MS, Cornell University; PhD, University of California, Davis
IYIGUN, Murat F.	professor	BS, Hacettepe University, Turkey; MBA, Boston University; MA, PhD, Brown University
KAEMPFER, William H.	vice provost and associate vice chancellor for academic affairs, budget, and planning; professor	BA, College of Wooster; MA, PhD, Duke University
KAPLAN, Jules	senior instructor	BS, University of Maryland; MA, PhD, University of Colorado Boulder.
KELLER, Wolfgang	professor	Diploma in Economics, University of Freiburg, Germany; PhD, Yale University
KIM, Jin-Hyuk	assistant professor	BA, Yonsei University; MA, Cornell University; PhD, Cornell University
LILLYDAHL, Jane	professor emerita	
LIU, Xiaodong	assistant professor	Fudan University; MA, PhD, Ohio State University
MARKUSEN, James R.	university distinguished professor	BA, PhD, Boston College
MARTINS-FILHO, Carlos	professor	BS, Federal University of Ceará, Brazil; MA, PhD, University of Tennessee
MASKUS, Keith E.	associate dean for the social sciences, College of Arts and Sciences, professor	BA, Knox College; MA, PhD, University of Michigan
McKINNISH, Terra G.	associate professor	BA, University of Richmond; MS, PhD, Carnegie Mellon University
McNOWN, Robert F.	professor	BA, University of California, Los Angeles; PhD, University of California, San Diego
MERTENS, William	instructor	BA, University of Michigan; MA, PhD, University of Colorado Boulder
MOREY, Edward R.	professor	BA, University of Denver; MA, University of Arizona; PhD, University of British Columbia
OWEN, Wyn F.	professor emeritus	
POULSON, Barry	professor emeritus	

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ROPER, Don E.	professor emeritus	
SAVAGE, Scott	associate professor	BB, PhD, Curtin University of Technology, Australia; MEd, University of Western Australia
SHIUE, Carol	associate professor	BS, Massachusetts Institute of Technology; PhD, Yale University
SINGELL, Larry D.	professor emeritus	
UDIS, Bernard	professor emeritus	
WALDMAN, Donald M.	associate chair for graduate studies; professor	BA, Cornell University; MA, PhD, University of Wisconsin
ZAX, Jeffrey S.	associate chair for undergraduate studies; professor	BA, PhD, Harvard University

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# Faculty: English

Name	Title	Education
BAKER, Donald C.	professor emeritus	
BASSOFF, Bruce	professor emeritus	
BEECHY, Tiffany	assistant professor	AB, Harvard University; MFA, Columbia University; PhD, University of Oregon
BICKMAN, Martin E.	professor	AB, Amherst College; MAT, Harvard University; MA, PhD, University of Pennsylvania
BILLINGSLEY, Ronald	associate professor emeritus	
BOARDMAN, Arthur M.	professor emeritus	
BRADLEY, Adam	associate professor	BA, Lewis and Clark College; AM, PhD, Harvard University
BURGER, Douglas A.	associate professor emeritus	
CARR, Julie	associate professor	BA, Barnard College; MFA, New York University, PhD, University of California, Berkeley
COX, Jeffrey	associate vice chancellor for faculty affairs; professor (joint with Department of Humanities)	BA, Wesleyan University; PhD, University of Virginia
DESHELL, Jeffrey	professor	BA, MA, University of Colorado Boulder; PhD, State University of New York at Buffalo
DOUGLAS, Marcia	associate professor	BA, Oakwood College; MFA, Ohio State University; PhD, State University of New York at Binghamton
EGGERT, Katherine	associate professor	BA, Rice University; MA, PhD, University of California, Berkeley
EMERSON, Lori	assistant professor	BA, University of Alberta, Edmonton; MA, University of Victoria, British Columbia; MA, PhD, State University of New York at Buffalo.
ESCOBEDO,	assistant professor	BA, University of California, Riverside; MA, PhD, Rice University

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John		
GARRITY, Jane	associate professor	AB, MA, PhD, University of California, Berkeley; MA, Queens Mary College, University of London
GLIMP, David	associate professor	BS, Texas A&M University; MA, University of Colorado; PhD, Johns Hopkins University
GOLDFARB, Sidney	professor emeritus	
GOODMAN, Nan	associate professor	BA, Princeton University; MA, University of California, Berkeley; JD, Stanford University; PhD, Harvard University
GORDON, Noah Eli	assistant professor	BA, MFA, University of Massachusetts, Amherst
GREEN, Jeremy F.	associate professor	BA, Wadham College, Oxford University; PhD, Cambridge University
HASAN, Raza Ali	instructor	BA, MA, University of Texas at Austin; MFA, Syracuse University
HEYDT-STEVENSON, Jillian	associate professor	BA, University of Colorado; MA, University of Iowa; Ph.D., University of Colorado
HIGASHIDA, Cheryl	assistant professor	BA, University of California, Berkeley; MA, PhD, Cornell University
HO, Janice Chiew Ling	assistant professor	BA, University of Queensland, Australia; MA, PhD, Cornell University
HOGAN, Linda	professor emerita	
HURLEY, Kelly K.	associate professor	BA, Reed College; PhD, Stanford University
JACOBS, Karen	associate professor	BA, Washington University; PhD, University of California, Berkeley
JONES, Stephen Graham	professor	BA, Texas Tech University; MA, University of North Texas; PhD, Florida State University
JUHASZ, Suzanne H.	professor emerita	
KATZ, Steven	professor emeritus	
KAWIN, Bruce F.	professor (joint, with the Department of Film Studies)	AB, Columbia University; MFA, PhD, Cornell University
KELSEY, Penelope	associate professor	BA, Manchester College; PhD, University of Minnesota
KIBBEY, Ann	associate professor	BA, Cornell University; PhD, University of Pennsylvania
KINNEAVY, Gerald B.	professor emeritus	

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KLAGES, Mary	associate professor	AB, Dartmouth College; MA, PhD, Stanford University
KOCHER, Ruth Ellen	associate professor	BA, Pennsylvania State University; MFA, PhD, Arizona State University.
KRAUTH, Phillip L.	professor emeritus	
KRYSL, Marilyn D.	professor emerita	
KUSKIN, William	department chair; associate professor	BA, Vassar College; MA, PhD, University of Wisconsin–Madison
LABIO, Catherine	associate professor	Candidature, Facultés Universitaires Saint-Louis, Brussels; Licence, Université Libre de Bruxelles; MPhil, PhD, New York University
LAMOS, Steven J.	assistant professor	BA, MEd, PhD, University of Illinois
LEVITT, Paul M.	professor	BA, MA, University of Colorado; MA, PhD, University of California, Los Angeles
LITTLE, Katherine C.	associate professor	BA, University of California, Berkeley; PhD, Duke University
MICHELSON, Peter F.	professor emeritus	
MOSKOVIT, Leonard	professor emeritus	
MUNKHOFF, Richelle	assistant professor	BA, University of Maryland Baltimore County; MA, PhD, University of Wisconsin–Madison
MURPHY, John Leo	professor emeritus	
PRESTON, Cathy Lynn	senior instructor	BA, PhD, University of Colorado
PRESTON, Michael J.	professor	AB, Gonzaga University; MA, University of Virginia; MA, PhD, University of Colorado

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# Faculty: Environmental Studies

Name	Title	Education
ANDERSSON, Krister	associate professor (joint with the Department of Political Science)	BA, Point Loma Nazarene University; MA, Schiller International University; PhD, Indiana University
BLANKEN, Peter	associate professor (joint with the Department of Geography)	BS, MS, McMaster University; PhD, University of British Columbia
BOYKOFF, Maxwell	assistant professor (joint with CIRES)	BS, The Ohio State University; PhD, University of California, Santa Cruz
COLLINGE, Sharon	professor (joint with the Department of Ecology and Evolutionary Biology)	BA, Kansas State University; MS, University of Nebraska at Lincoln; PhD, Harvard University
CROW, Deserai	assistant professor	BS, University of Colorado, Boulder; MPA, University of Colorado, Denver; PhD, Duke University
DILLING, Lisa	assistant professor	BA, Harvard University; PhD, University of California, Santa Barbara
HALE, Benjamin	assistant professor	BS, Kalamazoo College; MPA, University of Arizona; PhD, State University of New York at Stony Brook
LITT, Jill	assistant professor (joint with the Department of Preventative Medicine and Biometrics, University of Colorado Health Sciences Center)	BA, Johns Hopkins University; PhD, Johns Hopkins School of Public Health
MILLER, Dale	senior instructor	BA, MA, University of Colorado Denver
NEFF, Jason	associate professor (joint with Department of Geology)	BA, University of Colorado Boulder; PhD, Stanford University
NEMERGUT, Diana	assistant professor (joint with the Institute of Arctic and Alpine Research)	BS, University of New Orleans; PhD, University of Colorado Boulder
PIELKE JR., Roger	professor (joint with CIRES)	BA, MA, PhD, University of Colorado Boulder
TOWNSEND, Alan	director; professor of ecology and evolutionary biology	BA, Amherst; PhD, Stanford University
WHITE, James W. C.	professor of geological sciences (joint with Environmental Studies)	BS, Florida State University; MA, MPhil, PhD, Columbia University

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# Faculty: Ethnic Studies

Name	Title	Education
ALDAMA, Arturo J.	associate chair; associate professor	BA, Evergreen State College; MA, PhD, University of California, Berkeley
FACIO, Elisa	associate professor	BS, University of Santa Clara; MA, PhD, University of California, Berkeley
KING, William M.	professor emeritus	
LOCKE, Brian	instructor	BA, Whitman College; MPA, University of Washington; MA, PhD, Brown University
MAEDA, Daryl	department chair, associate professor	BS, Harvey Mudd College; MA, San Francisco University; MA, University of Michigan; PhD, University of Michigan
MARTINEZ, Doreen E.	assistant professor	BS, Mansfield University; MS, West Virginia University; CAS, PhD, Syracuse University
MEDAK-SALTZMAN, Danika F.	assistant professor	BA, University of Massachusetts, Amherst; MA, PhD, University of California, Berkeley
PEREZ, Emma	professor	BA, MA, PhD, University of California, Los Angeles
RABAKA, Reiland	associate professor	BFA, University of the Arts; MA, PhD, Temple University
SOHI, Seema	assistant professor	BA, University of California, Santa Cruz; MA, University of Vermont; PhD, University of Washington
WALKER, Deward	professor emeritus	
WILLIAMS, Bianca	assistant professor	BA, MA, PhD, Duke University

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# Faculty: Farrand RAP

Name	Title	Education
ANDERMAN, Elizabeth	instructor	AB, Princeton; PhD, University of Colorado Boulder
CHAN, Steve	director; college professor of distinction of political science	BA, Tulane University; PhD, University of Minnesota
COMSTOCK, Cathy	senior instructor	BA, Miami University; PhD, University of Colorado Boulder
GILLETT, Bernard	senior instructor	BS, University of Wisconsin, Madison; MA, University of Colorado Boulder
LYNCH, Mary Beth	instructor	BA, Miami University; PhD, Arizona State University
MARTIN, John	senior instructor	BA, Western Oregon University; MA, Pennsylvania State; PhD, University of Colorado Boulder
McGUIRE, Vincent	senior instructor	PhD, University of Colorado Boulder
SIMPSON, Michele D.	instructor	BA, Virginia State University, Petersburg; JD, Indiana University, Bloomington

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## Faculty: Film Studies

Name	Title	Education
ACEVEDO-MUÑOZ, Ernesto	director; associate professor	BA, University of Puerto Rico; MA, PhD, University of Iowa
AUGUISTE, Reece	assistant professor	BS, Portsmouth Polytechnic; MS, Marlboro College; PhD, University of Nottingham
BARLOW, Melinda	associate professor	BA, University of Toronto; PhD, New York University
BATTLE, Christina	assistant professor	BS, University of Alberta; MFA, San Francisco Art Institute
BOORD, Daniel	professor	BFA, University of Oklahoma; MFA, University of California, San Diego
COX, Alex	assistant professor	BA, Worcester College; MFA, University of California, Los Angeles
GANGULY, Suranjan	associate professor	BA, University of Calcutta; MA, Jadavpur University; PhD, Purdue University
LIOTTA, Jeanne	assistant professor	BFA, New York University
PALMER, James	director of World Affairs Conference; professor	BA, Dartmouth College; MA, PhD, Claremont Graduate School
PETERSON, Jennifer	assistant professor	BA, University of California, Berkeley; MA, PhD, University of Chicago
SOLOMON, Phillip	professor	BA, State University of New York at Binghamton; MFA, Massachusetts College of Art
YANNACITO, Donald	senior instructor	BA, University of Colorado Boulder; MA, University of Colorado Denver

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## Faculty: French and Italian

Name	Title	Education
ARDIZZONI, Michela	assistant professor	BA, MA, University of Cagliari; MA, University of Iowa; PhD, Indiana University
ARNOULD-BLOOMFIELD, Elisabeth	associate professor	License ès Lettres, Maîtrise ès Lettres, University of Paris (Sorbonne); PhD, University of California, San Diego
BARCILON, Jacques	professor emeritus	
BRAIDER, Christopher	professor	BA, PhD, Trinity College, Dublin
COWELL, Andrew	professor, joint with department of French and Italian	BA, Harvard University; MA, PhD, University of California, Berkeley
FERME, Valerio	department chair; associate professor	BA, Brown University; MA, Indiana University; PhD, University of California, Berkeley
FREY, Julia B.	professor emerita	
GOERGEN, Maxime	assistant professor	License ès Lettres, University of Neuchatel; DPhil, University of Oxford
JUNOD, Samuel	associate professor	License ès Lettres, Diplôme d'Etudes Supérieures, University of Geneva; PhD, Johns Hopkins University
LAZZARINO, Graziana G.	professor emerita	
MAGNANINI, Suzanne	associate professor	BA, Washington University; MA, PhD, University of Chicago
MAYER, Edgar N.	professor emeritus	
MORTIMER, Wildred	professor emerita	
MOTTE Jr., Warren F.	professor	M. ès L., University of Bordeaux; BA, MA, PhD, University of Pennsylvania
REED, Cosetta Seno	assistant professor	Laurea, University of Macerata, Italy; MA, University of Virginia; PhD, University of California, Berkeley

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YAMASHITA, Masano	assistant professor	BA, Kings College; MA, PhD, New York University
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## Faculty: Geography

Name	Title	Education
ABDALATI, Waleed	director, Center for the Study of Earth from Space; associate professor	BS, Syracuse University; MS, PhD, University of Colorado Boulder
ANDERSON, Suzanne P.	assistant professor	BS, University of Puget Sound; MS, University of Washington; PhD, University of California, Berkeley
ANDERSON, Suzanne P.	associate professor	BS, University of Puget Sounds; MS, University of Washington; PhD, University of California, Berkeley
BARNARD, Holly	assistant professor	BS, University of Washington; MS, Colorado State University; PhD, Oregon State University
BARRY, Roger G.	professor emeritus	
BLANKEN, Peter	department chair; professor (joint with Environmental Studies program)	BSc, MSc, McMaster University; PhD, University of British Columbia
BRYAN, Joseph H.	assistant professor	BA, University of California, Santa Cruz; MA, PhD, University of California, Berkeley
BUTTENFIELD, Barbara P.	professor	BA, Clark University; MA, University of Kansas; PhD, University of Washington
CAINE, T. Nelson	professor emeritus	
DUNN, Elizabeth	associate professor	BA, University of Rochester; MA, University of Chicago; PhD, Johns Hopkins Universit
ERICKSON, Kenneth A.	professor emeritus	
FOOTE, Kenneth E.	professor	BA, University of Wisconsin; MA, PhD, University of Chicago
GOLDMAN, Mara	assistant professor	BA, Clark University; MA, University of California, Los Angeles; MS, PhD, University of Wisconsin-Madison
HILL, A. David	professor emeritus	
JAN, Najeeb	assistant professor	BA, Rhodes College; MA, PhD, University of Michigan

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LEYK, Stefan	assistant professor	BS, MS, Technical University of Dresden; PhD; University of Zurich
MOLOTCH, Noah P.	assistant professor	BA, University of Colorado; MS, University of California, Santa Barbara; PhD, University of Arizona
OAKES, Timothy S.	professor	BA, Colby College; MA, PhD, University of Washington
O'LOUGHLIN, John V.	professor	BA, National University of Ireland; MS, PhD, Pennsylvania State University
PITLICK, John	professor	BSc, University of Washington; MSc, PhD, Colorado State University
RIOSMENA, Fernando	assistant professor	Licenciado en Mercadotecnica, ITESM; MA, PhD, University of Pennsylvania
ROGERS, Andrei	professor emeritus	
ROOT, Elisabeth D.	assistant professor	BA, Pomona College; MA, University of Maryland; PhD, University of North Carolina
SERREZE, Mark C.	professor	BA, MS, University of Massachusetts; PhD, University of Colorado
SPIELMAN, Seth E.	assistant professor	BA, Macalester College; MA, Columbia University; PhD, State University of New York at Buffalo
STEFFEN, Konrad	professor	MA, PhD, Swiss Federal Institute of Technology (ETH), Zurich
TRAVIS, William E.	associate professor	BS, Florida State University; MS, University of Utah; PhD, Clark University
VEBLEN, Thomas T.	professor	AB, MA, PhD, University of California, Berkeley
WILLIAMS, Mark W.	professor	BA, PhD, University of California, Santa Barbara
YEH, Emily	associate professor	BS, MS, Massachusetts Institute of Technology; PhD, University of California, Berkeley

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# Faculty: Geological Sciences

Name	Title	Education
ABBOTT, Lon	senior instructor	BS, University of Utah; PhD, University of California, Santa Cruz
ANDERSON, Robert S.	professor	BS, Williams College; MS, Stanford University; PhD, University of Washington
ANDREWS, John T.	professor emeritus	
ATKINSON Jr., William W.	associate professor emeritus	
BILHAM, Roger G.	professor	BS, University of Wales; PhD, Cambridge University
BIRKELAND, Peter W.	professor emeritus	
BRADLEY, William C.	professor emeritus	
BUDD, David A.	professor	BS, College of Wooster; MS, Duke University; PhD, University of Texas at Austin
CHIN, Karen	associate professor	BA, University of California; MS, Montana State University; PhD, University of California, Santa Barbara
DREXLER, John	associate professor attendant rank	BS, Western Illinois University; MS, PhD, Michigan Technological University
EBERLE, Jaelyn	associate professor	BS, University of Saskatchewan; PhD, University of Wyoming
EICHER, Don L.	professor emeritus	
FARMER, G. Lang	department chair; professor	BA, University of California, San Diego; PhD, University of California, Los Angeles
FLOWERS, Rebecca M.	assistant professor	BS, College of William and Mary; MS, University of Utah; PhD, Massachusetts Institute of Technology
GE, Shemin	professor	BSc, Wuhan University of Technology, China; MAsc., The University of British Columbia, Canada; MA, PhD, Johns Hopkins University
GOETZ, F. H.	professor emeritus	

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Alexander		
HYNEK, Brian M.	assistant professor	BA, University of Northern Iowa; PhD, Washington University
JAKOSKY, Bruce M.	professor	BS, University of California, Los Angeles; MS, PhD, California Institute of Technology
JONES, Craig	associate professor	BS, California Institute of Technology; PhD, Massachusetts Institute of Technology
KRAUS, Mary J.	associate dean for the natural sciences; professor	BS, Yale University; MS, University of Wyoming; PhD, University of Colorado
LARSON, Edwin E.	professor emeritus	
MAHAN, Kevin	assistant professor	BSc, Auburn University; MSc, University of Utah; PhD, University of Massachusetts Amherst
MARCHITTO Jr., Thomas M.	associate professor	BS, Yale University; PhD, Massachusetts Institute of Technology/Woods Hole Oceanographic Institute Joint Program
MEIER, Mark F.	professor emeritus	
MILLER, Gifford H.	professor	BA, PhD, University of Colorado
MOJZSIS, Stephen J.	associate professor	BA, MA, Boston University; PhD, Scripps Institute of Oceanography
MOLNAR, Peter	professor	BA, Oberlin College; PhD, Columbia University
MUELLER, Karl J.	associate professor	BS, MS, San Diego State University; PhD, University of Wyoming
MUNOZ, James L.	professor emeritus	
NEFF, Jason C.	associate professor	BA, University of Colorado; PhD, Stanford University
PRANTER, Matthew J.	associate professor	BS, Oklahoma State University; BS, Colorado School of Mines; MS, Baylor University; PhD, Colorado School of Mines
ROBINSON, Peter	professor emeritus	
RUNNELLS, Don	professor emeritus	
SHEEHAN, Anne	professor	BS, University of Kansas; PhD, Massachusetts Institute of Technology
SMITH, Dena M.	associate professor	BA, University of California, Santa Cruz; PhD, University of Arizona
SMYTH,	professor	BS, Virginia Polytechnic Institute; MS, PhD, University of

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Joseph R.		Chicago
SPETZLER, Hartmut A. W.	professor emeritus	
STERN, Charles R.	professor	BS, MS, PhD, University of Chicago
SYVITSKI, James P. M.	professor	BSc, HBS, Lakehead University; PhD, University of British Columbia
TEMPLETON, Alexis S.	assistant professor	BA, MS, Dartmouth College; PhD, Stanford University
TILTON, Eric	professor	BA, Williams College; PhD, University of California at Santa Cruz
TUCKER, Gregory E.	associate professor	BA, Brown University; PhD, Pennsylvania State University
WALKER, Theodore R.	professor emeritus	
WEIMER, Paul	director of EMARC; Bruce D. Benson professor of petroleum geology	BA, Pomona College; MS, University of Colorado Boulder; PhD, University of Texas at Austin
WHITE, James W. C.	professor	BS, Florida State University; MA, MPhil, PhD, Columbia University

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# Faculty: Germanic and Slavic Languages and Literatures

Name	Title	Education
FIRESTONE, Robert	assistant professor emeritus	
GERWIG, Inger-Johanne	senior instructor emerita	
GOODMAN, Zilla	senior instructor of Hebrew	BA, MA, PhD, University of Cape Town
GREANEY, Patrick	associate professor	BA, Yale College; MA, PhD, Johns Hopkins University
GROVE, Vicki	senior instructor	BA, Lake Forest College; MA, PhD, University of Colorado Boulder
HINTZ, Saskia B.	senior instructor	Erstes Staatsexamen (MA equivalent) Pädagogische Hochschule, Flensburg; PhD, New York University
KOSTOGLODOVA, Elena Y.	senior instructor	BA, Uppsala College; MA, PhD, University of Colorado
LEE, C. Nicholas	professor emeritus	
LEIDERMAN, Mark N.	professor of Russian	BA, MA, PhD, Ural State University
MIKHAILOVA, Tatiana	senior instructor	BA, MA, Ural State University
MULLER-SIEVERS, Helmut	director, center for humanities and the arts; professor	BA equiv., University of Düsseldorf; MA, Free University of Berlin; PhD, Stanford University
OSTERMAN, Laura J.	associate professor	BA, State University of New York; MA, Indiana University; PhD, Yale University. D. L. PLANK, professor emeritus
PICKFORD, Henry	assistant professor	BA, Dartmouth College; MA, Stanford University; PhD, Yale University
PLANK, D. L.	professor emeritus	
ROMANOV, Artemi	associate professor	BA, MA, PhD, Leningrad University
SALYS, Rimgalia	professor	BA, University of Pennsylvania; MA, PhD, Harvard University
SAMPSON, Earl D.	associate professor	

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emeritus		
SCHINDLER, PATRICIA A.	senior instructor	BA, University of Michigan; MA, University of Colorado Boulder
SCHMIESING, Ann C.	associate professor	BA, Willamette University; MA, University of Washington; PhD, Cambridge University
STIMILLI, Davide	department chair; associate professor	BA, Laurea, University of Pisa; MPhil, PhD, Yale University
TEITELBAUM, Benjamin	instructor	BM, Bethany College; MA, Brown University
WEBER, Beverly M.	assistant professor	BA, Gustavus Adolphus College; MA, Pennsylvania State University; PhD, University of Massachusetts Amherst

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# Faculty: Global Studies RAP

Name	Title	Education
CONZELMAN, Carol	associate director; instructor	BA, BS Miami University; MA, PhD, University of Colorado Boulder
MARTIN, Jessica	instructor	BA, Northwestern University; MA, PhD, University of Colorado Boulder
ZEILER, Thomas	director; professor of history	BA, Emory University; MA, PhD, University of Massachusetts Amherst

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## Faculty: History

Name	Title	Education
ANDERSON, Fred W.	professor	BA, Colorado State University; AM, PhD, Harvard University
ANDERSON, Virginia D.	professor	BA, University of Connecticut; MA, University of East Anglia; AM, PhD, Harvard University
BARBOSA, Francisco J.	assistant professor	BA, University of California, Los Angeles; MA, California State University, Los Angeles; PhD, Indiana University
BRUCE, Scott G.	associate professor	BA, York University; MA, PhD, Princeton University
CHAMBERS, Lee V.	associate professor	BA, Wellesley College; MA, PhD, University of Michigan
CHESTER, Lucy	assistant professor of history and international affairs	BA, MA, PhD, Yale University
CHRISTENSEN, Carl C.	professor emeritus	
COX, Jeffrey	associate vice chancellor for faculty affairs; professor of humanities and English	BA, Wesleyan University; PhD, University of Virginia
DAUVERD, Celine	assistant professor	BA, Hawaii Pacific University; MA, University of Hawaii, Manoa; PhD, University of California, Los Angeles
ENGEL, Barbara A.	distinguished professor emerita	
FERRY, Robert J.	associate professor	BA, University of Colorado; MA, PhD, University of Minnesota
FISCHER-GALATI, Stephen	distinguished professor emeritus	
GAUTAM, Sanjay Kumar	assistant professor	BA, Ramjaf College of Delhi University; MA, Jawaharlal Nehru University; PhD, University of Chicago
GERBER, Matthew D.	assistant professor	BA, Yale University; MA, PhD, University of California, Berkeley
GORDON, Paul	professor	BA, State University of New York at Buffalo;

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		PhD, Yale University
GROSS, David L.	professor	BA, St. Ambrose College; MA, PhD, University of Wisconsin
HAMMER, Paul E. J.	professor	BA, University of Auckland; PhD, Selwyn College, University of Cambridge, UK
HANNA, Martha	professor	BA, University of Winnipeg; MA, University of Toronto; PhD, Georgetown University
HILL JR., Boyd H.	professor emeritus	
HOHLFELDER, Robert	professor emeritus	
JANKOWSKI, James P.	professor emeritus	
KENT, Susan K.	department chair; professor	BS, Suffolk University; MA, PhD, Brandeis University
KIM, Kwangmin	assistant professor	BA, MA, Sogang University, South Korea; PhD, University of California, Berkeley
KINGSBERG, Miriam	assistant professor	BA, MA, Brandeis University. PhD, University of California, Berkeley
LEBRA, Joyce Chapman	professor emerita	
LESTER, Anne E.	assistant professor	BA, Brown University; MA, PhD, Princeton University
LIMERICK, Patricia Nelson	professor	BA, University of California, Santa Cruz; MA, M.Phil., PhD, Yale University
MAIN, Gloria L.	professor emerita	
MANN, Ralph	associate professor	BA, Duke University; MA, PhD, Stanford University
McINTOSH, Marjorie K.	distinguished professor emerita	
MUKHERJEE, Mithi	assistant professor	BA, Presidency College, Calcutta; MA, Jawaharlal Nehru University; PhD, University of Chicago
OSBORNE, Myles	assistant professor	BA, Columbia University; MA, PhD, Harvard University
PHILLIPS, George H.	professor emeritus	
PITTENGER, Mark A.	associate professor	BA, Denison University; MA, PhD, University of Michigan
RUESTOW, Edward G.	associate professor emeritus	
SCAMEHORN, Howard Lee	professor emeritus	

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>

SCHULZINGER, Robert D.	professor	BA, Columbia University; M.Phil., PhD, Yale University
SHNEER, David	associate professor and director of Jewish Studies	BA, MA, PhD, University of California, Berkeley
SPIRES, David N.	senior instructor emeritus	
SUTTER, Paul S.	associate professor	BA, Hamilton College. PhD, University of Kansas
WEI, William	professor	BA, Marquette University; MA, PhD, University of Michigan
WESTON, Timothy	associate professor	BA, University of Wisconsin–Madison; MA, PhD, University of California, Berkeley
WILLIS, John	assistant professor	BA, University of Louisville; MA, Georgetown University; PhD, New York University
YONEMOTO, Marcia A.	associate professor	BA, MA, PhD, University of California, Berkeley
YOUNG, Phoebe S. K.	assistant professor	BA, Bryn Mawr College; MA, PhD, University of California, San Diego
ZEILER, Thomas W.	professor	BA, Emory University; MA, PhD, University of Massachusetts

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# Faculty: Honors

Name	Title	Education
ANDERSON, Fred W.	director of honors; professor of history	BA, Colorado State University; AM, PhD, Harvard Univrsity
JONES, Daniel C. L.	senior instructor	BA, Sonoma State University; MM, PhD, University of Colorado
KOPFF, E. Christian	associate professor	BA, Haverford College; PhD, University of North Carolina
MOLINARO, Nina L.	associate director of honors; associate professor of Spanish	BA, Scripps College; MA, PhD, University of Kansas
STROM, Paul	associate director of Honors Residential Academic Program; senior instructor	BA, University of Colorado; MDiv, Austin Presbyterian Theological Seminary; PhD, University of Denver

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Name	Title	Education
ANDERSON, Fred W.	director of Honors Residential Academic Program; professor of history	BA, Colorado State University; AM, PhD, Harvard University
COLE, Penelope	instructor	BA, Hamline University; MA, University of Oregon; PhD, University of Colorado
JONES, Daniel C. L.	senior instructor	BA, Sonoma State University; MM, PhD, University of Colorado
MOORE, George	senior instructor	BS, Lewis & Clark College, Portland, Oregon; MA, PhD, University of Colorado
STROM, Paul	associate director in residence; senior instructor	BA, University of Colorado; MDiv, Austin Presbyterian Theological Seminary; PhD, University of Denver

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## Faculty: Humanities

Name	Title	Education
BERNARDINI, Giulia	instructor of humanities and Libby Residential Academic Program	BA, Mount Holyoke College; Post-graduate diploma, Courtauld Institute, London; MA, University of Colorado Boulder
CARNAHAN, Shirley	senior instructor, undergraduate advisor	BA, University of California, Santa Barbara; MA, California State University; PhD, University of Colorado Boulder
CATLOS, Brian	associate professor of Spanish and Portuguese	BA, MA, PhD, University of Toronto
COX, Jeffrey	associate vice chancellor for faculty affairs; professor of humanities and English	BA, Wesleyan University; PhD, University of Virginia
DABOVE, Juan Pablo	associate professor of Spanish and Portuguese	BA, MA, PhD, University of Toronto
FERRIS, David	professor of humanities	BA, University of Leeds, England; PhD, State University of New York at Buffalo
GERLAND, Oliver	associate professor of Theatre and Dance	BA, Swarthmore College; PhD, Stanford University
GORDON, Paul	professor of humanities	BA, State University of New York at Buffalo; PhD, Yale University
GREANEY, Patrick	associate professor of Germanic and Slavic Languages and Civilizations	BA, Yale College; MA, PhD, Johns Hopkins University
KROLL, Paul W.	professor of Chinese	BA, MA, PhD University of Michigan
MAS, Ruth	assistant professor of Religious Studies	BA, MA, Concordia University; PhD, University of Toronto
RABAKA, Reiland	associate professor of Ethnic Studies	BFA, University of the Arts; MA, PhD, Temple University
SCHÜMTRUMPF, Eckart	professor of Classics	PhD, University of Marburg; Habilitation in Classics, University of Marburg

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## Faculty: INVST Community

Name	Title	Education
KUHN, Timothy	faculty director, INVST; associate professor, Department of Communication	BS, MA, University of Minnesota–Twin Cities; PhD, Arizona State University
MEENS, David	instructor	BA, University of Colorado Boulder; MA, University of Colorado Anschutz Medical Campus
SIDERIS, Sabrina	program director, instructor	BA, University of Colorado Boulder; MA, University for Peace, Costa Rica

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## Faculty: Integrative Physiology

Name	Title	Education
AHMED, Alaa	assistant professor	BS, American University, Cairo; PhD, University of Michigan
ALLEN, David L.	assistant professor	BS, PhD, University of California, Los Angeles
BEKOFF, Anne C.	professor	BA, Smith College; PhD, Washington University
BOYKO, Marie E.	senior instructor	BA, Cornell University; MA, University of Colorado
BYRNES, William C.	associate professor	BS, Manhattan College; MA, Appalachian State University; PhD, University of Wisconsin
CAREY, Cynthia	director; professor of integrative physiology	AB, MA, Occidental College; PhD, University of Michigan
CASAGRANDE, Janet	instructor	BA, Drew University; PhD, Case Western Reserve University
DeSOUZA, Christopher	professor	BPHE, University of Toronto; MA, George Washington University; PhD, University of Maryland
DICKINSON, Arthur L.	professor emeritus	
EATON, Robert	professor emeritus	
EHRINGER, Marissa	associate professor	BS, BA, Indiana University; PhD, University of Colorado Denver
ENOKA, Roger M.	department chair; professor	Diploma PE, University of Otago, New Zealand; MS, PhD, University of Washington
FLESHNER, Monika R.	professor	BS, Iowa State University; MA, PhD, University of Colorado Boulder
FOWLER, John S.	associate professor emeritus	
GREENWOOD, Benjamin N.	assistant research professor	BA, MS, PhD, University of Colorado Boulder
HEISLER, Ruth E.	senior instructor	BS, University of Minnesota; MA, University of Colorado

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HERMANSON, Robert B.	instructor	BA, Carleton College; MA, University of Colorado Boulder
HOBBS, Steven	instructor	BS, University of California, San Diego; PhD, University of Colorado Boulder
JOHNSON, Thomas E.	professor	BSc, Massachusetts Institute of Technology; PhD, University of Washington
KRAM, Rodger	associate professor	BA, Northwestern University; MS, Penn State University; PhD, Harvard University
LEBOURGEOIS, Monique K.	assistant professor	BS, MS, MA, PhD, University of Southern Mississippi
LINK, Christopher D.	associate research professor	BS, Brooklyn College; PhD, University of Massachusetts
LOWRY, Christopher A.	assistant professor	BA, University of Wyoming; PhD, Oregon State University
LYNCH, G. ROBERT	professor emeritus	
MAZZEO, Robert S.	graduate coordinator; associate professor	BS, North Carolina State University; MA, Wake Forest University; PhD, University of California, Berkeley
MOOD, Dale P.	professor emeritus	
MOORE, Russell L.	provost; professor	BS, University of California, Davis; MS, PhD, Washington State University
NELSON, Suzanne L.	instructor	BS, MS, University of Illinois at Champaign; MA, PhD, University of Colorado Boulder
NORRIS, David O.	professor	BS, Baldwin-Wallace College; PhD, University of Washington
ROBICHAUX, Waldean	professor emerita	
SAUL, Leif	senior instructor	BS, University of Texas at Austin; PhD, University of California, Berkeley
SEALS, Douglas R.	college professor of distinction	BS, William Jewell College; MS, PhD, University of Wisconsin–Madison
SHERWOOD, David E.	undergraduate coordinator; associate professor	AB, MA, San Diego State University; PhD, University of Southern California
STITZEL, Jerry	associate professor	BA, University of Colorado Boulder; PhD, Johns Hopkins University
TSAI, Pei-San	associate professor	BS, Texas A&M University; MA, PhD, University of California, Berkeley
WRIGHT Jr., Kenneth P.	associate professor	BS, University of Arizona; MA, PhD, Bowling Green State University

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## Faculty: International Affairs

Name	Title	Education
BEARCE, David	associate professor (joint with Department of Political Science)	BA, Davidson College; PhD, Ohio State University
CHESTER, Lucy	associate professor (joint with Department of History)	BA, MPhil, PhD, Yale University
DUNN, Elizabeth	associate professor (joint with the Department of Geography)	BA, University of Rochester; MA, University of Chicago; PhD, Johns Hopkins University
HUNTER, Victoria A.	senior instructor	BA, Mount Holyoke College; PhD, University of Colorado Boulder
MARTIN, Jessica	instructor (joint with the Global Studies Residential Academic Program)	BA, Northwestern University; PhD, University of Colorado Boulder
McNOWN, Robert	program director; professor of economics	BA, University of California, Los Angeles; PhD, University of California, San Diego

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## Faculty: Jewish Studies

Name	Title	Education
AVIV, Caryn	senior instructor in secular Jewish society and civilization	BA, The New School for Social Research; MA, PhD, Loyola University of Chicago
CATLOS, Brian A.	associate professor of religious studies	BA, University of Toronto; MA, PhD, Centre for Medieval Studies
GOODMAN, Zilla	senior instructor of Hebrew	BA, MA, PhD, University of Cape Town
STIMILLI, Davide	department chair; associate professor	BA, Laurea, University of Pisa; MPhil, PhD, Yale University

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# Faculty: Libby RAP

Name	Title	Education
ALPERN, Tyler	instructor	BA, Occidental College; MFA, University of Colorado Boulder
BERNARDINI, Giulia	instructor	BA, Mount Holyoke College; Diploma, Courtauld Institute, England; MA, University of Colorado Boulder
BROERSMA, Leslee	senior instructor	BA, University of California, Irvine; MFA, University of Colorado Boulder
LOUIE, Donna	instructor	BS, New Mexico State University; PhD, University of Health Science Center at San Antonio
RAJ SHARMA, Vijaya	instructor	BE, University of Roorkee, India; ME, Asian Institute of Technology, Thailand; PhD, University of Colorado Boulder
ROBINSON, Janet S.	instructor	BA, University of Colorado Boulder; MA, University of Colorado Denver
STADE, Eric	director; professor of mathematics	BA, MA, PhD, Columbia University

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## Faculty: Linguistics

Name	Title	Education
BELL, Alan	associate professor emeritus	
COWELL, Andrew R.	department chair, professor	BA, Harvard University; PhD, University of California, Berkeley
FOX, Barbara A.	professor	BA, MA, PhD, University of California, Los Angeles
FRAJZYNGIER, Zygmunt	department chair, professor	MA, PhD, University of Warsaw; MA, University of Ghana
HALL, Kira	associate professor	BA, Auburn University; MA, PhD, University of California, Berkeley
MENN, Lise	professor emerita	
MICHAELIS-CUMMINGS, Laura A.	associate professor	BA, MA, PhD, University of California, Berkeley
NARASIMHAN, Bhuvana	assistant professor	PhD, Boston University
PALMER, Martha	professor	BA, MA, University of Texas; PhD, University of Edinburgh
ROOD, David S.	professor	AB, Cornell University; MA, PhD, University of California, Berkeley
SCARBOROUGH, Rebecca	assistant professor	BA, Stanford University; MA, PhD, University of California, Los Angeles
TAYLOR, Allan R.	professor emeritus	
THOMAS-RUZIC, Maria	Senior instructor	BA, MA, PhD, University of Colorado

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## Faculty: Mathematics

Name	Title	Education
BAGGETT, Lawrence W.	professor emeritus	
BROWN, Gordon E.	associate professor emeritus	
CASALAINA-MARTIN, Sebastian	assistant professor	PhD, Columbia University
CLELLAND, Jeanne	associate professor	BS, MA, PhD, Duke University
CLEMENTS, George F.	professor emeritus	
ELLINGWOOD, Robert W.	professor emeritus	
ELLIOTT, Peter D.	professor	BS, University of Bristol; PhD, University of Cambridge
ELLIS, Homer G.	associate professor	BA, MA, PhD, University of Texas
ENGLANDER, Janos	associate professor	DSc, Technion-ITT
FARSI, Carla	professor	Laurea, University of Florence; PhD, University of Maryland
FOX, Jeffrey S.	professor	BA, Massachusetts Institute of Technology; PhD, University of California, Berkeley
GOODRICH, Robert K.	professor emeritus	
GOROKHOVSKY, Alexander	associate professor	PhD, Ohio State University
GRANT, David R.	professor	AB, Princeton University; PhD, Massachusetts Institute of Technology
GREEN, Richard M.	professor	MA, Oxford University; MSc, PhD, University of Warwick
GUSTAFSON,	professor	BS, BS, University of Colorado; PhD, University of Maryland

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Karl E.		
HERMES, Henry G.	professor emeritus	
HODGES, John H.	professor emeritus	
HOLLEY, Richard A.	professor emeritus	
IH, Su-Ion	assistant professor	PhD, Brown University
JONES, William B.	professor emeritus	
KEARNES, Keith A.	professor	BS, MS, University of California, Riverside; PhD, University of California, Berkeley
KUZNETSOV, Sergei	associate professor	Diploma, Moscow State University; PhD, Institute of Mathematics of Ukrainian Academy of Sciences, Kiev, Mathematics and Physics; Doctor of Physics and Mathematics, Vilnius State University, Lithuania
LAVER, Richard Joseph	professor emeritus	
LUNDELL, Albert T.	professor emeritus	
MACRAE, Robert Eugene	professor emeritus	
MALITZ, Jerome I.	professor emeritus	
MONK, James Donald	professor	AB, University of Chicago; BS, University of New Mexico; MA, PhD, University of California, Berkeley
MUIR, Carrie	instructor	BA, Graceland College; MA, University of Colorado Boulder
MYCIELSKI, Jan	professor emeritus	
PACKER, Judith A.	department chair; professor	. BA, MA, Wesleyan University; PhD, Harvard University
PFLAUM, Marcus	associate professor	PhD, Universität München
PRESTON, Stephen	assistant professor	BS, Pennsylvania State University; PhD, State University of New York at Stony Brook
PUAA, Evelyn	, instructor	MEd, University of Southern California
RAMSAY, Arlan	professor emeritus	
REARICK, David F.	professor emeritus	

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RIDER, Brian C.	associate professor	BS, Massachusetts Institute of Technology; PhD, Courant Institute of Mathematical Sciences
ROTH, Richard L.	professor emeritus	
SATHER, Duane P.	professor emeritus	
SCHMIDT, Wolfgang	distinguished professor emeritus	
SHAULIS, Delphy T.	senior instructor	BA, San Diego State University; PhD, University of Colorado Boulder
SPINA, Alejandro	senior instructor	PhD, La Plata National University; PhD, University of Colorado Boulder
STADE, Eric	director; professor of mathematics	BA, MA, PhD, Columbia University
STRUIK, Ruth Rebekka	professor emerita	
SZENDREI, Agnes	professor	MSc, University of Szeged; PhD, Hungarian Academy of Sciences
TAYLOR, Walter F.	professor emeritus	
THIEM, Nathaniel	associate professor	PhD, University of Wisconsin–Madison
TUBBS, Robert	associate professor	BA, University of South Florida; MA, Columbia University; PhD, Pennsylvania State University
VIRK, Rahbar	instructor	PhD, University of Virginia
WALTER, Martin E.	professor	BS, University of Redlands; MA, PhD, University of California, Irvine

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- > [Spanish and Portuguese](#)
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- > [Western American Studies](#)
- > [Women and Gender Studies](#)
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# Faculty: Miramontes Arts and Sciences Program (MASP)

Name	Title	Education
SANCHEZ, Leticia	associate director; instructor	BS, San Diego State University; PhD, University of Colorado Boulder
TUBBS, Robert	director; professor of mathematics	BA, University of South Florida; MA, Columbia University; PhD, Pennsylvania State University

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# Faculty: Molecular, Cellular, and Development Biology

Name	Title	Education
ABBOTT, Lois A.	senior instructor emerita	
BLUMENTHAL, Tom	department chair; professor	BA, Antioch College; PhD, Johns Hopkins University
BOSWELL, Robert E.	vice chancellor for diversity, equity, and community engagement; professor	BA, Marietta College; PhD, University of Colorado
CECH, Thomas R.	distinguished professor (joint appointment with Chemistry and Biochemistry)	BA, Grinnell College; PhD, University of California, Berkeley
CHEN, Zhe	assistant research professor	BS, Peking University; PhD, University of Colorado Boulder
COPLEY, Shelley D.	professor	AB, Radcliffe College; PhD, Harvard University
DeDECKER, Brian	assistant research professor	BS, University of Illinois, Urbana; PhD, Yale University
DETWEILER, Corrella S.	associate professor	AB, Bowdoin College; PhD, University of California, San Francisco
DOWELL-DEEN, Robin	assistant professor	BS, Texas A&M, College Station; DSc, Washington University, St. Louis
DUBIN, Mark W.	professor emeritus	
ESPINOSA, Joaquin M.	associate professor	BS, MS, National University of Mar del Plata, Argentina; PhD, University of Buenos Aires
FILLMAN, Christy L.	instructor	BS, Colorado State University; PhD, University of Colorado
FOTINO, Mircea	professor attendant rank	Licence-es-Sciences, University of Paris; PhD, University of California, Berkeley
GARCEA, Robert	professor	BA, Harvard; MD, University of California, San Francisco
GOLD, Lawrence	professor	BS, Yale University; PhD, University of Connecticut
GUILD, Nancy A.	associate professor attendant rank	BA, Colorado College; PhD, University of

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		Colorado
HAN, Min	professor	BS, Peking University; PhD, University of California, Los Angeles
HOENGER, Andreas	associate professor	Diploma in Biology II, PhD, University of Basel, Switzerland
JONES, Kevin R.	associate professor	BS, University of Illinois, Urbana; PhD, University of California, Berkeley
JUNGE, Harald	assistant professor	BS, MS, Philipps University, Germany; PhD, Max Planck Institute and Philipps University, Germany
KLYMKOWSKY, Michael W.	professor	BS, Pennsylvania State University; PhD, California Institute of Technology
KNIGHT, Jennifer K.	senior instructor	BA, Cornell University; PhD, University of Michigan
KRAUTER, Kenneth S.	professor	BS, State University of New York at Stony Brook; PhD, Albert Einstein College of Medicine
KUEMPEL, Peter L.	professor emeritus	
LEINWAND, Leslie A.	professor	BS, Cornell University; PhD, Yale University
MARTIN, Jennifer M.	senior instructor	BA, University of California, Davis; PhD, University of Washington
MASTRONARDE, David N.	professor attendant rank	BA, Amherst College; PhD, University of Colorado
McCONKEY, Edwin H.	professor emeritus	
McINTOSH, J. Richard	distinguished professor emeritus	
McKINSEY, Timothy A.	assistant professor adjunct	BS, University of Missouri; PhD, Vanderbilt University
ODORIZZI, Greg	associate professor	BS, Texas Tech University; PhD, University of California, San Diego
OLWIN, Bradley B.	professor	BA, University of California, San Diego; PhD, University of Washington
PACE, Norman R.	professor	BA, Indiana University; PhD, University of Illinois. BA, Indiana University; PhD, University of Illinois
PERKINS, Thomas T.	associate professor adjunct, JILA Fellow	AB, Harvard University; PhD, Stanford University
POYTON, Robert O.	professor	AB, Brown University; PhD, University of California, Berkeley
RUNNER, Meredith	professor emeritus	
SHEN, Jingshi	assistant professor,	BS, Tsinghua University; PhD, Columbia

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SINGH, Ravinder	associate professor	BSc HAU, Hisar, India; PhD, Baylor College of Medicine
STAEHELIN, L. Andrew	professor emeritus	
STEIN, Gretchen H.	lecturer	AB, Brown University; PhD, Stanford University
STOWELL, Michael	associate professor	BA, Reed College; PhD, California Institute of Technology
SU, Tin Tlin	professor	BA, Mount Holyoke College; PhD, Carnegie Mellon University
SUEOKA, Noboru	professor emeritus	
VAN BLERKOM, Jonathan	research professor	BS, City College of New York; PhD, University of Colorado
VOELTZ, Gia	assistant professor	BA, University of California, Santa Cruz; PhD, Yale University
WINEY, Mark	professor	BS, Syracuse University; PhD, University of Wisconsin–Madison
WOOD, III, William B.	distinguished professor emeritus	
XUE, Ding	professor	BS, University of Science and Technology of China; PhD, Columbia University
YARUS, Michael J.	professor emeritus	
YI, Rui	assistant professor	BS, College of Life Science; PhD, Peking University

- > [Political Science](#)

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- > [Psychology and Neuroscience](#)

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## Faculty: Museum and Field Studies

Name	Title	Education
BAILEY, Dominic	assistant professor	BA, PhD, Trinity College, Cambridge University
BARNETT, David	associate professor	BA, Emory University; PhD, New York University
BOWERS, M. Deane	curator of entomology; professor of ecology and evolutionary biology	BA, Smith College; PhD, University of Massachusetts
CAIN, Christina M.	collections manager of anthropology	MS, University of Colorado
CHIN, Karen	curator of vertebrate paleontology; associate professor of geological sciences	BA, University of California, San Diego; MS, Montana State University; PhD, University of California, Santa Barbara
CORDELL, Linda S.	professor emerita	
COUNTER, Charles	exhibits coordinator; senior instructor adjoint	MA, Otis/Parsons School of Design
CULVER, Toni	collections manager of paleontology	MS, South Dakota School of Mines & Technology
EBERLE, Jaelyn J.	curator of vertebrate paleontology; associate professor geological sciences	BSc, University of Saskatchewan; PhD, University of Wyoming
GURALNIK, Robert	curator of invertebrate zoology; associate professor of ecology and evolutionary biology	BA, PhD, University of California, Berkeley
HAKALA, James S. H.	senior educator of the University Museum; senior instructor	BS, Western Michigan University; MAT, George Washington University
HALL, Wesley Eugene	collections manager of invertebrate zoology and paleontology	MS, University of Arizona, Tucson
HARRIS, Judith A.	associate professor emerita	
KAGEYAMA, Mariko	collections manager of vertebrate zoology	MA, Texas Tech University

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- [Communications RAP](#)
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KARIM , Talia	collections manager of invertebrate paleontology	PhD, University of Iowa
KOCIOLEK, J. Patrick	director, University Museum; professor of ecology and evolutionary biology; curator of diatoms	BS, St. Mary's College, Maryland; MS, Bowling Green State University; PhD, University of Michigan
LEKSON, Steve	curator of anthropology; professor of anthropology	BA, Case Western Reserve; MA, Eastern New Mexico University; PhD, University of New Mexico
McCAIN, Christy	curator of vertebrates, assistant professor of ecology and evolutionary biology	BS, Humboldt State University, California; PhD, University of Kansas
REGAN, Cathy	education coordinator	PhD, University of Colorado Boulder
ROBINSON, Peter	professor emeritus	
ROHNER, John R.	professor emeritus	
SCOTT, Virginia L.	collections manager of entomology	MS, Michigan State University
SHANNON, Jennifer	curator of anthropology; assistant professor of anthropology	BA, University of California, Santa Cruz; PhD, University of Arizona
WEBER, William A.	professor emeritus	
WU, Shi-Kuei	professor emeritus	

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## Faculty: Philosophy

Name	Title	Education
BOONIN, David	associate dean for arts and humanities; professor	BA, Yale University; PhD, University of Pittsburgh
BOONIN, Leonard G.	professor emeritus	
BRINDELL, Sheralee	senior instructor	BA, University of California, Los Angeles; PhD, University of Colorado Boulder
CARNES, John Robb	professor emeritus	
CHWANG, Eric	assistant professor	BA, Cornell University; PhD, Princeton University; MD, Baylor College of Medicine
CLELAND, Carol E.	professor	BA, University of California, Santa Barbara; PhD, Brown University
CROWE, Lawson	professor emeritus	
FISHER, John Andrew	professor emeritus	
FORBES, Graeme	department chair; professor	BA, Balliol College, Oxford University; MA, University of Glasgow; PhD, New College, Oxford University
HANNA, Robert	professor	BA, Victoria College, University of Toronto; MPhil, PhD, Yale University
HEATHWOOD, Christopher	associate professor	BA, University of California, San Diego; PhD, University of Massachusetts Amherst
HOSEIN, Adam Omar	assistant professor	BA, University of Oxford; PhD, Massachusetts Institute of Technology
HUEMER, Michael	professor	BA, University of California, Berkeley; PhD, Rutgers University
JAGGAR, Alison M.	professor (joint appointment with women and gender studies)	BA, University of London; MLitt, University of Edinburgh; PhD, State University of New York at Buffalo
KAUFMAN, Dan	associate professor	BA, University of Connecticut; PhD, University of Massachusetts Amherst

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KENEVAN, Phyllis	professor emerita	
KOSLICKI, Kathrin	associate professor	BA, State University of New York at Stony Brook; PhD, Massachusetts Institute of Technology
LEE, Mi-Kyoung (Mitzi)	associate professor	BA, Columbia University; PhD, Harvard University
MILLER, Ed L.	professor emeritus	
MILLER, Paul John William	professor emeritus	
MILLS, Claudia	associate professor	BA, Wellesley College; PhD, Princeton University
MONTON, Bradley	associate professor	BA, Rice University; PhD, Princeton University
MORRISTON, Wesley	professor	BA, Queen's University of Belfast; PhD, Northwestern University
NORCROSS, Alastair	associate professor	BA, Christ Church College, Oxford University; PhD, Syracuse University
ODDIE, Graham James	professor	BA, University of Otago, New Zealand; PhD, University of London
PASNAU, Robert	professor	BA, University of Pennsylvania; PhD, Cornell University
RUPERT, Robert	associate professor	BA, University of Washington, Seattle; MA, PhD, University of Illinois, Chicago
STURGIS, Daniel	senior instructor	BA, Northwestern University; PhD, University of Colorado Boulder
TALBOT, Brian	instructor	BA, JD, University of California, Berkeley; PhD, University of Southern California
TOOLEY, Michael	professor	BA, University of Toronto; PhD, Princeton University
WILLIAMS, Forrest	professor emeritus	
WINGO, Ajume	associate professor	BA, University of California, Berkeley; PhD, University of Wisconsin–Madison
ZIMMERMAN, Michael	professor	BA, Louisiana State University; MA, PhD, Tulane University

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## Faculty: Physics

Name	Title	Education
ANDERSON, Dana Z.	professor	BSEE, Cornell University; PhD, University of Arizona
ASHBY, Neil	professor emeritus	
BARTLETT, Albert Allen	professor emeritus	
BARTLETT, David	professor emeritus	
BEALE, Paul	department chair; professor	BS, University of North Carolina; PhD, Cornell University
BECKER, Andreas	associate professor	Dr. rer. Nat., University of Bielefeld, Germany
BETTERTON, Meredith	assistant professor	BA, Princeton University; MA, PhD, Harvard University
BIASCA, Debra	instructor	PhD, University of Colorado Boulder
BOHN, John L.	research professor	BS, PhD, University of Chicago
CARY, John R.	professor	BA, University of California, Irvine; MA, PhD, University of California, Berkeley
CLARK, Noel A.	professor	BS, MS, John Carroll University; PhD, Massachusetts Institute of Technology
COOPER, John	professor emeritus	
CORNELL, Eric A.	professor adjoint	BSc, Stanford; PhD, Massachusetts Institute of Technology
CUMALAT, John P.	professor	BA, MA, PhD, University of California, Santa Barbara
CUNDIFF, Steven T.	professor adjoint	BA, Rutgers University; MS, PhD, University of Michigan
DEGRAND, Thomas A.	professor	BS, University of Tennessee; PhD, Massachusetts Institute of Technology
DESSAU, Daniel	associate chair of graduate studies; professor	BS, Rice University; PhD, Stanford University
DeWOLFE,	assistant professor	BA, Wesleyan University; PhD, Massachusetts

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DREITLEIN, Joseph	professor emeritus	
DUBSON, Michael	associate chair of undergraduate studies; senior instructor	BS, University of Illinois, Urbana; PhD, Cornell University
FALLER, James	professor adjoint	AB, Indiana University; MA, PhD, Princeton University
FINKELSTEIN, Noah	associate professor	BA, Yale University; PhD, Princeton University
FORD, William T.	professor	BA, Carleton College; PhD, Princeton University
FRANKLIN, Allan D.	professor	AB, Columbia College; PhD, Cornell University
GLASER, Matthew A.	associate professor attendant rank	BSc, Michigan State University; MS, University of Nevada, Reno; PhD, University of Colorado Boulder
GOLDMAN, Martin V.	professor	BA, Princeton University; MS, PhD, Harvard University
GREENE, Chris H.	professor	BS, University of Nebraska; MS, PhD, University of Chicago
GURARIE, Victor	assistant professor	BA, Moscow Institute of Physics and Technology; MA, PhD, Princeton University
HALL, John	professor adjoint	PhD, Carnegie Institute of Technology
HASENFRATZ, Anna	professor	MS, PhD, L. Eotvos University, Budapest
HERMANN, Allen M.	professor emeritus	
HERMELE, Michael	assistant professor	AB, Harvard University; MS; PhD, University of California, Santa Barbara
HOLLAND, Murray J.	associate professor	BSc, MSc, Auckland University; PhD, Oxford University
HORANYI, Mihaly	professor	MS, PhD, Lerand Eötvös University, Budapest
HOUGH, Loren	assistant professor	BA, Howard University; PhD, University of Colorado Boulder
JIN, Deborah S.	associate professor adjoint	AB, Princeton University; PhD, University of Chicago
KAPTEYN, Henry	professor	BS, Harvey Mudd; MA, Princeton University; PhD, University of California, Berkeley
KEMPF, Sascha	Assistant professor	PhD, Friedrich Schiller University, Jena, Germany
KINNEY, Edward R.	professor	SB, PhD, Massachusetts Institute of Technology

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KNILL, Emanuel	professor adjoint	BS, MS, University of Massachusetts at Boston; PhD, University of Colorado
KRAUSHAAR, Jack J.	professor emeritus	
LEE, Minhyea	assistant professor	BS, MS, Pohang University of Science and Technology, South Korea; PhD, University of Chicago
LEHNERT, Konrad	assistant professor adjoint	BS, Harvey Mudd College; PhD, University of California, Santa Barbara
LEVINE, Judah	professor adjoint	AB, Yeshiva College; MS, PhD, New York University
LEWANDOWSKI, Heather	assistant professor	BS, Michigan Tech; MS, PhD, University of Colorado
LIND, David A.	professor emeritus	
MACLENNAN, Joseph E.	associate professor attendant rank	BS, Rhodes University; MS, PhD, University of Colorado Boulder
MAHANTHAPPA, K. T.	professor	BSc, Central College at Bangalore; MSc, Delhi University; PhD, Harvard University
MAO, Xiaoming	Assistant professor	BA, BS, Peking University, China; MS, PhD, University of Illinois at Urbana-Champaign
MARINO, Alysia	associate professor	BA, Princeton University; MA, PhD, University of California, Berkeley

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## Faculty: Political Science

Name	Title	Education
ADLER, E. Scott	associate professor	BA, University of Michigan; MA, MPhil., PhD, Columbia University
AYDIN, Ayesegul	assistant professor	BA, Istanbul University; MA, Bogazici University, Istanbul; MA, PhD, Binghamton University
BAIRD, Vanessa	associate professor	BA, PhD, University of Houston
BAKER, Andy	associate professor	BA, Valparaiso University; MA, PhD, University of Wisconsin–Madison
BEARCE, David H.	associate professor (joint appointment with the International Affairs Program)	BA, Davidson College; PhD, Ohio State University
BEER, Francis A.	professor emeritus	
BICKERS, Kenneth	department chair; professor	BA, Texas Christian University; MA, PhD, University of Wisconsin–Madison
BOULDING, Carew	assistant professor	BA, University of Washington, Seattle; MA, PhD, University of California, San Diego
BROWN, David	associate professor	BA, Doane College; MA, PhD University of California, Los Angeles
BROWN, Hank	professor and president emeritus	
BRUNNER, Ronald D.	professor emeritus	
CHAN, Steve	professor	BA, Tulane University; MA, PhD, University of Minnesota
CLARKE, Susan E.	professor	BA, California State College at Fullerton; MA, University of Southern California; PhD, University of North Carolina
COSTAIN, W. Douglas	senior instructor	BA (HONS), University of British Columbia; MA, PhD, Johns Hopkins University
DONAVAN, Janet L.	senior instructor	BA, Kent State University; MA, PhD, University of Wisconsin–Madison

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ECKART, Dennis R.	associate professor emeritus	
FERGUSON, Michael L.	assistant professor	AB, Bryn Mawr College; PhD, Harvard University
FITCH, J. Samuel	professor	BA, Randolph-Macon College; MA, MPhil, PhD, Yale University
FITZGERALD, Jennifer	assistant professor	BA, Indiana University; MA, University of Chicago; PhD, Brown University
GREENBERG, Edward S.	professor	BA, MA, Miami University, Ohio; PhD, University of Wisconsin
JUPILLE, Joseph	associate professor	BA, University of California, Santa Barbara; MA, Monterey Institute of International Studies; MA, PhD, University of Washington
KIM, Moonhawk	assistant professor	BA, University of California, Berkeley; MA, PhD, Stanford University
KRYSTUFEK, Zdenek	professor emeritus	
LAVERTU, Stéphane	assistant professor	BA, Ohio State University; MA, Stanford University; MA, PhD, University of Wisconsin–Madison
LIU, Amy	assistant professor	BA, Smith College; PhD, Emory University
MAPEL, David R.	associate professor	BA, Colorado College; MSc, London School of Economics; MA, PhD, Johns Hopkins University
McBRIDE, Conrad L.	professor emeritus	
McIVER, John P.	associate professor	AB, Cornell University; MA, PhD, Indiana University
McNOWN, Lauri	senior instructor	BA, MA, PhD, University of Colorado Boulder
MEWES, Horst	associate professor	BA, Beloit College; MA, PhD, University of Chicago
SAFRAN, William	professor emeritus	
SCARRITT, James R.	professor emeritus	
SLOAN Jr., Royal Daniel	associate professor emeritus	
SOKHEY, Anand Edward	assistant professor	BA, Denison University; PhD, Ohio State University
SOKHEY, Sarah	assistant professor	BA, The Catholic University of America; MA, PhD, Ohio State University
STEINMO,	professor	BA, University of California, Santa Cruz; MA, MPH, PhD, University of California, Berkeley

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Sven H.		
TECZA, Thaddeus J.	senior instructor emeritus	
TIR, Jaroslav	associate professor	BA, Bethel College, Kansas; MA, PhD, University of Illinois Urbana-Champaign
WINTER, William O.	professor emeritus	
WOLAK, Jennifer	associate professor	BS, East Michigan University; MA, PhD, University of North Carolina at Chapel Hill

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## Faculty - Psychology and Neuroscience

Name	Title	Education
ALLEN, David L.	senior instructor	BS, PhD, University of California, Los Angeles
ALPERN, Herbert P.	professor emeritus	
ARCH, Joanna	assistant professor	BA, Wellesley College; PhD, University of California, Los Angeles
BACHTELL, Ryan K.	assistant professor	BA, Bloomsberg University; MS, Central Washington University; PhD, Oregon Health and Science University
BANICH, Marie T.	professor	BA, MA, Tufts University; PhD, University of Chicago
BARTH, Daniel S.	professor	BA, Boston University; MA, PhD, University of California, Los Angeles
BERTA, Joseph E.	senior instructor	BA, MA, University of Toledo; PhD, University of Colorado
BLAIR, Irene V.	associate professor	BA, Loma Linda University; MS, M.Phil., PhD, Yale University
BLECHMAN, Elaine A.	professor emerita	
BLOOM, Bernard L.	professor emeritus	
BOURNE JR., Lyle E.	professor emeritus	
BRYAN, Angela	professor	BA, University of California, Los Angeles, PhD, Arizona State University
CAMPEAU, Serge	associate professor	BS, McGill University; MS, PhD, Yale University
CAREY, Gregory	associate professor	BA, Duquesne University; MA, Graduate Faculty, New School for Social Research; PhD, University of Minnesota
CARTWRIGHT, Desmond S.	professor emeritus	
CHISZAR,	professor emeritus	

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David A.		
COLLINS, Allan C.	professor emeritus	
COLUNGA, Eliana	associate professor	BS, MS, Institute of Technology, Monterrey (ITESM); PhD, Indiana University
COOPER, Donald	associate professor	BA, University of Colorado Boulder; PhD, Chicago Medical School
CROTHERS, Edward J.	associate professor emeritus	
CURRAN, Tim	professor	BA, MA, PhD, University of Oregon
DAY, Heidi E. W.	assistant research professor	BSc, University of Bath, U.K.; MPhil, PhD, University of Cambridge, U.K
DeFRIES, John C.	professor	BS, MS, PhD, University of Illinois
DIMIDJIAN, Sona A.	associate professor	BA, University of Chicago; MSW, University of Pittsburg; PhD, University of Washington
FORWARD, John R.	associate professor emeritus	
GOLLIN, Eugene S.	professor emeritus	
HAMMOND, Kenneth R.	professor emeritus	
HARVEY Jr., Lewis O.	department chair; professor	BA, Williams College; MS, PhD, Pennsylvania State University
HEALY, Alice F.	professor	AB, Vassar College; PhD, Rockefeller University
HERNÁNDEZ, Theresa D.	associate chair, associate professor	BA, PhD, University of Texas, Austin
HEWITT, John K.	professor	BSc, MSc, University of Birmingham, England; PhD, University of London
HUTCHISON, Kent	professor	BS, MS, PhD, Oklahoma State University
ITO, Tiffany A.	associate professor	BA, University of California, Los Angeles; PhD, University of Southern California
JESSOR, Richard	professor emeritus	
JONES, Matthew C.	assistant professor	BA, University of California, Santa Barbara; MA, PhD, University of Michigan
JUDD, Charles M.	professor	BA, Yale University; MDiv, Union Theological Seminary; MA, PhD, Columbia University

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KELLER, Matthew C.	assistant professor	BA, University of Texas; MA, PhD, University of Michigan
KIM, Albert E.	assistant professor	BS, University of Illinois, Urbana-Champaign; MSc, University of Edinburgh; PhD, University of Pennsylvania
KING, D. Brett	senior instructor	BS, MS, PhD, Colorado State University
KINTSCH, Walter	professor emeritus	
LANDAUER, Thomas K.	research professor emeritus	
MAIER, Steven F.	distinguished professor	BA, New York University; MA, PhD, University of Pennsylvania
MARTICHUSKI, Diane K.	senior instructor	BS, Lamar University; MS, PhD, Colorado State University
McCLELLAND, Gary H.	professor	BA, University of Kansas; MA, PhD, University of Michigan
MITTAL, Vijay	assistant professor	BA, University of California, Santa Barbara; PhD, University of California, Los Angeles
MIYAKE, Akira	professor	BA, Osaka University; MS, PhD, Carnegie Mellon University
MUNAKATA, Yuko	professor	BA/BS, Stanford University; MA, PhD, Carnegie Mellon University
OLSON, Richard K.	professor	BA, Macaf College; MA, PhD, University of Oregon
O'REILLY, Randall C.	professor	BA, Harvard University; PhD, Carnegie Mellon University
PARK, Bernadette M.	professor	BS, University of Oregon; MA, PhD, Northwestern University

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# Faculty: Religious Studies

Name	Title	Education
BIERNACKI, Loriliai	associate professor	BA, Princeton University; PhD, University of Pennsylvania
CATLOS, Brian	associate professor	BA, University of Toronto, University College; MA, PhD, University of Toronto, Centre for Medieval Studies
CHERNUS, Ira	professor	BA, Rutgers College; MA, PhD, Temple University
DENNY, Frederick M.	professor emeritus	
GAYLEY, Holly	assistant professor	BA, Brown University; MA, Naropa University; PhD, Harvard University
GILL, Sam D.	professor	BS, MS, Wichita State University; MA, PhD, University of Chicago
HOOVER, Stewart	professor of journalism and mass communication	AB, McPherson College; MA, PhD, Annenberg School of Communications, University of Pennsylvania
JOHNSON, Greg	department chair; associate professor	BA, University of Colorado; MA, PhD, Divinity School, University of Chicago
LESTER, Robert C.	professor emeritus	
MAS, Ruth	assistant professor	BA, MA, Concordia University; PhD, University of Toronto
ROSS-BRYANT, Lynn	associate professor emerita	
TAYLOR, Rodney L.	professor	BA, University of Southern California; MA, University of Washington; PhD, Columbia University
WHITEHEAD, Deborah	assistant professor	BA, MA, Florida State University; ThD, Harvard University, The Divinity School

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## Faculty - Sewall RAP

Name	Title	Education
AIKEN, Ellen	instructor	BA, MA, PhD, University of Colorado Boulder
BAMFORTH, Douglas	program director; professor of anthropology	BA University of Pennsylvania; MA, PhD University of California, Santa Barbara
JOBIN, Nicole	instructor	BA, Colorado College; MA, PhD, University of Colorado Boulder
LEWIS, Chris H.	senior instructor	BA, San Diego State University; MA, PhD, University of Minnesota
MOORE, George	senior instructor	BS, Lewis and Clark College; MA, PhD, University of Colorado Boulder
RAMIREZ, Karen	associate director, senior instructor	BA, Swarthmore College; MA, PhD, University of Illinois at Urbana-Champaign

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# Faculty -Social Entreprenuership for Equitable Development and Sustainability (SEEDS) RAP

Name	Title	Education
CLARKE, Susan	program director; professor of political science	Ph.D. University of North Carolina, Chapel Hill
COMSTOCK, Cathy	associate director, senior instructor; Farrand Residential Academic Program	BA, Miami University; PhD, University of Colorado Boulder

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## Faculty - Sociology

Name	Title	Education
ADLER, PATRICIA A.	professor	BA, Washington University; MA, PhD, University of California, San Diego
BAIR, Jennifer	assistant professor	BA, Johns Hopkins University; MA, PhD, Duke University
BARTOS, Otomar J.	professor emeritus	
BELKNAP, Joanne	professor	BA, University of Colorado; MA, PhD, Michigan State University
BOARDMAN, Jason	associate professor	BA, University of California, Berkeley; PhD, University of Texas at Austin
BROWN, Matthew C.	instructor	BA, Miami University, Oxford, Ohio; MA, University of Cincinnati; PhD, University of Colorado Boulder
DOWNEY, Liam C.	associate professor	BA, Oberlin College; MA, PhD, University of Arizona
DOWNTON, James V.	professor emeritus	
ELLIOTT, Delbert S.	distinguished professor emeritus	
GIMENEZ, Martha E.	professor emerita	
HAFHEY, Mike	instructor	BA, MA, University of Kentucky; PhD, University of Colorado
HARRISON, Jill	assistant professor	BA, University of California at Berkeley; PhD, University of California at Santa Cruz
HUBBARD, Eleanor	senior instructor emerita	
HUNTER, Lori M.	director of undergraduate studies; associate professor	BA, University of Washington; MA, PhD, Brown University
IRVINE, Leslie	director of graduate studies; associate professor	BA, MA, Florida Atlantic University; PhD, State University of New York, Stony Brook
KJOLSETH, J. Rolf	associate professor emeritus	

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MAYER, Thomas	professor emeritus	
MENKEN, Jane	director IBS; distinguished professor	AB, University of Pennsylvania; MS, Harvard University; PhD, Princeton University
MILETI, Dennis S.	professor emeritus	
MOJOLA, Sanyu	assistant professor	BA, University of Durham; PhD, University of Chicago
MOLLBORN, Stefanie	assistant professor	BA, Harvard University; MA, PhD, Stanford University
NIELSEN, Joyce M.	department chair, professor	BA, University of Colorado; MA, PhD, University of Washington
PAMPEL, Fred	professor emeritus	
PINTO, Leonard J.	associate professor emeritus	
PLATTER, Adele	senior instructor emerita	
POTTER, Hillary	assistant professor	MA, John Jay College of Criminal Justice; BA, PhD, University of Colorado
RADELET, Michael L.	professor	BA, Michigan State University; MA, Eastern Michigan University; PhD, Purdue University
REED, Isaac	assistant professor	BA, Swarthmore College; MPhil, PhD, Yale University
REGOLI, Robert M.	professor emeritus	
ROGERS, Richard G.	director, Population Program, IBS; professor	BA, University of New Mexico; MA, PhD, University of Texas at Austin
STEEN, Sara	associate professor	BA, Oberlin College; MA, PhD, University of Washington
SUE, Christina A.	assistant professor	ABA, University of Washington; MA, PhD, University of California, Los Angeles
TIERNEY, Kathleen J.	director, Natural Hazards Center, IBS; professor	BA, Youngstown State University; MA, PhD, Ohio State University
WADSWORTH, Tim	associate professor	BA, University of California, Santa Cruz; MA, PhD, University of Washington
WALDEN, Glenda	instructor	BSc, MA, Northern Arizona University; PhD, University of Colorado Boulder
WANDERER, Jules J.	professor emeritus	
WEHR, Paul E.	associate professor emeritus	
WILKINS, Amy C.	assistant professor	BA, Mount Holyoke College; MA, PhD, University of Massachusetts Amherst

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## Faculty - Spanish and Portugese

Name	Title	Education
AREHART, Kathryn H.	associate professor	BS, Stanford University; MS, PhD, University of Washington
BAENA, Julio	professor	Licenciatura, Universidad Católica Andrés Bello; MS, PhD, Georgetown University
BARRETT, Yvonne Guillon	associate professor emerita	
BECHER, Anne H.	senior instructor	BA, Carleton College; MA, University of Colorado, Boulder
BROWN, Esther L.	assistant professor	MA, Pennsylvania State University; PhD, University of New Mexico
DABOVE, Juan Pablo	associate professor	MA, PhD, University of Pittsburgh
ELMORE, Peter	professor; associate chair for graduate studies	Licenciatura, Pontificia Universidad Católica del Perú; PhD, University of Texas, Austin
ELMORE, Vivian	instructor	BA, Pontificia Universidad Católica del Perú
GÓMEZ, Leila G.	associate professor	Licenciatura, Universidad Nacional de Tucumán, Argentina; MA, PhD, Johns Hopkins University
GÓMEZ, Leila G.	associate professor	Licenciatura, Universidad de Nacional de Tucumán, Argentina; MA, PhD Jonh Hopkins University
GREEN, Antonia	instructor	BA, MA, University of Missouri
HALLSTEAD, Susan R.	senior instructor	BAS, MA, PhD, University of Pittsburgh
HERRERO-SENÉS, Juan	assistant professor	MA, PhD, Universitat Pompeu Fabra, Spain
HORNO-DELGADO, Asunción	associate professor	Licenciatura, Universidad Complutense de Madrid; MA, University of New Hampshire; PhD, University of Massachusetts Amherst
KING, Charles L.	professor emeritus	

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KOPEN, Carmen	instructor	BA, Grand Valley State University; MA, University of Colorado Boulder
KRAUEL, Javier	assistant professor	MA, University of North Carolina at Chapel Hill; PhD, Duke University
LANDEIRA, Ricardo	department chair; professor	BA, MA, Arizona State University; PhD, Indiana University
LONG, Mary K.	senior instructor	BA, Colorado State University; MA, PhD, Princeton University
LOZANO, Anthony Girard	professor emeritus	
MALCOLM, Karen	instructor	BA, University of Arkansas; MA, University of Nebraska
MARTUSCELLI, Tania A.	assistant professor	BA, MA, Universidade Estadual de Campinas-Unicamp; PhD, University of Massachusetts, Amherst
MOLINARO, Nina L.	associate professor	BA, Scripps College; MA, PhD, University of Kansas
MONTIEL, Isidora	professor emerita	
MORENO, Maria	instructor	BA, MA, Eastern Michigan University
PAMIES, Susanna Pérez	instructor	BA, Universitat Pompeu Fabra; MA, University of Barcelona, International University of Catalonia, Universitat Pompeu Fabra
PIRAS, Cristiina	instructor	BA, Richard Palma University; MA, University of Colorado, Boulder
PRIETO, Andrés I.	associate chair for undergraduate studies; assistant professor	MA, PhD, University of Connecticut
RIVAS-RODRÍGUEZ, José Javier	assistant professor	BA, MA, PhD, Universidade de Santiago de Compostela, Spain
SCHINCARIOL, Marcelo T.	instructor	BA, MA, PhD, Universidade Estadual de Campinas
SILLERAS-FERNÁNDEZ, Núria	assistant professor	MA, PhD, Universitat Autònoma de Barcelona
SLATER, John	assistant professor	BA, Earlham College, Indiana; PhD, Brandeis University
TABLER, ALICIA	instructor	BA, MA, University of Wyoming

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# Faculty - Speech, Language, and Hearing Sciences

Name	Title	Education
AREHART, Kathryn	associate professor	BS, Stanford University; MS, PhD, University of Washington
BOWLER, Ned W.	professor emeritus	
BROOKE, Judith M.	clinical assistant professor	BA, Pacific University; MS, Idaho State University
COADY, Jeffry	associate professor	BA, University of Rhode Island; MA, PhD, University of Rochester
FONG KAN, Pui	assistant professor	BA, National Taiwan Normal University; MA, University of Leeds and University of Minnesota; PhD, University of Minnesota
GABBARD, Sandra	associate professor adjunct	BS, Purdue University; MA, University of Northern Colorado, PhD, University of Colorado Boulder
GILLEY, Phillip	assistant professor	BS, University of Texas at Austin; MS, PhD, University of Texas at Dallas
HARDIN, Kathryn	clinical assistant professor	BA, St. Olaf College; MA, University of Colorado Boulder
HAYES, Deborah	professor adjunct	BS, MA, Northwestern University; PhD, Baylor College of Medicine
HEDBERG, Natalie L.	professor emerita	
HORII, Yoshiyuki	professor emeritus	
HYDE-SMITH, Anne	professional research assistant	BS, The College of New Jersey; MA, University of Colorado Anschutz Medical Campus
JANCOSEK, Elizabeth G.	senior instructor emerita	
KATES, James	adjoint faculty	BS, MS, Massachusetts Institute of Technology
MOERS, Willard	instructor	BA, MA, Gallaudet University

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MOORE, Susan M.	director of clinical education and services; clinical professor	BA, College of New Rochelle; MA, JD, University of Denver
RAMIG, Lorraine Olson	professor	BS, University of Wisconsin–Oshkosh; MS, University of Wisconsin–Madison; PhD, Purdue University
RAMIG, Peter R.	professor	BS, MS, University of Wisconsin; PhD, Purdue University
RAMSBERGER, Gail	associate professor	BS, MA, University of Colorado; ScD, Boston University
SADAGOPAN, Neeraja	assistant professor	BSc, All India Institute of Speech and Hearing; MS, PhD, Purdue University
SCHICK, Brenda	professor	BS, Purdue University; MS, Washington University; PhD, Purdue University
SHARMA, Anu	professor	BSc, University of Bombay; MA, PhD, Northwestern University
SNYDER, Lynn	professor emerita	
SWEETMAN, Richard H.	professor emeritus	
THRASHER, Amy	clinical assistant professor	BA, Williams College; MA, University of Colorado Boulder
WEISS, Rita S.	professor emerita	
WHITNEY, Anne	clinical professor	BS, MS, Colorado State University; EdD, University of Northern Colorado
YOSHINAGA-ITANO, Christine	department chair; professor	BA, University of Southern California; MA., PhD, Northwestern University

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## Faculty - Theater and Dance

Name	Title	Education
BERGNER, Bruce	associate chair; associate professor	BA, University of Minnesota; MFA, University of Illinois
COBIN, Martin T.	professor emeritus	
COLEMAN, Bud	department chair; associate professor	BFA, Texas Christian University; MFA, University of Utah; PhD, University of Texas at Austin
CRIFE, Kerry M.	senior instructor	BFA, University of Evansville; MFA, Florida State University
DEVIN, Richard	professor emeritus	
DIACHENKO, Nada	professor	BS, University of Maryland; MA, New York University
ELLSWORTH, Michelle	associate professor	BA, New York University; MFA, University of Colorado Boulder
GERLAND, Oliver	associate professor	BA, Swarthmore College; PhD, Stanford University
HAIG, Robin	senior instructor emerita	
HANKIN, Toby R.	professor emeritus	
HARRIS, Lorenzo	artist-in-residence	
HENRY, Markas	associate professor	BS, Ball State University; MFA, University of Connecticut
IREY, Charlotte York	professor emerita	
LANE, Constance	instructor	BA, Beloit College
LESSLEY,	professor emeritus	

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MANNO, Jesse	senior instructor	BA, University of Colorado
MENEGHINI, Tamara	assistant professor	BA, St. Mary's College; MFA, Northern Illinois University
NICHOLS, Lynn	senior instructor	BA, University of the South; MA, Emporia State College; PhD, University of Colorado Boulder
OSNES, Beth	assistant professor	BA, Marquette University; MA, PhD, University of Colorado Boulder
PANG, Cecilia J.	associate professor	BA, University of Guelph, Ontario, Canada; MA, San Francisco State University; PhD, University of California, Berkeley
PERSONS, Chip	assistant professor	BFA, University of California, Santa Barbara; MFA, Columbia University
POTTS, Margaret Lee	associate professor emerita	
RANDALL, Erika	assistant professor	BA, University of Washington at Seattle; MFA, Ohio State University
SHANNON, Robert J.	senior instructor	
SOWAH, Nil Armal	senior instructor	BA, University of Ghana; MA, Lesley College
SPANIER, Nancy L.	professor emerita	
STARK, Theodore	senior instructor	BA, College of William and Mary; MFA, Boston University
SYMONS, James M.	professor emeritus	
WILLIAMS, Letitia S.	senior instructor emerita	
YANG, Daniel	professor emeritus	

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## Faculty - Western American Studies

Name	Title	Education
NELSON LIMERICK, Patricia Nelson	faculty director, Center of the American West	professor of history. BA, University of California, Santa Cruz; MA, MPhil, PhD, Yale University

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# Faculty - Women and Gender Studies

Name	Title	Education
BAYARD de VOLO, Lorraine	associate professor	BA, University of California, Santa Barbara; PhD, University of Michigan
BUFFINGTON, Robert	director, associate professor	BA, Colorado College; PhD, University of Arizona
JAGGAR, Alison M.	professor of distinction (joint appointment with the Department of Philosophy)	BA, University of London; MLitt, University of Edinburgh; PhD, State University of New York at Buffalo
MISRI, Deepti	assistant professor	BA, University of Mumbai; MA, PhD, University of Illinois, Urbana
MONTOYA, Celeste	assistant professor	BS, Bradley University; MA, PhD, Washington University, St. Louis
POIS, Anne Marie	senior instructor emerita	

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- [Ecology and Evolutionary Biology](#)



# Faculty: Writing and Rhetoric, Program for

Name	Title	Education
ACKERMAN, John	associate professor of communication	BA, MA, University of Missouri; PhD, Carnegie Mellon University
ALBERT, Michelle	senior instructor	BA, Towson State University; MFA, Naropa University; MA, University of Colorado Denver
BLISS, Anne	senior instructor emerita	
BURGER, Eric	instructor	BA, Colby College; MFA, University of Arizona; PhD, University of Utah
BYRD, Sigman	instructor	BA, Sarah Lawrence College; MFA, University of Iowa, Iowa Writer's Workshop; PhD, University of Utah
CHARTERIS, Frances	senior instructor	BFA, School of Visual Arts, New York; MFA University of California, San Diego
DEBELLA, Diane	instructor	BA, James Madison University; MA, California State, San Diego
DICKSON, Rebecca J.	senior instructor	BA, Colorado State University; MA., PhD, University of Colorado Boulder
DOERSCH, Charles	instructor	BA, University of Nebraska; MFA, Columbia University
DOYLE, Damian	senior instructor	BA, Central Connecticut State University; MA, University College Dublin; PhD, University of Colorado Boulder
ELLIS, Jay	senior instructor	BA, Berklee College of Music; MA, University of Texas; PhD, New York University
ERON, Don	senior instructor	BA, University of Colorado Boulder; MFA, University of Iowa
FELDMAN, Andrea	senior instructor	BA, Cornell University; MA, PhD, University of Colorado Boulder
FERRELL, Tracy	instructor	BA, College of William and Mary; MA, PhD, University of Colorado Boulder
GINGRASS, H. Lynn	senior instructor	BA, New York University; MA, Temple University
GOODLOE, Amy	instructor	BA, Agnes Scott College; MEd, University of Virginia; MA, Virginia Polytechnic Institute and State University

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GREEN, Sally	senior instructor	BA, University of Illinois, Urbana-Champaign; MA, University of Colorado Boulder
HERSH, Orly	instructor	BA, Mount Holyoke College; MA, Northern Arizona University
HIGHTOWER, Nancy	instructor	BA, Ft. Lewis College; MA, PhD, University of Denver
HOUSE, Veronica	associate director; instructor	BA, Wellesley College; MFA University of Maryland at College Park; PhD, University of Texas at Austin
KLINGER, Eric	associate director; instructor	BA, MA, New Mexico State University
KLINGER, Eliza	instructor	BA, Richard Stockton College of New Jersey; MA, New Mexico State University
KNOWLTON, Ginger	senior instructor	BA, Kenyon College; MA, University of Colorado Boulder; PhD, University of Denver
KRATZKE, Peter	senior instructor	BA, MA, University of Washington; PhD, University of Kentucky
KUNCE, Catherine	senior instructor	BA, Colorado College; MA, PhD, University of Denver
LAMOS, Steven	associate director; assistant professor	BA, MA, PhD, University of Illinois
LASSWELL, Catherine	instructor	BA, Michigan State University, MEd, University of Vermont
LECLAIR, Molly	instructor	BA, MA, University of Colorado
LYONS, Tim	instructor	BA, Occidental College; MA, Johns Hopkins University
MACDONALD, Christine	senior instructor	BA, Pomona College; MA, PhD, University of Colorado Boulder
MALESH, Patricia	associate director; assistant professor of communication	BA, MA, Salisbury State University; PhD, University of Arizona
McBREARTY, Robert	instructor	BA, Instituto Allende/University of Guanajuato; MFA, University of Iowa
NORGAARD, Rolf	associate director; senior instructor	BA, Wesleyan University; MA, PhD, Stanford University
OLIVIA, Nona	instructor	BA, University of Santa Cruz; AM, PhD, Brown University
PEARCE, Lonni	associate director; senior instructor	BA, William Jewell College; MA, University of Missouri, Kansas City; PhD, University of Arizona
PIELOW, Kathryn	senior instructor	BA, Augustana College; JD, University of South Dakota
REILLY, Kerry	senior instructor	BA, Providence College; MA, University of New Hampshire; MFA, University of Iowa
RIVERA, John-Michael	interim director, associate professor of English	BA, University of California, Berkeley; MA, University of Houston; PhD, University of Texas, Austin
		BA, DePaul University; MA, University of Colorado

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SCHABERG, Petger	senior instructor	Boulder
SULLIVAN, Patricia	professor of English	BA, MA, University of Utah; PhD, Ohio State University
VON DER NUELL, Tobin	instructor	BA, San Diego State University; MA, University of Colorado Boulder
WALKER, James	instructor	BA, University of California, Riverside; MA, PhD, University of Colorado Boulder
WENGER, Paula	senior instructor	BA, University of Northern Colorado; MA, University of Denver; MA, Miami University
WILKERSON, Donald H.	senior instructor	BA, University of Northern Colorado; MA, University of Denver; MA, Miami University
WILSEY-CLEVELAND, Matthew O.	instructor	BA, BA Hons, PhD, University of New South Wales, Sydney
ZIGMOND, Rosalyn	instructor	BA, University of Michigan; MA, PhD, University of Colorado Denver

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# Leeds School of Business



**David L. Ikenberry, dean**  
419 UCB phone: 303-492-1809  
Fax: 303-492-7676  
School website: [leeds.colorado.edu](http://leeds.colorado.edu)

THE LEEDS SCHOOL OF BUSINESS develops people who are knowledgeable in best business practices, well-versed in sustainability, entrepreneurial in their outlook, have knowledge of the whole person, think critically and creatively, communicate effectively, adapt to and lead change, act ethically, value diversity, and are competitive in the global economy. The school promotes academic excellence, fosters strong relationships with the surrounding business community, and emphasizes ongoing business research.

The Leeds School holds accreditation by the Association to Advance Collegiate Schools of Business (AACSB-International). Leeds awards four types of degrees: the bachelor of science (BS), the master of science (MS), the master of business administration (MBA), and the doctor of philosophy (PhD). Students can specialize in accounting, finance, management and entrepreneurship, and marketing.

Strong ties to the business community provide students with a practical educational experience during their academic careers. The board is composed of high-level executives who provide advice, counsel, and an outside perspective to the dean and his administration while advocating for the school within the external community. Board members spearhead major parts of development programs, strengthen the school's nationwide network in business and political arenas, and provide significant input to curriculum design.

Each year, nationally recognized business executives visit the school to share their working-world experience, their expertise, and often their reflections on life outside of business. Visiting executives are present in classroom settings, informal luncheons, and after-hours meetings, and often hold office hours to meet with students individually. Students enjoy conversations with these professionals, which cover a range of subjects including: the types of courses students are taking, career planning, steps to success, their own successes and failures, and corporate and personal strategies.

The faculty of the school is made up of talented individuals who offer a diverse range of expertise and research activities. The faculty publishes frequently and is internationally recognized for the quality of its research. In addition, many maintain strong ties within the business community and bring a current

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business perspective to the classroom. Business faculty members strive to deliver the most effective teaching in management theory and real-world applications to ensure a quality learning experience for business graduates.

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# Facilities & Research Activities

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The Leeds School houses resources for the specific needs of business students. The facilities include: the Burridge Center for Securities Analysis and Valuation, the Business Research Division, Career Connections, the Center for Education on Social Responsibility, the Center for Research on Consumer Financial Decision Making, Eurest Dining, the MBA Business Center, the Office of Diversity Affairs, the Real Estate Center, the Robert H. and Beverly A. Deming Center for Entrepreneurship, smart classrooms, student lounges, Trep Café, Undergraduate Student Services, William M. White Business Library and Information Commons, and other amenities.

The William M. White Business Library ([ucblibraries.colorado.edu/business](http://ucblibraries.colorado.edu/business)) and Information Commons provides students with a wealth of information pertaining to the business world. Students have access to the business and other libraries via the university libraries online catalog. Many databases are accessible through the wireless network and off campus. These databases, both CD- and web-based, contain a myriad of full-text magazines and journals; business periodical indexes; corporate annual, 10-K, and proxy reports of all the public companies in the United States; short profiles of both American and international companies; demographic and business statistics; industry and market information; and investment reports written by Wall Street analysts. Over 50 computers provide access to the databases and the Internet, and technology-outfitted team rooms are available for group study. Knowledgeable librarians are always available to help navigate the search for information. The Information Commons is open 24 hours, seven days per week and contains 30 of the 50 computers with a full suite of software. These are accessible to students, faculty, and staff of the university. In addition, Leeds has 25 technology equipped team rooms. These rooms support group study and project work. They are available for reservation at [leeds.colorado.edu/teamrooms](http://leeds.colorado.edu/teamrooms).

The White Business Library is part of the University of Colorado library system, which includes more than two million volumes, more than five million microforms, and more than 24,000 periodicals and serials. The system is also a full depository for United States government, international, and state documents.

All classrooms in the Leeds School of Business are equipped up to campus “smart” classroom technology standards. Technologies in a typical Leeds classroom include: a desktop computer loaded with Microsoft Office Suite applications, video projection system, ceiling speakers for audio, DVD/VCR, iClicker base station, campus cable, and both wired and wireless Internet connections. All classrooms have the flexibility to support a personal laptop with connectivity in place to integrate with the video projection and sound system.

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## Business Research Division

Established in 1915, the Business Research Division is one of the earliest organized state service-oriented bureaus in the country.

The Business Research Division conducts business, economic, and market research that contributes to the efficient use of Colorado's resources and increases interest in and awareness of the Leeds School of Business. It also is the umbrella organization for the Rocky Mountain Trade Adjustment Assistance Center (RMTAAC) and the Colorado Association of Manufacturing and Technology (CAMT). Through its annual Colorado Business Economic Outlook Forum, held in December, the division has established a base of knowledge that adds value to its work in other areas. In addition to providing companies and state agencies with information to help them make better-informed business and policy decisions, the division conducts research in a variety of areas, including government policy, technology, and real estate. It also prepares a Colorado leading economic indicator series, the *Leeds Business Confidence Index*, and collects local economic data for various city and county organizations. Research results are distributed through presentations and reports; a quarterly newsletter, the *Colorado Business Review*; and the division's website.

Funding for center activities comes from the Leeds School of Business, the university, state agencies, the federal government, state and local business firms, and from the sale of research products and services.

The centers offer a variety of services, including contract research and support for faculty research, both theoretical and applied. In addition, the centers provide outreach and community service activities and consulting support to small and medium-sized businesses in Colorado.

RMTAAC is one of 11 centers across the nation funded by the U.S. Department of Commerce to manage the Trade Adjustment Act for Firms (TAAF) Program, which helps import-impacted U.S. firms develop and implement business recovery strategies to strengthen their competitiveness in the global marketplace. The TAAF Program is a cost-sharing federal grant program that pays a portion of professional consultant expenses or industry-specific expert services for projects that improve a firm's competitiveness, thereby increasing sales and creating U.S. jobs. Benefits of the program include up to \$75,000 in grant funds and 50/50 cost sharing for strategic projects.

CAMT is a statewide manufacturing assistance center dedicated to increasing the competitiveness of Colorado manufacturers. The center's manufacturing experts and industry resource network provide expertise in results-driven methodologies, best practices, and innovative technologies designed to increase profitability. As a public/private partnership partially funded by the NIST Manufacturing Extension Partnership, government, not-for-profit, and industry resources are brought together to offer comprehensive programs and services, including company assessments, customized training and workshops, and hands-on facilitation and implementation.

## Academic Centers

In addition to the Business Research Division, the school has five centers linking academic programs and the business community—the endowed Robert H. and Beverly A. Deming Center for Entrepreneurship, the Center for Real Estate, the Burridge Center for Securities and Valuation, the Curriculum Emphasis on Social Responsibility (CESR), and the Center for Business Integration.

### *The Robert H. and Beverly A. Deming Center for Entrepreneurship*

The Deming Center for Entrepreneurship starts with a rich academic program led by thought leaders in entrepreneurship. The program is designed to help students develop the intellectual framework necessary for successful entrepreneurial decision making. The in-class experience is enhanced by a beyond-the-classroom experience that provides relevant, hands-on learning.

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At the Deming Center, students have an opportunity to be among the pioneers exploring the future of entrepreneurship—sustainable venturing. More than just “greentech” or “cleantech,” sustainable venturing is about harnessing the knowledge, power, and passion of entrepreneurs to create a new generation of businesses that strengthen rather than deplete the environmental and economic resources of our planet.

Through Deming Center activities and the entrepreneurship curriculum, students get a head start, building a strong foundation in accounting, finance, management, marketing, operations, and systems. They study each of these subjects in the context of entrepreneurial decision making. Some of those activities include:

- **RASEI Student Alliance, or CU Energy Club ([cuenergyclub.org](http://cuenergyclub.org))**, connects the energy and imagination of students at the University of Colorado Boulder to the emerging industries of renewable energy and clean technology. Open to CU students from all departments, CU Energy emphasizes interdisciplinary connections between the arenas of finance, technology, policy, science, and law. In support of the RASEI, and for the benefit of the renewable energy community of Colorado, they focus on six action areas: events, cross-campus collaboration, curriculum development, industry connections, and Web and media development.
- CU Energy is an initiative of the Renewable and Sustainable Energy Institute, a joint institute of the University of Colorado Boulder and the National Renewable Energy Laboratory. RASEI has partnered with the Deming Center and other institutions on and off campus to create a hub for cleantech commercialization and start-ups.
- **CIMB, Colorado Initiative in Molecular Biotechnology.** The Deming Center and the Leeds School are currently assessing opportunities to partner with the new Colorado Initiative in Molecular Biotechnology, CU’s Biotech Initiative. Led by Nobel Laureate Tom Cech and Leslie Leinwand, the Biotech Initiative will focus on key research priorities, as well as seeking to address the gap in education between “the bench and the bedside.” Traditionally, the gap has been the business skills and expertise that help bring transformational scientific research and medical breakthroughs through the process of regulatory approval and commercialization
- **TREP Café.** This specialty coffee and food service is sponsored by the Deming Center and is run and managed by undergraduates.
- **The CU New Venture Challenge ([cu.nvc.org](http://cu.nvc.org))** is a campuswide initiative connecting students and faculty with teammates in a broad range of disciplines and with mentors from the business community. The goal is to provide knowledge and experience making entrepreneurship accessible to anyone on the CU-Boulder campus with the enthusiasm and creativity required to start a new business.
- **The Organic Business Initiative** is a program of the Deming Center for Entrepreneurship in the Leeds School of Business at CU-Boulder. Its mission is to foster entrepreneurial leaders, world-class scholarship, and research in natural and organic business to create sustainable business models and innovations that inspire transformation in all sectors. The initiative achieves its mission by acting as a learning laboratory for the industry, and by connecting Leeds students with the natural and organic business community through course work and field projects.

Continued national recognitions affirm the quality of the Deming Center for Entrepreneurship’s program and its success creating innovative new areas of entrepreneurial opportunity. The undergraduate and graduate program has been ranked among the top 20 nationally in *U.S. News and World Report’s* rankings in Business Specialties Entrepreneurship for the last 10 years.

The center’s work in sustainable venturing, natural and organic products, and renewable energy keep it at the forefront of entrepreneurship education. Collaborations across campus, in the business community, and with national government labs have established a model for the intersection of entrepreneurial creativity, technology, and innovation.

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Successful collaborations include CU-Boulder's Technology Transfer Office, Renewable Energy Initiative, Entrepreneurial Law Clinic, Music Entrepreneurship Program, Silicon Flatirons Telecommunications Program, and College of Engineering & Applied Science. Partnerships with entrepreneurial incubators, innovation centers, and government agencies include: CTEK Venture Centers, Boulder Innovation Center, Naturally Boulder Products Task Force, the National Renewable Energy Laboratory (NREL), and the National Center for Atmospheric Research (NCAR).

The center's internal business plan competitions and existing programs continue to grow and thrive. Included among those are the undergraduate Certificate in Entrepreneurial Studies, the Collegiate Entrepreneurs Organization, and the TREP Café. At the MBA level, the Graduate Entrepreneurs Association supports activities to encourage and promote student activity in entrepreneurship including Learn from the Best Speaker Series, and the annual Entrepreneurship Retreat. MBAs also continue the legacy of Entrepreneurial Solutions, a for-profit, student-run consulting firm staffed by a select group of MBA students. It serves the business community by providing high value solutions that rely on the expertise of each year's team.

### *Real Estate Center*

The Real Estate Center, founded in 1995, is supported by an industry council with the goal of advancing academic excellence in real estate education and scholarship. The center oversees the school's real estate teaching programs and advises the faculty in designing an integrated curriculum at both the graduate and undergraduate levels. Course work is drawn from the law school, the colleges of architecture and engineering, construction management, and others.

The center creates real-world experiences for students by providing project course work and being a resource for securing internships, mentors, and jobs. It also provides support for faculty teaching and research activities in real estate and, through the Real Estate Foundation, assists the university with its real estate portfolio.

### *Burridge Center for Securities Analysis and Valuation*

The Burridge Center for Securities Analysis and Valuation is dedicated to encouraging and supporting the creation and dissemination of new knowledge about the world financial markets with an emphasis on the U.S. financial markets by:

- facilitating the exchange of ideas and knowledge between professional investment managers, finance scholars, policy makers, and the investing public;
- identifying critical research issues in the theory and practice of security analysis and valuation; and
- encouraging and supporting rigorous qualitative and quantitative research on topics relevant and useful to money managers, valuation experts, and finance academics.

### *Center for Education on Social Responsibility (CESR)*

CESR's goal is to help students become outstanding business leaders of tomorrow by preparing them to meet the ethical challenges posed by a highly competitive, globally-connected business world. Accordingly, CESR oversees the inculcation of values and social responsibility discussions in classes throughout the undergraduate and graduate curricula at the Leeds School of Business.

CESR is directly responsible for course development, staffing, and coordination of the required courses: Introduction to Business (freshman level) and Business Applications of Social Responsibility (junior level). CESR offers cutting edge electives such as CESR 4000 Leadership Challenges: Exercises in Moral Courage and CESR 4005 Business Solutions for the Developing World: Learning through Service. Undergraduates wishing to focus on CESR-related topics may earn the Certificate in Socially Responsible Enterprise (SRE). At the MBA level, CESR is responsible for the required Socially Responsible Enterprise course, and electives such as MBAX 6845 Social Entrepreneurship in Emerging Markets and MBAX 6825 Topics in Sustainable Business, two of the four options for

MBA to acquire the Sustainability Portfolio.

CESR developed the Professional Mentorship Program and houses several initiatives that support the mission of developing values-driven business leaders of tomorrow.

- **Conscious Capitalism Conference.** An annual conference hosted by CESR featuring innovative executives and entrepreneurs who have used the traditional tools of capitalism to serve social needs.
- **Student Center for Social Entrepreneurship (SCSE).** CESR provides faculty sponsorship for SCSE, the student branch of Social Entrepreneurship for Equitable Development ([SEED@CU](#)), an interdisciplinary, inter-generational campus group that is involved in researching, teaching, and generating student involvement in the areas of social entrepreneurship and sustainable community development.
- **Net Impact.** CESR is home to a graduate chapter of Net Impact, an international non-profit organization whose mission is to use the power of business to create a more socially and environmentally sustainable world.

## Career Opportunities

Leeds School of Business graduates are prepared for positions in the following fields:

- Accounting—public, private, nonprofit, and governmental
- Banking and other financial institutions
- Consulting
- Corporate financial management
- Entrepreneurship and small business management
- Financial analysis
- Human resources management
- Information systems
- International business
- Investment management
- Management consulting and organization management
- Marketing and sales management
- Nonprofit management
- Operations management
- Real estate
- Retailing
- Taxation
- Technology management
- Transportation
- Venture capital

Other graduates hold positions in fields as diverse as business journalism, public relations, city planning, chamber of commerce and trade association management, college administration, and government. The entrepreneurial area of application prepares students to start their own business ventures to take positions in emerging growth companies and the venture capital industry.

## Professional Mentorship Program

The Professional Mentorship Program (PMP) is a unique program that offers one-on-one professional

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mentoring to current undergraduate students. The program was initiated in 2009 to enhance the undergraduate academic experience of Leeds students, as well as to prepare and inspire them to best meet future challenges in the professional world. PMP provides an outstanding opportunity for Leeds students to interact with the “real world professionals” and business leaders they seek to become.

This two-year program matches students with executives or high-level business professionals who align by industry, geographic location, or functional area. To ensure a quality experience for both students and mentors, the PMP provides workshops, training, and additional support for participants throughout the program.

## Program Benefits

Through this program, students gain an additional level of advising and career counseling from a business professional. Through the mentoring relationships, students can explore choice of majors, potential for graduate school, work-life balance, effective networking, and effective job search strategies.

Other potential benefits of being involved in the PMP include:

- Advice and assistance on academic questions, career options, life beyond college, and more
- Access to the PMP network and networking opportunities and the opportunity to start building the student's own professional network
- Opportunities to practice and strengthen professional communication and presentation skills
- Help in defining personal and professional goals, and the strategies to achieve them
- Unique internship and job opportunities
- Development of a life-long friend and connection in the business world

## Contact Information

Website: <http://Leeds.colorado.edu/pmp>

E-mail: [professionalmentor@colorado.edu](mailto:professionalmentor@colorado.edu)

Phone: **303-492-5881**

## Study Abroad

Study abroad programs are available for students interested in international business or in cultural experiences abroad. The college-sponsored London Seminar in International Finance and Business is a five-week-long program held each summer in the financial district of London and is open to juniors, seniors, and graduate students.

## Student Organizations

Listed below are undergraduate organizations that promote professional interests and provide recognition of scholastic attainment:

- ABC—Athletic Business Club
- Association for Information Systems
- Business and Film Club
- Business of Sports
- Collegiate DECA
- Collegiate Entrepreneurs Organization

- Collegiate Initiatives
- CU Finance Club
- CU American Marketing Association
- CU Investment Club
- CU Society for Human Resources Management
- Fashionistas, Inc.
- GLBT Business Leaders Alliance
- Global Business Club
- Graduate Finance Club
- High Performance Contemplative Leeds Ambassadors
- International Business Club
- Leeds Ambassadors
- Leeds Community Crew
- Leeds Council (Undergraduate Student Government)
- Multicultural Business Student Alliance
- MBA National Association of Women
- Net Impact
- Real Estate Club
- Graduate Real Estate
- Peer-2-Peer Mentors

## Leeds School of Business Student Government

Leeds Council is the governing body of the Leeds School of Business that strives to serve, support, and represent the student body. The council also works to make Leeds a better business school through social, academic, and professional programming. The council is made up of five primary committees and an executive board that control a significant portion of the Leeds student fees.

Two members of Leeds Council also serve as representatives on University of Colorado Student Government (CUSG) to voice the interests of business students at the main campus.

## Graduation Recognition Ceremony

Every December and May, the Office of the Dean and the Leeds Business Student Government sponsor a recognition ceremony honoring the graduating class, in addition to the university-wide commencement. Graduates and their families are invited to attend.

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# Undergraduate Academic Excellence

## Honors

In recognition of high scholastic achievement, upon recommendation of the faculty, the designation "With High Distinction" or "With Distinction" will be awarded at graduation. To qualify for the "With High Distinction" designation, the student's cumulative University of Colorado GPA must be at least 3.90. For the "With Distinction" designation, the student's cumulative GPA must be at least 3.75 but less than 3.90. In addition, for these designations, at least 60 semester hours must have been earned at CU-Boulder.

In addition to the distinction of honors, Leeds School of Business students also may participate in the Latin honors granted by the College of Arts and Sciences. Qualified students are encouraged to participate in this program, which coordinates the offering of a variety of honors seminars as well as the granting of Latin honors (cum laude, magna cum laude, summa cum laude) at graduation. Granting of these honors is determined by the Honors Council based on several criteria, including the quality of original scholarly work (generally reported in the form of a thesis). Latin honors are not conferred on a graduate entering in the summer of 1995 and thereafter simply by virtue of high grades. Interested students should consult the Honors Program listing in the College of Arts and Sciences section or contact the Honors Program in Norlin Library.

## Dean's List

Students in the Leeds School of Business who have completed at least 12 semester hours of CU-Boulder course work for a letter grade in any single semester with a term GPA of 3.600 or better are included on the dean's list and receive a notation on their transcript.

## Beta Gamma Sigma

Membership in Beta Gamma Sigma is an honor that must be earned through outstanding scholastic achievement. Such membership is the highest scholastic honor that a student in a school of business or management can attain.

To be eligible for Beta Gamma Sigma membership, students must rank in the top ten percent of their junior class, the top 10 percent of their senior class, or be among the top 20 percent of those students receiving master's degrees. Also, students completing all requirements for the doctoral degree conferred by a business school are eligible for Beta Gamma Sigma. It should be noted that Beta Gamma Sigma chapters may be chartered only in those schools of business and management accredited by AACSB, the International Association for Management Education.

## Scholarships

Each year the college awards a number of divisional and general scholarships. Business scholarships are for students who have completed business course work at the university. The amount and number of the awards vary each year.

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# Undergraduate Academic Standards

## Academic Ethics

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery or falsification of official records, and similar acts or the attempt to engage in such acts are grounds for suspension or expulsion from the university. Reported acts of academic dishonesty must be referred to the Honor Council.

Students are advised that plagiarism consists of any act involving the offering of someone else's work as the student's own. It is recommended that students consult with instructors as to the proper preparation of reports, papers, etc., in order to avoid this and similar offenses. Official college procedures concerning academic ethics are maintained in the Office of Undergraduate Studies.

## Standards of Performance

Students are held to basic standards of performance with respect to attendance, active participation in course work, promptness of assignments, correct English usage both in writing and speech, accuracy in calculations, and general quality of scholastic workmanship.

In general, examinations are required in all courses and for all students, including seniors.

## *Good Academic Standing*

To be in good standing, students must have an overall grade point average of C (2.000) or better for all course work taken, and a 2.000 or better for all business courses taken. Students must earn a passing grade for all required courses. Grades earned at another institution are not used in calculating the grade point average at the University of Colorado. This requirement applies to work taken at all university campuses. Physical education activity courses are not included in the overall grade point average.

Any student earning all, or nearly all, failing grades or no academic credit for a semester will not be permitted to register without the dean's approval.

Official double-degree students must maintain required academic standards for the Leeds School as well as their other college.

When semester grades become available, students below the acceptable standard will be placed on probation or suspension. Students are responsible for being aware of their academic status at all times, and late grades and/or late notification do not waive this responsibility. College rules governing probation and suspension are as follows:

**Probation.** Students whose cumulative grade point average or cumulative business grade point average falls below 2.000 will immediately be placed on probation for one semester. Those students

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who enroll in any term in the calendar year, excluding summers, after being placed on probation, are expected to raise their cumulative and business grade point average to at least a 2.000.

**Scholastic Suspension.** Students who still have a cumulative overall and/or business GPA below 2.000 after one semester of probation, will be suspended and will not be able to register for University of Colorado daytime courses on any campus for one academic year, not including summer. Suspended students may choose one of the following four options:

- They may attend summer session at any campus of the University of Colorado and take classes in order to improve their grade point average in the area of deficiency.
- They may take Continuing Education Independent Learning courses, and/or Boulder Evening credit classes.
- They may choose to attend another educational institution and apply for readmission only when they have overcome their grade deficiencies by means of averaging the grades from CU with the grades from the other institution. These transfer grades are used only for the purpose of readmission and do not remain in the University of Colorado grade point average. If they choose this option, upon readmission, students will have two semesters to raise their CU cumulative or business GPA to the required 2.000, provided they make academic progress. If their GPA falls after the first semester, they will again be suspended for another academic year.

In order to attend another university, students must have their proposed course work approved by the Office of Undergraduate Studies of the Leeds School of Business.

- Students who have been under suspension for one calendar year and elected none of the above may still apply for readmission. They will have two semesters to raise their cumulative or business grade point average to at least a 2.000, provided they make academic progress and earn no grade less than C. If their GPA falls after the first semester, they will again be suspended for another academic year or until the grade deficiency has been made up.

Students who make up their grade deficiencies prior to the expiration of the one-year suspension by pursuing any of the above options, and desire to be readmitted, may reapply by following the process outlined below.

Suspended Leeds School students who transfer into another school or college of the university will not be eligible to register for business courses and will be subject to administrative drops.

**Readmission.** To be readmitted, students must request readmission by contacting the Office of Undergraduate Student Services at UCB 419, Boulder, CO 80303, **303-492-6515**. They must then provide undergraduate student services with a written request to return.

**University Catalog 2012-2013**

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# Undergraduate Admissions & Enrollment Policies

## On This Page:

- [Admission to the Business Program](#)
- [Credit Policies](#)
- [Registration Stops](#)
- [Grading Policies](#)
- [Registration for Business Courses](#)
- [Withdrawal](#)

All students are responsible for knowing and following the provisions set forth below. Any questions concerning these provisions should be directed to the college. The college cannot assume responsibility for problems resulting from a student's failure to follow the policies stated here or from incorrect advice given by those outside the Office of Undergraduate Studies. Similarly, students are responsible for all deadlines, rules, and regulations stated in the General Information section of this catalog. All rules and regulations are subject to change. Any questions should be directed to the Leeds School of Business, Office of Undergraduate Studies, room 115, **303-492-6515**.

## Admission to the Business Program

Prospective freshman students are encouraged to complete strong academic programs in high school. A minimum of four academic units should be completed each year with special emphasis given to writing, mathematics, and science skills. For a detailed explanation of the high school preparation desired, see Undergraduate Admission in the General Information section.

Transfer students are expected to demonstrate proficiency in economics, writing, and mathematics. Prospective transfer students should complete courses equivalent to those taken by University of Colorado business freshmen and sophomores.

### *Intrauniversity Transfer*

An undergraduate student who is enrolled on the Boulder campus and wishes to transfer to the Leeds School of Business may submit a completed application for the fall or spring semester. A cumulative university GPA of 3.000 and a cumulative GPA of 2.000 in business courses is necessary to be considered for admission. In addition, students must have 24 completed semester hours, 12 of which must be graded work at CU-Boulder; 6 credit hours of math, including MATH 1071 or ECON 1078, and MATH 1081 or ECON 1088 or a calculus course; and microeconomics and macroeconomics. Students must earn a grade of *B-* or better in ECON and MATH to be considered for admission.

Intrauniversity transfer students must take a minimum of 30 hours of business courses, including their area of emphasis, in residence after admission to the college. The deadline is October 1 for spring admission and March 1 for fall admission. Students must view and complete the IUT presentation and quiz. For more information on intrauniversity transfer, see [leeds.colorado.edu](http://leeds.colorado.edu). Current Leeds students should see "Frequently Asked Questions."

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## Registration Stops

A service indicator stop will be placed on students' records when they have earned 60 credit hours, if they have not yet declared their area of emphasis.

## Registration for Business Courses

Business students may register only for those courses for which they have the stated prerequisites.

### *Administrative Drops*

Instructors may recommend to the Office of Undergraduate Studies that students who fail to meet expected course attendance or prerequisites be dropped from their courses at any time during the semester.

### *Attendance Regulations*

Classroom attendance is left to the discretion of the instructor. Students are responsible for understanding each instructor's policy on attendance.

Students who are unavoidably absent should make arrangements with instructors to make up the work missed. Failure to attend regularly may result in receipt of an *F* in a course. Students who, for illness or other legitimate reasons, miss a final examination must notify the instructor no later than the end of the day on which the examination is given. Failure to do so may result in receipt of an *F* in the course.

### *Concurrent Registration*

Concurrent registration is for graduating seniors who must be enrolled on two campuses of the University of Colorado at the same time in order to fulfill graduation requirements.

Students enrolled in the Leeds School of Business may exercise the concurrent registration option if they are in their graduating semester or are two semesters from graduating and cannot obtain a course necessary to complete a prerequisite sequence. The course must be required for graduation and must not be offered on the Boulder campus, or the course must conflict with another required course in which the student is enrolled. Students from other colleges and schools who wish to take business courses must have the approval of their own college or school before submitting the concurrent registration form.

### *Scholastic Load*

The normal scholastic load of an undergraduate student in the college is 21 semester hours, with a maximum of 21 hours during the fall and spring semesters. A maximum of 3 semester hours may be taken during Maymester. A maximum of 6 hours may be taken during a five-week summer term, with no more than 12 hours total during the 10-week summer session.

## Credit Policies

To receive credit, all courses must be listed on the student's official transcript by the Office of the Registrar. Credit is then evaluated by the Leeds School of Business to determine degree acceptability.

### *Cooperative Education Credit*

No credit is given for work experience or cooperative education programs.

### *Correspondence Credit*

All correspondence courses must have prior approval and be evaluated to determine their acceptability.

### *Credit by Examination*

**Advanced Placement (College Board).** For students who earn scores of 3, 4, or 5 on Advanced Placement exams, college credit will be given where appropriate. See the General Information section for a comprehensive chart on AP credit.

**College-Level Examination Program (CLEP).** College credit for approved CLEP subject examinations may be considered, providing the scores are at the 67th percentile or above. Specific information is available in the Office of Undergraduate Student Services.

CLEP credit is only appropriate for nonbusiness requirements and nonbusiness electives. A maximum of 6 hours of credit in any one course area is allowed. CLEP may not be used in course areas where credit has already been allowed. General examinations are not acceptable. CLEP credit is not transferable.

Before a CLEP examination can be taken, students must have prior approval in writing by the Office of Undergraduate Student Services.

### *No Credit*

Because of enrollment limitations, business classes may not be taken on a no-credit basis.

### *Special Sources of Credit*

The college reserves the right to accept or reject all special sources of credit that do not have prior approval of the dean.

### *Independent Study*

A maximum of 6 hours of independent study will be accepted as degree credit. Prior approval is required if the work is to be applied as degree credit. A maximum of 3 hours may be taken in any one semester.

### *Study Abroad Credit*

Transfer credit from study abroad programs may be applied to the business degree. Students planning to attend study abroad programs must meet with an undergraduate advisor and have their course selections approved prior to leaving campus.

More specific information about these opportunities is available from the Office of International Education.

### *Transfer Credit*

The school reserves the right to disallow any credit that it deems inappropriate degree credit.

Credits in business subjects transferred from other institutions will be limited to the number of credit hours given for equivalent work in the regular offerings of the university. Only work from regionally accredited institutions will transfer to the college. A maximum of 60 semester hours of credit may be accepted from a two-year school.

Actual equivalent courses may be substituted for required courses. Students must submit a carefully checked catalog description and course syllabus for course equivalency determination.

Business students desiring to apply course work from another institution or University of Colorado campus toward the BS degree in business administration must have prior approval of the Leeds

School of Business. Only nonbusiness requirements or elective credit is acceptable in transfer from other institutions once the student has enrolled.

All courses in the area of emphasis must be taken at the University of Colorado Boulder unless written approval is given by the associate dean of undergraduate studies. Transfer students must take a minimum of 30 hours of business courses, including the area of emphasis, in residence after admission to the college. For more information on transfer of credit policies, see Transfer of College-Level Credit in the Admission section.

## Grading Policies

In addition to the campuswide grading system and *pass/fail* policy listed under Registration in the General Information section, the Leeds School of Business enforces the following policies.

### *Pass/Fail*

Students in the Leeds School of Business may not use the *pass/fail* option for courses taken to fulfill **General Education Core Requirements, courses used to satisfy the Minimum Academic Preparation Standards (MAPS), business core requirements, business major requirements, or business electives.** A grade of *F* when earned in a course taken *pass/fail* will calculate into the GPA as a failing grade. Only nonbusiness electives may be taken on a *pass/fail* basis. A maximum of 6 hours of *pass/fail* credit may be applied toward the BS degree in business administration. *Pass/fail* determination must be made within the first two weeks of the semester and is irreversible. A maximum of 6 hours designated *pass/fail* may be taken in any one semester.

**Failed Courses.** Failed courses may be repeated, but the *F* will be included in the GPA.

### *Incomplete Grades*

The only incomplete grade given in the college is *I*. An *I* grade is given only when documented circumstances clearly beyond the student's control prevent the student from completing the course. Generally, students should make up the missing work and not retake the entire course. Students should not register for the class a second time, unless directed by the instructor. All *I* grades must be made up within one year or the *I* will be changed to a grade of *F*.

### *Grade Changes*

Final grades as reported by instructors are considered permanent and final. Grade changes will be considered only in cases of documented clerical errors, and must be approved by the associate dean.

## Withdrawal

Students may withdraw from the university any time before the beginning of the final examination period.



# Business Administration

The Leeds School of Business holds accreditation by the Association to Advance Collegiate Schools of Business (AACSB-International). Leeds awards four types of degrees: the bachelor of science (BS), the master of science (MS), the master of business administration (MBA), and the doctor of philosophy (PhD).

Course codes for these programs are ACCT, BADM, BCOR, BPOL, BSLW, CESR, ESBM, FNCE, INBU, MGMT, MKTG, MBAC, MBAX, OPMG, OPIM, ORMG, PHPM, and REAL.

## *Bachelor's Degree Program(s)*

### Bachelor of Science in Business Administration (BS)

#### *Knowledge and Abilities of Business Students*

The following areas of knowledge are central to the undergraduate degree in business administration:

- knowledge of core business concepts that provides students with a comprehensive understanding of the basic functional areas of the discipline;
- knowledge in one or more of the four areas of emphasis, in which students are exposed to in-depth study that provides them with the tools necessary to solve complex business problems;
- awareness of the interrelations between academic theory and practice in order for students to be fully equipped to make effective decisions;
- strong verbal and written communication skills, proficiency in business computer applications, and knowledge of international business environments;
- knowledge of mathematics sufficient to facilitate the application of quantitative principles; and
- awareness of the importance of academic fields in the area of arts and sciences, with special emphasis placed on the study of economics, political science, and other related fields.

In addition, students completing a degree in business administration are expected to acquire:

- the ability to apply basic business principles to solve problems in new and recurring situations;
- the ability to conceptualize and analyze decision-making situations to facilitate solutions in an effective and timely manner; and
- the ability to effectively communicate the results of problem-solving situations, both verbally and in writing.

Having acquired these skills and knowledge, students are able to conceptualize and analyze the concept of business and problem solving as a system. They have the ability to present solutions to business problems in an understandable and useful form. Their education provides them with excellent working knowledge, not only in the field of business, but also in related academic disciplines.

## Advising and Records

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Business students receive academic counseling from a staff of advisors in the Office of Undergraduate Student Services. During the semester, advisors are available Monday through Friday from 8:00 a.m. to 5:00 p.m., and by appointment.

Faculty advisors are available to discuss the various areas of emphasis as well as career opportunities. Faculty advising hours will vary each semester.

Students are expected to assume responsibility for planning their program in accordance with college rules and policies.

Students are encouraged to discuss the various emphases available as well as career opportunities with the faculty of the college.

## Undergraduate Degree Requirements

All business students pursuing a bachelor's degree in business administration must complete the prescribed courses in at least one area of emphasis. The school offers programs in four areas of emphasis: accounting, finance, management, and marketing. An area of emphasis consists of a minimum of 18 semester hours taken at the University of Colorado Boulder. A cumulative grade point average of 2.000 is mandatory for the required area of emphasis courses and all courses must have a grade of C- or higher.

In addition to the area of emphasis, students also may complete an area of application. The school offers the following areas of application: entrepreneurship and small business management, international business, and real estate. An area of application consists of a minimum of 9 semester hours taken at the University of Colorado Boulder. A 2.000 cumulative GPA is required for the required area of application courses. Successful completion of additional requirements in some of these areas of application entitles students to a certificate issued by the dean of the college.

### Minors

The school also offers a minor program in business for nonbusiness students.

## *Areas of Emphasis*

### Accounting

The accounting area of emphasis prepares students for careers in which they will develop, analyze, and interpret complex financial data. Accounting majors become experts in "the language of business." This expertise prepares them for careers in CPA firms, business consulting, industry (from Fortune 500 companies to small entrepreneurial enterprises), not-for-profit enterprises, or government. Accountants who develop careers in public accounting may become partners in public accounting and consulting firms. Those who make their careers in industry may have positions as a chief executive officer (CEO), chief financial officer (CFO), chief accounting officer (CAO) or controller, tax specialist, internal auditor, accounting systems analyst, financial analyst, or managerial accountant. Many students begin their careers in CPA firms and move to industry or government after several years of experience. Employers seek students with skills in communication, interpersonal interactions, analytical thinking, problem solving, and integrity.

The major areas of study in the accounting area of emphasis are 1) Financial Accounting Analysis and Audit and 2) Tax Planning and Compliance. Basic course work in accounting focuses on developing a comprehensive understanding of the theory and concepts underlying the presentation of financial and operating information about an enterprise to external and internal users. Additional course work exposes the student to income taxation of business enterprises and individuals, the practice and principles of auditing and assurance services, and cost management. Specialization is available through graduate work.

Most accounting students from the University of Colorado earn professional credentials within a year

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of completing their degrees. The two major types of professional certification are certified public accountant [CPA] and certified management accountant [CMA]. The CPA's expertise focuses on presentation and analysis of financial information for an external user. The CMA's primary focus is improving information for the internal user. Professional accountants' expertise in financial matters and their understanding of company operations through financial information prepare them to become key players and critical decision makers for all aspects of business creation, operation, and transformation.

Requirements for the CPA license vary significantly by state. Every state requires that the candidate pass the Uniform CPA Examination (a standard national exam), but the requirements regarding educational background and work experience are state-specific. All states, including Colorado, have passed rules requiring 150 hours of university education. All states write their own rules about the number of hours, specific courses, and experience required for becoming a CPA in that state. **It is very important that the accounting student obtain the guidelines for the relevant state to ensure proper development of his or her degree plan** (see [NASBA.org](https://www.nasba.org)).

The degree options are:

### **BS in Business Administration with an Emphasis in Accounting**

This degree may be earned by a student who takes 18 hours of accounting beyond the core. The 18-hour requirement for the degree does not qualify the student to sit for the CPA exam in any state. This option may be chosen by a student who does not want to become professionally certified but who seeks a career involving accounting and financial analysis in industry, government, or not-for-profit enterprises.

The undergraduate area of emphasis in accounting consists of at least 18 semester hours of course work beyond the undergraduate core requirements.

#### ***Required Courses and Semester Credit Hours***

- ACCT 3220 Corporate Financial Reporting 1—3
- ACCT 3230 Corporate Financial Reporting 2—3
- ACCT 3320 Cost Management—3
- ACCT 4850 Senior Seminar in Accounting—3

Plus 6 credit hours from the following courses:

- ACCT 4250 Financial Statement Analysis—3
- ACCT 4440/Income Taxation—3
- ACCT 4540 Accounting Information Systems—3
- ACCT 4820 Special Topics—3

### **BS in Business Administration with an emphasis in accounting, enhanced by additional course work required to sit for the CPA exam in various states**

The student who aspires to earn the CPA credential must always go beyond the basic college requirements for earning an area of emphasis. These requirements vary by state, but always include significantly more hours in accounting. Each student is responsible for determining the relevant requirements for the desired state of residence following graduation (see [NASBA.org](https://www.nasba.org)). These undergraduate courses may not be available at the University of Colorado Boulder.

## **Finance**

The finance area of emphasis is designed to provide students with in-depth exposure to the

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theoretical concepts and applied tools and techniques necessary for entry-level positions in various areas of financial management. The principal areas of study include business financial management, investments and derivative securities, and financial markets and institutions.

Finance is an applied discipline with an analytical orientation. Effort is made to develop students' ability to think logically about financial problems and to formulate sound financial decisions and policies. Although the emphasis is on financial management of profit-oriented organizations, the principles and concepts developed are also applicable to not-for-profit and governmental organizations.

It is strongly recommended that finance students take additional accounting courses.

### ***Required Courses and Semester Credit Hours***

- FNCE 3010 Corporate Finance—3
- ACCT 3220 Corporate Financial Reporting I—3
- FNCE 4030 Investment and Portfolio Management—3
- FNCE 4850 Senior Seminar in Finance—3

Plus any three of the following courses:

- FNCE 4000 Financial Institutions Management—3
- FNCE 4040 Derivative Securities—3
- FNCE 4050 Capital Investment Analysis—3
- FNCE 4070 Financial Markets and Institutions—3
- FNCE 4820 Experimental Course (only one FNCE 4820 course can be applied to meet the finance area of emphasis requirements)—3
- FNCE 4830 Seminar in Investment Banking—3
- FNCE 4831 Seminar in Investment Management—3
- FNCE 4060 London Seminar in International Finance and Business (3 credit hours can be applied toward the finance area of emphasis)—variable credit

In addition, one of the following elective courses can be substituted for one of the above FNCE elective courses to meet finance area of emphasis requirements.

- FNCE 4832 Micro Finance—3
- APPM 4720 Mathematical Finance—3
- ESBM 4570 Entrepreneurial Finance—3
- INBU 4200 International Financial Management—3
- REAL 4100 Real Estate Finance and Investment Analysis—3

## **Management**

The Management Area of Emphasis addresses the effective management of people, organizations, operations, information, and technology to improve the performance of diverse private and public organizations. A management emphasis provides students with the managerial skills necessary for success in entry-level positions, and builds foundations for success in management positions of greater responsibility, authority, and leadership. Students completing the management area of emphasis are viewed by potential employers as having the broad-gauged education required in the team-oriented, horizontally organized, and globally competitive environments of the 21st century. The management area of emphasis prepares students for careers managing people, operations, information, and technology, and can serve as a strong complement to a second area of emphasis.

Management students must choose one of three tracks: the first emphasizes human resource management; the second focuses on the management of operations; and the third emphasizes the management of information.

## **Human Resource Management Track**

The human resource management track provides students with the knowledge and skills necessary to earn certification in human resources from the Society of Human Resources, the principal professional society in the field. Graduates are qualified to act as human resource generalists in small, medium, and large companies; specialists in organizations with focused human resource units; or well-rounded general managers in any organization. There are three required courses in the HR Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- ESBM 3700 Entrepreneurship—3
- MGMT 4850 Strategy—3

In addition, students in the HR Management track must complete three of the following elective courses:

- MGMT 4010 Redefining the Employee-Employer Relationship—3
- MGMT 4020 Hiring and Retaining Critical Human Resources—3
- MGMT 4030 Managing Employee Reward Systems—3
- MGMT 4040 Individual, Team, and Organizational Development—3

Students focusing on HR are also encouraged to take INBU 4300 International Management.

## **Information Management Track**

Advances in business knowledge and technology have radically changed business systems and processes. As a result, critical to today's businesses is the ability to get the right information to the right people at the right time, so that both strategic and operational decisions are made properly and quickly. Students majoring in information management will learn to recognize the pivotal roles that information systems play in the business world and to use their knowledge to increase business competitiveness. They are exposed to a range of tools, methods, and techniques for addressing issues such as the selection and implementation of new technologies, and the creation of processes that effectively connect with customers, suppliers, and distributor channels. Students are prepared to be leaders in the effective utilization of information in business. There are three required courses in the Information Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- MGMT 3200 Business Intelligence—3
- MGMT 4850 Strategy—3

In addition, students in the Information Management track must complete three of the following elective courses:

- MGMT 4210 Systems Thinking—3
- MGMT 4220 Business Technologies—3
- MGMT 4230 Design of Usable Business—3
- MGMT 4140 Project Management—3

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IM students inclined toward careers in technical information systems are encouraged to take programming courses as business electives (MGMT 3210 Visual-language Programming) or as non-business electives (such as CSCI 1300 Programming or ATLS 3519 Applied Java Programming).

## **Operations Management Track**

The principal function of any organization is the efficient creation and delivery of products and services to its customers (operations). The operations management track focuses on this creative process and identifies how organizations use productivity, quality, flexibility, timeliness, and technology to compete and prevail in their markets. Students graduating from the operations management track will have a broad understanding of the importance of operations in the success of any organization, and will be qualified to serve in entry-level line management positions and as general managers later in their careers. There are three required courses in the Operations Management track:

### ***Required Courses and Semester Credit Hours***

- MGMT 3030 Critical Leadership Skills—3
- MGMT 3100 Managing Service Operations—3
- MGMT 4850 Strategy—3

In addition, students in the Operations Management track must complete three of the following elective courses:

- MGMT 4110 Supply Chain Management—3
- MGMT 4120 Managing Business Processes—3
- MGMT 4130 Sustainable Operations—3
- MGMT 4140 Project Management—3

Students focusing on Operations are also encouraged to take MGMT 4150 International Operations.

## **Marketing**

The marketing area of emphasis hones skills in analysis and decision-making for a wide spectrum of marketing careers in fields such as advertising, market research, brand management, e-business, selling and sales management, distribution, industrial and business-to-business marketing, international marketing, the marketing of services, and marketing for not-for-profit organizations.

Marketing strategies are essential to the communication and sale of both products and services. They are applied across consumer and business markets, across domestic and global boundaries, and across traditional and electronic business environments. Key concepts focus on identifying customer needs and wants, developing products and/or services to satisfy these needs and wants, establishing channels and communications to move products and services through intermediaries to end users, and monitoring transactions and customer responses to guide future activities.

Students should choose from one of the following two plans for taking required marketing courses. Students with a marketing emphasis must take 18 hours of marketing courses beyond BCOR 2400. These students should select Plan A. Plan B is intended for those students wishing to take marketing courses as part of their business electives.

*Students pursuing a marketing emphasis (Plan A) will need three semesters to complete the required course work (beyond BCOR 2400).*

### **Plan A**

For students with marketing as their area of emphasis

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### **Required Courses and Semester Credit Hours**

- MKTG 3250 Buyer Behavior—3
- MKTG 3350 Marketing Research—3
- MKTG 4850 Senior Seminar in Marketing—3

At least two of the following three courses must be taken as prerequisite to MKTG 4850. The remaining course (if not taken as a prerequisite) must be taken as a corerequisite to MKTG 4850.

- MKTG 4250 Product Strategy—3
- MKTG 4300 Pricing and Channels of Distribution—3
- MKTG 4550 Advertising and Promotion Management—3

### Plan B

The following marketing courses are offered as business elective only:

### **Required Courses and Semester Credit Hours**

- INBU 3450 International Marketing—3  
(Prerequisite course for marketing 3000 level courses BCOR 2400 Fundamentals of Marketing)
- MKTG 3150 Sales Management—3
- MKTG 3250 Buyer Behavior—3

Prerequisite courses for marketing 4000 level courses:

- MKTG 3250 Buyer Behavior—3
- MKTG 3350 Marketing Research—3

## *Areas of Application*

### **Entrepreneurship and Small Business Management**

The entrepreneurship and small business management area of application reflects that practically all new job creation in the United States is produced by new ventures and small- to medium-sized emerging growth businesses. In addition, Boulder and the Leeds School of Business are highly recognized for a unique entrepreneurship climate. This application area provides the knowledge, understanding, and skills to create, organize, and manage new ventures or small- to medium-sized and emerging growth businesses as independent entities, or within corporate structures.

Students examine theory and research, but the fundamental thrust of this application area is to experience entrepreneurial cultures through professional experiences such as field projects, meeting entrepreneurs in the classroom, internships, writing feasibility and business plans, and developing other practical skills.

After completing the required lower-division core courses, students may begin the study of entrepreneurial environments in their junior year. Entrepreneurial finance, business plan preparation, and an internship may be taken in the junior and/or senior year.

Students who complete the three required entrepreneurship courses with a 3.000 GPA or better, and who complete an approved 60-hour internship, will qualify to sit for the entrepreneurship honors oral exam. Those who pass the exam will be awarded the Certificate of Excellence in Entrepreneurial Studies.

### **Required Courses and Semester Credit Hours**

- ESBM 3700 Entrepreneurial Environments—3
- ESBM 4570 Entrepreneurial Finance—3
- ESBM 4830 Business Plan Preparation—3

*NOTE: Students seeking internships should have completed ESBM 3700 by the end of their junior year.*

## **International Business**

The globalization of the marketplace has created a need for managers who can function effectively in the international business environment. Despite this movement toward globalization, there remains significant environmental differences (cultural, economic, and political) between countries and/or regions. Managers in an international business must be sensitive to these differences and also must adopt the appropriate policies and strategies for dealing with them.

To address these issues, the Leeds School of Business offers an area of application in international business. In addition to this area of application, students can complete additional requirements that result in an international business certificate. The area of application and certificate program build on the student's understanding of the functional areas of business and provide her or him with an appreciation of the international environment and a framework for developing policies and strategies appropriate for this environment.

### **Required Courses and Semester Credit Hours**

- INBU 3450 International Marketing—3
- INBU 4200 International Financial Management—3
- INBU 4300 International Business Management—3

In addition, the certificate program requires completion of the following:

- Six hours of economics, geography, or political science beyond arts and sciences course requirements. Courses must be selected from an approved list (students should see the advising office for details).
- Three hours of foreign language beyond MAPS requirements.
- Six hours of an international experience. This requirement can be satisfied through either study abroad programs or academic internships of an international business nature.

Finally, it is recommended that students in the international business area of application or the certificate program consider additional electives from the following courses:

- MGMT 4070 International Operations Management
- ACCT 4700 International Accounting

## **Real Estate**

The real estate area of application is designed to provide students with exposure to the concepts, tools, and techniques necessary for entry-level positions. A career in real estate provides an opportunity for individuals to operate as entrepreneurs whether they are brokers, appraisers, developers, property managers, consultants, or investors. An integrated process is followed in the three application area courses to prepare students for real estate careers.

### **Area of Application**

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### **Required Courses and Semester Credit Hours**

- REAL 3000 Principles of Real Estate Practice—3
- REAL 4000 Real Estate Law and Financing Instruments—3
- REAL 4100 Real Estate Finance and Investment Analysis—3

The real estate certificate program allows students to broaden their knowledge and understanding of real estate through a multidisciplinary focus, whereby courses are taken outside of the Leeds School of Business. For this program, students must complete the courses listed above (REAL 3000, 4000, and 4100), 9 credits of nonbusiness electives listed below, and an academic internship. See the Real Estate center for a list of the approved electives and internships.

### **Certificate**

#### **Required Courses Semester Hours**

- Area of application courses listed above—9
- College of Architecture and Planning courses—6
- Construction management course in the Department of Civil, Environmental, and Architectural Engineering—3
- Academic internship in real estate practice or related area—3

### ***Concurrent Bachelor's/Master's Program***

#### **BS/MS Degree in Business**

The Leeds School of Business also offers a unique program that allows undergraduates the opportunity to earn a bachelor's and master's degree simultaneously. The joint program graduates students with a bachelor's degree from the Leeds School of Business and a master's degree from the College of Engineering in telecommunications. For more information, see [itp.colorado.edu](http://itp.colorado.edu).

### ***Graduate Degree Program(s)***

#### **Graduate Study in Business**

The Leeds School of Business offers programs leading to the master of business administration (MBA), master of science (MS) emphasis in accounting, and doctor of philosophy in business administration (PhD) degrees. The Leeds School also offers a part-time MBA program called the Evening MBA that leads to the same degree as the full-time MBA program. Dual degree options available in the MBA program include juris doctor/master of business administration (JD/MBA), master of business administration/master of arts (MBA/MA) in fine arts, master of business administration/master of arts (MBA/MA) in anthropology, master of business administration/master of arts (MBA/MA) in Germanic and Slavic Languages, master of business administration/master of arts (MBA/MA) in theatre and dance, master of business administration/master of science (MBA/MS) in environmental studies, master of business administration/master of science (MBA/MS) in computer science, master of business administration/master of science (MBA/MS TLEN) in telecommunications. The Leeds School of Business, in conjunction with the Peace Corps, also offers a Master's International (MBA-MI). Dual degree options are not available in the Evening MBA program.

These programs are open to qualified individuals who hold a bachelor's degree from a regionally accredited college or university, or a recognized international university, without regard to their undergraduate major. The Leeds School of Business also offers a concurrent BS/MS program in accounting that awards the bachelor's and master's degrees simultaneously.

#### **Master of Science in Business Administration (MS)**

There are two paths to the master of science in business administration (MS) degree with an emphasis in accounting or taxation. The first is the concurrent bachelor's and master's degree program. In this program, both the bachelor's and master's degrees are awarded following the completion of 150 specified hours of course credit. An academic internship is a highly recommended option within this requirement. The program is designed for students pursuing the 150-hour educational background requirement for CPAs (required by most states) and is a carefully integrated and challenging program of study. Upon completion of 90 credit hours, undergraduate students in the Leeds School of Business may apply to the program and begin taking graduate courses and an internship during their senior year. This program provides an excellent foundation for careers in professional accounting.

The second path is an independent "stand alone" master's degree program. Students with undergraduate degrees other than accounting or business may also be admitted to the program, but may have to fulfill deficiency requirements in addition to the regular program requirements.

Students in both programs choose an area of study that focuses on financial accounting or taxation.

Note that stand alone MS students are required to complete all degree requirements within four years. Graduate students are not given preferential enrollment in undergraduate courses needed for the deficiency requirements.

**Minimum Requirements.** Accounting and taxation students must complete a minimum of 30 semester hours of graduate-level work. The newly accepted student should consult with the faculty advisor for the program to develop an individualized degree plan. No thesis is required.

Students in the Master of Science in Business Administration programs are governed by the rules of the [Graduate School](#).

### *Emphasis in Financial Accounting/Audit*

The expanding role and increased breadth of knowledge expected of accountants make graduate study in accounting highly desirable. Courses offered for the accounting area of emphasis prepare students for high-level, professional careers in the field. The graduate programs in accounting are designed to provide a broad understanding of accounting issues as well as to enhance an undergraduate degree in accounting. They also provide the opportunity to develop knowledge in a related minor area, such as economics, finance, information systems, management, marketing, taxation, or telecommunications. Note that these supporting fields may require some undergraduate level course work beyond core requirements.

### *Emphasis in Taxation*

The master of science in business administration that emphasizes taxation integrates accounting and law school courses. Some of the tax and law courses are strictly tax-related while others include related legal aspects of a particular subject area. The combination of courses is designed to give exposure to taxation from the accounting and law faculty perspectives.

The purpose of this program is to prepare students for professional careers as Certified Public Accountants (CPAs) specialized in taxation. Therefore, the student will:

- develop a refined ability to recognize tax problems and understand tax issues in a broad economic framework;
- research and present well-developed strategies or solutions to tax problems; and
- develop creative tax planning opportunities in a variety of contexts.

## Master of Business Administration (MBA)

The breadth of training that master of business administration graduates receive prepares them to

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become high-level managers or lead in a challenging and evolving business environment.

The MBA program is rigorous and comprehensive, and demands student commitment. The curriculum develops a set of broad-based, integrative skills. Core courses provide a solid foundation in both business management and analytical disciplines, a foundation that fosters continued career growth. In addition to core courses stressing key functional areas of business, students can choose electives specific to a chosen area of concentration.

The case study method and student field projects are used broadly throughout all courses, and common areas of study such as ethics, technology, communications, and international issues are integrated throughout much of the curriculum. Students learn about management theory and its practical applications in “real-world” situations. Lectures, seminars, team teaching, team projects, and guest lectures are various approaches taken by the faculty to generate new ideas and encourage student input.

### *Requirements for Admission to MBA Programs*

For all MBA programs, the admissions committee reviews the applicant’s complete application, with consideration given to the following:

- An applicant’s academic record.
- An applicant’s score on the Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE). The GMAT or GRE must be retaken if the test date was more than five years ago.
- International students must provide a test showing proof of English language proficiency.
- An applicant’s work experience.
- Written essays.
- Personal interviews.
- Letters of recommendation.

In addition, a nonrefundable application fee is required of all applicants. See the specific MBA application for more information. The online application is on the MBA program website at [leeds.colorado.edu](https://leeds.colorado.edu).

The mailing address for additional materials is Leeds School of Business, University of Colorado Boulder, 419 UCB, Boulder, CO 80309-0419, or call 303-492-8397.

### *Diversity*

The Leeds School of Business encourages qualified individuals to apply regardless of gender, race, religion, national origin, age, physical limitation, or sexual orientation.

### *MBA Policies and Requirements*

For current, detailed information regarding the MBA program, contact the Leeds School of Business.

**Advising.** During the first semester of study, to ascertain degree requirements, MBA students should check in with the student services manager for the MBA program.

**Minimum Hours Required.** Students entering the MBA program take a prescribed sequence of classes before beginning elective courses. A minimum of 55 credit hours is needed to graduate. Students entering the MBA program are expected to complete the degree in two years. Transferred course work is not accepted into the MBA program.

**Core Course Waiver.** Students may not waive core courses.

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**Courses Taken Outside the Leeds School of Business (limits).** MBA students may enroll in up to 12 hours of elective course work outside the Leeds School of Business with approval from the MBA Programs office, provided the remaining 18 hours of electives are taken within the MBA program. Course work taken outside the Leeds School of Business must be at the graduate program level. Students may not take courses outside the University of Colorado Boulder and count them toward the degree. Students should contact individual departments for course listings and registration requirements for nonbusiness courses.

**Grades and Quality of Work.** All courses applied toward the 55 credit hours must be taken for a grade. Courses in which a C- or below is received are not accepted for credit toward the 55 credit hours and may have to be retaken. In this case, both grades are factored into the GPA. To withdraw from an elective course and receive a grade of W, a student must be earning a passing grade in that course. Students normally are not permitted to withdraw from courses after the sixth week of the semester. Students in the MBA program may not withdraw from specified, lock-step course work. An I is an incomplete grade. Use of the I is at the discretion of the course instructor and/or the dean. Students must ask for an incomplete grade. An I is given only when students, for reasons beyond their control, have been unable to complete course requirements. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given.

**Calculating GPAs.** For the purpose of calculating GPAs for MBA student rankings and probation, only course work taken within the business school is counted.

**Withdrawal.** Students who choose to leave the program must formally withdraw. Failure to do so will result in assessment of full tuition and fees. Students who withdraw must reapply to the program if they wish to continue their studies. Applicants who reapply are evaluated with current applicants to the program. Students who are granted re-admission must complete the requirements of the current program. Course work taken more than five years earlier must be validated by examination in order to count toward the degree and may be considered elective credit.

**Probation.** A student whose cumulative GPA falls between a 2.500 and 3.000 is placed on academic probation. The student is allowed to remain on probation for one semester as long as reasonable progress is made to improve the GPA. The MBA director for academic programs determines whether reasonable progress is being made and whether the student can graduate with a 3.000 in the stated time limit.

**Suspension.** A student whose cumulative GPA falls below 2.500 at any time is automatically suspended from the program. A suspended student is eligible to petition for readmission after one year.

## Master's International Master of Business Administration

The Leeds School of Business, in conjunction with the Peace Corps, offers a program resulting in a master of business administration (MBA) combined with Peace Corps service. Students spend the first year at Leeds developing a base level of core business skills, followed by two years of volunteer service with the Peace Corps. MI-MBA students will then return to Leeds to complete the remaining MBA degree requirements.

## Doctor of Philosophy in Business Administration (PhD)

A PhD degree recognizes scholarly achievement and is the highest academic honor that CU-Boulder bestows. The PhD in business administration prepares scholars to be preeminent in their field of expertise. The program focuses on developing the necessary skills for the design and execution of original, innovative research and for the dissemination of knowledge through teaching and writing.

**Requirements for Admission.** To preserve the individualized character of the PhD program and its quality, the number of students is limited and the application process is very competitive. Students are admitted for study in a specific area for doctoral work. The Leeds School of Business currently offers

the following areas of study: accounting; finance; marketing; information management; operations management; and strategic, organizational, and entrepreneurial studies.

For more information on the application requirements and process, write Leeds School of Business, PhD Program, University of Colorado Boulder, 419 UCB, Boulder, CO 80309-0419; call **303-492-4984**; or visit [leeds.colorado.edu/phd](http://leeds.colorado.edu/phd).

**Background, Prerequisites, and Deficiencies.** Each student must have a background in mathematics at or beyond calculus. Based on experience, background, and at the discretion of the academic advisor and/or division chair and/or the doctoral program director, additional prerequisites may be required of the PhD student.

**Requirements for the Degree.** Most curriculum and program requirements are decided by the division. Consult the PhD program advisor of the appropriate division for information regarding course selection, graduate teaching program certification, research internships, and other division requirements. Students must complete all Graduate School, Leeds School of Business, and division requirements to be conferred the PhD in business administration.

The newly accepted PhD student should consult with the division chair and/or academic advisor to develop an individualized degree plan. Students are required to become proficient in their primary area of study. In addition, all students are required to complete course work in a field outside their division. These “second fields” are governed by the departments offering the course work but typically require 6 to 12 credit hours. The second field may also require an additional preliminary or comprehensive exam.

**Course Work.** All doctoral students are required to complete at least 30 hours of course work and 30 hours of dissertation credit at CU-Boulder. Additional course work may be required as determined by the academic advisor. To comply with this 30-hour requirement, a course must have been taught by a member of the university’s graduate faculty, must be at the 5000 level or above, and the student must achieve a grade of B- or better.

Courses must be approved by the student’s academic advisor before registration. Most students are required to complete 7000- and 8000-level doctoral seminars.

For full-time status, the Leeds School of Business requires successful completion of 5 credit hours of course work each semester. During and after comprehensive exams, full-time status requires completion of a minimum of 5 dissertation hours each semester.

**Transfer of Credit.** A maximum of 9 semester hours of courses taken at other schools (this includes other University of Colorado campuses) or taken as a special student at the university may be transferred into the doctoral program. Course work must be recent and of doctoral-level quality. A doctoral student must establish a satisfactory record of residence in the doctoral program before the course work is eligible for transfer. The transfer of credit must be approved by the division, the doctoral program director, and the Graduate School. There is no guarantee any course work will be accepted for transfer.

**Residency.** The Leeds School of Business adheres to the Graduate School rules regarding residency. All students in the doctoral program are expected to be full-time students on the Boulder campus (at least during residency and prior to completing the comprehensive examinations). Doctoral students are expected to be available to participate in colloquia and other informal academic discussions. Full-time employment outside the university is prohibited during the residency period. Any off-campus status must be approved by the division and the doctoral program director.

**Time Limit.** Doctoral students have six years from the commencement of course work to complete all requirements of the degree, but most students complete their program within five years.

**Comprehensive Examination.** Before admission to candidacy, a doctoral student must pass a comprehensive examination in the field of concentration. The examination may be oral, written, or both, and will test the student's mastery of a broad field of knowledge, not merely the formal course work completed. Each division will determine the required content, length, and standards of evaluation for the exam. Check with the division as to the specific requirements for the comprehensive exam.

**Admission to Candidacy.** Students are admitted to candidacy according to Graduate School procedures and requirements. Students shall complete all course work and any other requirements listed on their degree plans, earn at least four semesters of residence, and successfully pass the comprehensive exams before admission to candidacy is approved by the Graduate School. In addition, requirements related to academic quality of work, graduate-level course work, the minimum number of course hours, and graduate faculty membership must be met before admission to candidacy is approved.

**Dissertation.** A dissertation based upon original investigation showing mature scholarship and critical judgment, as well as competence with research tools and methods, must be written on a subject approved by the candidate's dissertation committee. To be acceptable, the dissertation must be a significant contribution to knowledge in the candidate's primary field.

**Final Examination (Defense).** Upon recommendation of the candidate's doctoral dissertation committee, a final oral examination shall be given. This examination covers both the dissertation and the primary field of study. The oral examination is open to the public.

**Filing the Dissertation.** The dissertation must comply in mechanical features with the University of Colorado Graduate School Thesis and Dissertation Specifications. The dissertation must be filed with the Graduate School by the posted deadline for the semester in which the degree is to be conferred.

## *Dual Degree Programs*

### **Juris Doctor/Master of Business Administration Degree**

The purpose of this dual-degree program is to allow students admitted to both the School of Law and the Leeds School of Business to obtain the juris doctor (JD) and the master of business administration (MBA) degrees in four (or fewer) years of full-time study. The program is designed to train students for careers in which business administration and law overlap.

**Admission.** To be eligible for the JD/MBA dual-degree program of the School of Law and the Leeds School of Business, a student must apply separately to and be admitted by each of the two schools under their respective admission procedures and standards.

Students may elect the dual-degree program at the time of initial application to both schools, or they may apply for the dual-degree program during their first year of study in the degree program of either school.

**Course of Study.** A student enrolled in the JD/MBA program may commence studies under the program in either the School of Law or the Leeds School of Business. Dual-degree students are strongly encouraged to begin their course of study at the School of Law. However, a student must take the first year of the JD curriculum as a unit exclusively in the School of Law. Likewise, a student must take the first year of the MBA curriculum as a unit exclusively in the Leeds School of Business. Students can then take additional courses necessary to meet the requirements of the degree programs of the two schools.

No student in the dual-degree program shall be allowed to take fewer than 9 semester hours or more than 16 semester hours during any term (excluding summer terms) without receiving the consent of the program advisor in each school in which courses are being taken.

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**Credit for Law Courses in the JD/MBA Program.** The Leeds School of Business grants credit toward the MBA degree for up to 12 semester hours of acceptable performance in law courses taken by a JD/MBA student at the School of Law. Core courses required in the law school program cannot be counted toward the 12 hours. A student must earn at least a 77 grade in a law school course to be accepted for Leeds School of Business credit. For credit to be granted, the law school courses must be approved before enrollment by an MBA advisor. Only courses taken after admission into the MBA program are credited toward the degree.

**Grading in the Dual-Degree Program.** Leeds School of Business credit for courses completed in the School of Law as part of the joint degree program is recorded on a *pass/fail* basis and is not included in the required MBA 3.00 cumulative average.

## Master of Business Administration/Master of Science— Telecommunications

The Leeds School of Business, in conjunction with the College of Engineering and Applied Science, offers a dual-degree program resulting in a master of business administration (MBA) and master of science in telecommunications (MS/TLEN). The dual-degree program combines broad-based business management study with an in-depth understanding of telecommunications technology. This program prepares students to be competent, effective managers in the telecommunications industry.

**Admission.** An individual must apply separately and be admitted to both programs under each school's or college's admission procedures and standards. Applicants are encouraged to apply to the programs concurrently.

**Course of Study.** Students in the MBA/MS in telecommunications spend the first year of the dual-degree program exclusively in either the business school or the telecommunications program. In the second year, courses are taken exclusively in the other department. In the third year students will take both MBA and telecommunications elective courses to complete both master's degrees.

**Credit for Courses.** Dual degree students are required to complete 43 hours of MBA course work and 36 hours of telecommunications course work. A minimum of 79 approved credits must be completed to earn both degrees.

## Master of Business Administration/Master of Fine Arts

The Leeds School of Business, in conjunction with the Department of Art and Art History, offers students the ability to earn an MBA and an MA in fine arts through a three-year dual-degree program. Students in the MBA/MA dual-degree program pursue careers in digital marketing, web design, e-commerce, gallery/museum administration, and private art consulting.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in fine arts spend the first year of their dual-degree program exclusively in either the business school or the fine arts program. In the second year, courses are taken exclusively in the other department. The third year offers students the opportunity to take both MBA and fine arts elective courses.

**Credit for Fine Arts Courses in the MBA/MA Fine Arts Program.** Dual-degree students in studio arts are required to complete 43 hours of MBA course work and 45 hours of fine arts course work. Dual-degree students in art history are required to complete 43 hours of MBA course work and 30 hours of fine arts course work.

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## Master of Business Administration/Master of Arts Theater and Dance

The Leeds School of Business, in conjunction with the Department of Theatre and Dance, offers students the ability to earn an MBA and an MA in theatre or dance through a three-year dual-degree program. Students in the MBA/MA dual-degree program pursue careers in a wide variety of fields and jobs in the world of the performing arts. Types of organizations include theatre companies, dance companies, opera companies, symphonies, arts councils, performing arts complexes, civic auditoriums, and arts presenters.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in theatre and dance spend the first year of their dual-degree program exclusively in either the business school or the theatre/dance program. In the second year, courses are taken exclusively in the other department. The third year offers students the opportunity to take both MBA and theatre/dance elective courses.

**Credit for Courses.** Dual degree students are required to complete 43 hours of MBA course work and 24 hours of theatre/dance course work. A minimum of 67 approved credits must be completed to earn both degrees.

## Master of Business Administration/Master of Environmental Studies

The MBA/MS in environmental studies enables students to earn an MBA and an MS in environmental studies over three or four years. Students in the MBA/MA program have career interests that combine corporate business and environmental protection, the management of renewal energy, water conservation, or environmental programs.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MS in environmental studies spend the first year of the dual-degree program exclusively in either the business school or the environmental studies department. In the second year, courses are taken exclusively in the other department. The remaining year(s) students may take both MBA and environmental studies electives.

## Master of Business Administration/Master of Computer Science

The MBA/MS in computer science enables students to earn an MBA and an MS in computer science over three or four years. Students in this MBA/MS program have career interests that combine corporate business and technology.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MS in computer science spend the first year of the dual-

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degree program exclusively in either the business school or the computer science department. In the second year, courses are taken exclusively in the other department. The remaining year(s) students may take both MBA and computer science electives.

## Master of Business Administration/Master of Anthropology

The MBA/MA in anthropology dual-degree program enables students to earn an MBA and an MA in anthropology simultaneously over three or four years depending on the student's subdiscipline in anthropology. Students in this MBA/MA program pursue careers in managing the business aspects of archaeological projects, working in the growing field of corporate cultural anthropology, and ethnography or museum management.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in anthropology spend the first year of their dual-degree program exclusively in either the business school or the department of anthropology. In the second year, courses are taken exclusively in the other department. The remaining year(s) offers students the opportunity to take both MBA and anthropology elective courses.

## Master of Business Administration/Master of Germanic and Slavic Languages

The MBA/MA in Germanic and Slavic languages dual-degree program enables students to earn an MBA and an MA in Germanic and Slavic languages simultaneously over three or four years. Students in this MBA/MA program pursue careers in international business.

**Admission.** Applicants must apply to both programs and must meet the application requirements for each program separately. Students may apply simultaneously to both programs or may apply to the second program after starting the first master's program, provided they do so during the first year of study.

**Course of Study.** Students in the MBA/MA in Germanic and Slavic languages spend the first year of their dual-degree program exclusively in either the business school or the department of Germanic and Slavic languages. In the second year, courses are taken exclusively in the other department. The remaining year(s) offers students the opportunity to take both MBA and Germanic and Slavic languages elective courses.

### *Certificate Program*

## Certificate in Socially Responsible Enterprise (SRE) Offered by the Center for Education on Social Responsibility (CESR)

CU-Boulder's Leeds School of Business is one of the few undergraduate business schools in the nation that emphasizes socially responsible conduct in business throughout its curriculum. CESR helps undergraduate students become outstanding business leaders of tomorrow by preparing them to meet the ethical challenges posed by an increasingly competitive, globally-connected business world.

CESR offers the Certificate in Socially Responsible Enterprise (SRE) to business students to further develop students' ability to meet these future challenges by crossing the boundaries of traditional functional areas of business and those that separate business from other academic disciplines.

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Students who complete the certificate will see and understand the social and environmental impacts of business and their ethical implications from a broader perspective. They will also graduate with practical knowledge and marketable experiences that will guide them in conducting business in an informed, responsible, and ethical manner. Requirements for entrance into the program are:

- Sign up by the end of the student's junior year
- Have maintained a 3.000 grade point average

### ***Required Courses and Semester Credit Hours***

#### **General Courses**

It is recommended that students complete six hours (2 courses) in the areas of philosophy, environmental studies, political science, economics, communication, civil engineering, or sociology from the following list. Check prerequisites before enrolling.

- ECON 3545 Environmental Economics
- ECON 4292 Migration, Immigrant Adaption and Development
- ECON 4626 Economics of Inequality and Discrimination
- ECON 4774 Economic Reform in Developing Countries
- ECON 4784 Economic Development
- ENVD 4361 Special Topics: Social Factors in Design
- ENVS 3001 Sustainable Solutions Consulting: a service learning course
- ENVS 3070 Energy and the Environment
- ENVS 4027 Inequality, Democracy, and the Environment
- ENVS 4100 Topics in Environmental Policy
- FNCE 4825 Micro-Finance
- GEOG 2002 Geographies of Global Change
- GEOG 3682 Geography of International Development
- GEOG 4742 Environments and Peoples
- PHIL 2200 Major Social Theories.
- PHIL 2140 Environmental Justice
- PSCI 4012 Global Development
- PSYC 2456 Social Psychology of Social Problems
- SOCY 2011 Contemporary Social Issues
- WRTG 3040 Writing on Business and Society (Section with CSR Emphasis)

#### **Business-related Courses**

Complete three of the following (all these courses qualify as business electives):

- CESR 4000/4001 Leadership Challenges: Exercises in Moral Courage (This is a year-long course)—3
- CESR 4005 Business Solutions for the Developing World: Learning through Service—3
- CESR 4010/FNCE 4832 Microfinance—3
- CESR 4130/MGMT 4130 Sustainable Operations—3
- CESR 4825/MGMT 4825 Privacy in the Age of Facebook—3

NOTE: These courses are in addition to BCOR 1010, 3010, the capstone course for the Area of Emphasis, as well as any other prerequisites. See course descriptions for prerequisite details.

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## Experiential Learning

Students must sign up for their experiential learning for the SRE Certificate. The SRE Certificate advisor has information on the opportunities listed below and on other ways to fulfill the practical experience requirement. Students may also want to contact Career Connections for information about internships that have been approved for the SRE Certificate. With advisor approval, students can undertake projects that are not included in the following examples of experiential learning:

- **Intern for a company (for-profit or non-profit).** Students may serve as an intern to assist an enterprise in developing or furthering a cultural, social, or environmental initiative. For example, a student might act as an “intrapreneur” (corporate change-maker), helping draft and implement a corporate code of ethics or a training program designed to imbed corporate standards of behavior in an organization’s culture. Other examples: Serve as an intern for 1) Beanstalk, an incubator for smaller philanthropic startups or 2) Social Venture Partners, which helps build the capacity of local non-profit organizations. (This is a great organization that promises to provide multiple opportunities for internships.)
- **Voluntourism.** Voluntourism is the concept of traveling abroad, using one’s own funds, for the purpose of volunteering for a development-related project while also engaging in tourist activities. In order to gain credit for such a trip, students must show that the project or major activity for the trip is related to social responsibility (such as environmental sustainability or social development).
- **Service Learning through Study Abroad Office.** The Office of International Education offers study abroad programs focused on service learning. These programs generally span one academic quarter or semester in the host country, during which the student will participate in, and gain credit for, study in a school of higher education. Outside of the classroom, students will work with local institutions and non-governmental organizations on service projects that promote community development. Service learning programs that are approved through the Office of International Education are automatically approved for “practical experience” credit for this certificate.

Sign up for the experiential learning requirement with the SRE Certificate advisor (associate director of CESR). Complete experiential learning through one of the following:

- CESR 4005 Business Solutions for the Developing World
- ENVS 3001 Sustainable Solutions Consulting
- MGMT 4140 Project Management (with advisor approval)
- Advisor-approved independent study in a related topic or an advisor-approved internship of an appropriate nature

Note: Completion of CESR 4005 Business Solutions for the Developing World will count toward the experiential learning requirement or toward the 9-course credit requirement, but not toward both. For course descriptions and program details, visit [leeds.colorado.edu/CESR](https://leeds.colorado.edu/CESR).

## Personal Reflection and Statement of Purpose

Upon completion, students will reflect on their learning and draft a short reflection paper and a statement of purpose, setting out the values that will guide their conduct and their careers. They will then be interviewed by the director or associate director of CESR. This final requirement is to remind students why they elected to pursue the certificate and how it will continue to have an impact on their lives after college. Students are encouraged to truly “live” the statement of purpose.

## OPIM Certificate

Advances in business knowledge and technology have radically changed business systems and processes—for example, how organizations buy and sell goods and services, integrate their supply chain and logistic systems, and reach or retain customers. As a result, critical to today’s businesses

is the ability to get the right information to the right people at the right time, so that both strategic and operational decisions are made properly and quickly. To help students develop this ability, the Leeds School of Business offers the OPIM Certificate.

Students who are not in the OM or IM track in the Management and Entrepreneurship Division can take any three courses listed in the course description section below. *Students majoring in the OM track can take any three IM track courses, while students majoring in the IM track can take any three OM track courses.* To complete the OPIM certificate requirements, all students must also complete a faculty-supervised OPIM research project (MGMT 4900 Independent Study) or faculty-supervised OPIM internship (MGMT 4910 Academic Internship in Management).

In addition, students are required to maintain an overall GPA of 3.000 or higher for the selected courses and receive a letter grade of *B-* or higher in each of the three courses. Successful completion of the certificate program will appear on the student's transcript.

The following illustrates some of the courses that students not majoring in IM or OM might want to take:

### **Accounting Students**

- MGMT 4140 Project Management
- MGMT 4210 Systems Thinking
- ACCT 4220 Business Technologies

### **Finance Students**

- MGMT 3200 Business Intelligence
- MGMT 3210 Business Application Programming
- MGMT 4210 Systems Thinking

### **Management (HR Track) Students**

- MGMT 3200 Business Intelligence
- MGMT 4120 Managing Business Processes
- MGMT 4210 Systems Thinking

### **Marketing Students**

- MGMT 3200 Business Intelligence
- MGMT 4110 Supply Chain Management
- MGMT 4210 Systems Thinking

## **Quantitative Finance Certificate**

The Quantitative Finance Track is one of two tracks that make up the Actuarial Studies and Quantitative Finance Certificate Program and is co-sponsored by the Leeds School of Business and the College of Arts and Sciences. The program is interdisciplinary and rigorous. The goal of the program is to augment the financial education provided by the Leeds School with a more extensive mathematical base.

The analytical demands of business are increasing rapidly and constantly. This program is designed to prepare students for the increased requirements of the most attractive financial analyst positions. In addition, the program provides a solid base for success in graduate studies.

Program requirements are extensive and challenging. Students must meet two separate GPA requirements. First, the overall GPA for all courses applied to certificate requirements must be at least 3.000. In addition, students must meet a requirement specifically for mathematics and statistics courses applied to certificate requirements. This requirement can be met one of two ways, either by achieving a GPA of 2.870 or greater in calculus courses or a GPA of 3.000 or greater in the six mathematics and statistics courses required for the certificate. Most students will begin study during the freshman year and continue throughout their undergraduate career. A brief summary of course requirements is presented below. For a complete list of requirements and further information regarding the quantitative finance track and the related actuarial studies track, see the Actuarial Studies Program website. The certificate program is also described in the College of Arts and Sciences section. Interested students should contact Jerry Madigan, [Madigan@colorado.edu](mailto:Madigan@colorado.edu), Leeds School of Business.

#### ***Area of Study and Semester Credit Hours\****

- Finance and Accounting—25
- Mathematics and Statistics—23
- Economics—14
- Computer Programming—3

*\* Number of credit hours may vary according to the specific courses completed.*

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## Faculty: Business

Name	Title	Education
APPENZELLER, William	assistant professor of recreation emeritus	
BALKIN, David B	professor of strategy and organization management	BA, University of California, Los Angeles; MA, PhD, University of Minnesota
BALLANTINE, John Jay	senior instructor of business law	BS, Purdue University; MBA, Indiana University; JD, University of Colorado
BANGS, F. Kendrick	professor of business and administration emeritus	
BEAGLE, Chauncey M.	associate professor of accounting emeritus	
BERNTHAL, Wilmar F.	professor of management and organization emeritus	
BHAGAT, Sanjai	professor of finance	BTech, Indian Institute of Technology; MBA, University of Rochester; PhD, University of Washington
BORUM, Owen	instructor, CESR	BS, University of Florida; JD, University of Colorado
BOSS, R. Wayne	professor of strategy and organization management	BS, MPA, Brigham Young University; PhD, University of Georgia
BUCHMAN, Thomas A.	associate professor of accounting	BS, MS, PhD, University of Illinois
BURNS, Cathleen S.	senior instructor of accounting	Miami University; MBA, Xavier University; PhD, New Mexico State University
CAMPBELL, Meg	associate professor of marketing	AB, PhD, Stanford University
CATEORA, Phillip R.	professor of marketing emeritus	
CHEN, Hui	assistant professor of accounting	BA, MA, Northeast Normal University, China; MBA, Stuttgart Institute of Management and Technology; PhD, University of Tennessee
CHEN, Zeyun (Jeff)	assistant professor of accounting	BBA, Fudan University; MBA, University of Louisiana; PhD, University of Houston
CHRISTOFF, Lorna	instructor, CESR	BS, University of Colorado; JD, University of Denver

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CORRELL, Mark R.	senior instructor of business economics emeritus	
CROSS, Beth	instructor, CESR	BS, Springfield College; MEd, Colorado State University
DARNELL, Jerome C.	professor of finance emeritus	
de LANGHE, Bart	assistant professor of marketing	BA, MA, Catholic University Leuven, Belgium; PhD, Erasmus University, the Netherlands
DEMAREE, John D.	associate professor of management science and information systems emeritus	
DER FOO, Maw	assistant professor of management	BA, National University of Singapore; PhD, Massachusetts Institute of Technology
DONCHEZ, Robert	instructor of finance	BS, Lehigh University; MBA, Fordham University
DUNCAN, Calvin P.	associate dean for undergraduate program; associate professor of marketing	BS, MBA, University of Colorado; PhD, Indiana University
ENGEL, Steven	senior instructor of marketing	BA, University of Colorado; MBA, University of Oregon
FERNBACH, Phillip M.	assistant professor of marketing	BA, Williams College; PhD, Brown University
FREDERICK, David M.	associate professor of accounting	BS, University of Colorado; PhD, University of Michigan
FUND, Bret	assistant professor of management	BA, MA, Brigham Young University; PhD, Penn State University
FUSILIER, H. Lee	professor of business law emeritus	
GARNAND, John J.	senior instructor of business economics emeritus	
GLOVER, Fred W.	professor of management science and operations research emeritus	
GOELDNER, Charles R.	professor of marketing emeritus	
GORDON, Kenneth R.	senior instructor of operations management emeritus	
GROSS, David	instructor of finance	BA, New York University; MBA, Fordham University; PhD, University of Colorado
GUNNY, Katherine A.	assistant professor of accounting	BS, MS, University of California, Davis; PhD, University of California, Berkeley
HALL, Renée	senior instructor of accounting; director of MS program in	BA, Whitman College; MA, University of Chicago; MS, PhD, Texas A&M University

	accounting	
HAYWARD, Mathew	assistant professor of management	BC, University of Melbourne; PhD, Columbia University
HE, Chuan	assistant professor of marketing	BA, Memorial University of Newfoundland; MA, University of Toronto; PhD, Washington University
IKENBERRY, David L.	dean, Leeds School of Business; professor of finance	BS, Penn State University; MM, Northwestern University; PhD, University of Illinois
IYENGAR, Kishen	instructor of operations and information management	BS, MBA, Osmania University; MS, University of Texas–Dallas; PhD, University of Texas–Arlington
JACKSON, Betty R.	professor of accounting emerita	
JAGOLINZER, Alan	associate professor of accounting	BS, Pennsylvania State University; MBA, Syracuse University; PhD, Pennsylvania State University
JEDAMUS, Paul E.	professor of management science and information systems emeritus	
JENNINGS, Tracy	instructor of management	BA, Williams College; MBA, PhD, University of Denver
JENSEN, Howard G.	associate professor of accounting emeritus	
JOHNSTON, Randy	senior instructor of accounting	BS, MS, Clarkson University; MEd, St. Lawrence University
JORGENSEN, Bjorn	Tisone Chair of Accounting; associate professor of accounting	MS, University of Aarhus; PhD, Northwestern University
KAHL, Matthais	assistant professor of finance	M Phil, University of Cambridge; MA, PhD, University of Pennsylvania
KOBERG, Christine S	associate professor of strategy and organization management emerita	
KOLB, Burton A.	professor of finance emeritus	
KOZAR, Kenneth A.	professor of information systems	BS, MS, PhD, University of Minnesota
LAGUNA, Manuel	professor of operations management	BS, Monterrey Technologie at Queretaro, Mexico; MS, PhD, University of Texas at Austin
LARSEN, Kai	associate professor of information systems	PhD, Nelson A. Rockefeller College, University of Albany, State University of New York
LAZAR, Joseph	professor of business law emeritus	
LEACH, J. Chris	professor of finance; senior associate dean for faculty	BS, Oral Roberts University; MBA University of New Mexico; PhD, Cornell University
LEE, Jintae	associate professor of	BA, University of Chicago; MA, Harvard University; MPhi, University of Cambridge,

	information management	England; PhD, Massachusetts Institute of Technology
LEWIS, Barry L.	professor of accounting emeritus	
LICHTENSTEIN, Donald R.	professor of marketing	BS, University of Alabama; PhD, University of South Carolina
LYMBEROPOULOS, P. John	professor of finance emeritus	
LYNCH, JR, John G.	Ted G. Anderson Professor of Free Enterprise; professor of marketing	BA, MA, PhD, University of Illinois
MABON, Janet	instructor of accounting	BS, University of Arizona; MS, New Mexico State University
MACFEE Jr., Raymond D.	senior instructor in accounting emeritus	
MARLATT, James	senior instructor of systems	BS, University of Tennessee; MS, Georgia State University
MARTIN, Stanley	senior instructor of finance emeritus	
MATUSIK, Sharon	associate professor of strategic management	BA, Colby College; PhD, University of Washington
McGRAW, A. Peter	assistant professor of marketing	BA, MEd, Rutgers University; MA, PhD, Ohio State University
McMAHON, Kevin	instructor, CESR	BA, University of Michigan; MBA, Indiana University
MELICHER, Ronald W.	President's Teaching Scholar; William H. Baughn Distinguished Scholar; professor of finance	BS, MBA, DBA, Washington University, St. Louis
MEYER, G. Dale	professor of strategy and organization management emeritus	
MILBURN, Catherine K	instructor, CESR	BA, MS, University of Colorado
MILNER, Francy	associate director, Campus and Community Partnerships, instructor, CESR	BA, University of Colorado; MA, University of Texas; JD, Lewis and Clark
MONTEALEGRE, Ramiro	director, international management program; associate professor of information systems	BSI, Universidad Francisco Marroquin; MS, Carleton University; DBA, Harvard University
MOREAU, Page	professor of marketing	BA, Davidson College; MBA, Tulane University; PhD, Columbia University
MORLEY, Susan	senior instructor of accounting	BA, University of Kentucky; MS, JD, University of Colorado

MORRISON, Edward J.	professor of strategy and organization management emeritus	
MOYEN, Natalíe	associate professor of finance	BSc, Université de Moncton; MA, Queen's University of Kingston; PhD, University of British Columbia
MOYES, Frank	distinguished executive in residence; senior instructor of entrepreneurship	BA, Pennsylvania State University; MBA, University of Pennsylvania
NELSON, James E.	associate professor of marketing emeritus	
NELSON, Thomas	senior instructor of finance	BA, MBA, PhD, University of Colorado
NILSSON, Matthais	assistant professor of finance	MS, PhD, Stockholm School of Economics
OBREJA, Iulian	assistant professor of finance	BA, MS, University of Bucharest; MA, University of Rochester; MSIA, PhD, Carnegie Mellon University
PALMER, Michael	professor of finance	BS, MS, San Diego State University; PhD, University of Washington
PARKIN, Don	professor of marketing emeritus	
PAYNE, David	instructor, CESR	BA, Trinity College; Ed.M. Harvard University, MBA, University of Colorado
PENG, Liang	assistant professor of real estate	BS, MS, Renmin University; MPhil, MA, PhD, Yale University
PINHEIRO, Roberto	assistant professor of finance	BA, University of Sao Paulo; MA, Pontifical Catholic University of Rio de Janeiro; PhD, University of Pennsylvania
RICHEY, Clyde W.	professor of real estate emeritus	
RINGGENBERG, Ralph G.	associate professor of finance emeritus	
ROCK, Steven K.	associate professor of accounting	BS, MBA, Shippensburg University; PhD, Pennsylvania State University
ROSSE, Joseph G.	professor of strategy and organization management	BS, Loyola University of Los Angeles; PhD, University of Illinois
RUSH, David F.	professor of finance emeritus	
SCHATTKE, Rudolph	professor of accounting emeritus	
SEALS, Greg	director, Richard M. Burrige Center for Securities Analysis and Valuation	BS, MBA California State University
SELTO, Frank	professor of accounting	BSME, Gonzaga University; MSME, University of Utah; MBA, PhD, University of Washington
SEWARD, Lori	senior instructor of management	BA, MSci, PhD, Virginia Tech

SHRIVER, Stacy	instructor of management	BS, Arizona State University
SINHA, Atanu R.	associate professor of marketing	BSta, MStat, Indian Statistical Institute; PhD, New York University
SMITH, Al W.	associate dean, undergraduate affairs	BS, MA, East Carolina University; PhD, University of North Carolina at Greensboro
SOCKELL, Donna	Director, Center for Education on Social Responsibility; senior instructor	BA, Union College; MILR, PhD, Cornell University
SODERSTROM, Naomi	associate professor of accounting	BA, Reed College; MS, PhD, Northwestern University

## School of Education



*Lorrie A. Shepard, dean*

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School website: [www.colorado.edu/education](http://www.colorado.edu/education)

THE SCHOOL OF EDUCATION provides teacher licensure programs that ensure rigorous content preparation and extensive field-based practicum experiences. Its graduate programs emphasize research that focuses on educational policy and practice.

### Accreditation

The licensure programs, both undergraduate and graduate, are fully accredited by the North Central Association of Colleges and Schools, the National Council for Accreditation of Teacher Education, the Colorado Department of Education, and the Colorado Commission on Higher Education.

### Mission

The mission of the School of Education includes several interconnected elements. Faculty conduct research to improve educational policies and classroom practice, prepare researchers at the doctoral level, educate teachers at the undergraduate and master's levels in high quality programs, and provide exceptional outreach services to our partner school districts and Colorado. The School of Education has adopted the following priorities:

- to promote the distinctive identity of the school by building on the already visible contributions of individual faculty members and by emphasizing our shared commitment to evidence-based policy and practice and to democracy, diversity, and social justice;
- to produce research that makes a difference by bringing rigorous research methods and analytic tools to bear in addressing the most pressing questions affecting educational policy and practice;
- to prepare teachers who display a passionate commitment to ensuring every student learns, who embrace and demonstrate ethical behaviors and democratic dispositions, and who excel in their knowledge of subject matter, how people learn, the socio-cultural world of learners,

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standards-based curriculum design, learner-centered pedagogies and assessments, and the democratic context of schools;

- to prepare graduate candidates who are well-trained in research methodology, expert in their area of specialization, and broadly knowledgeable about psychological, sociological, philosophical, and historical research affecting education;
- to encourage candidates of color into teaching and research professions through recruitment and support; and
- to enhance the effectiveness of our partnership and outreach activities by fostering closer connections among teaching, research, and outreach commitments.

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# Academic Excellence

## Scholarships and Awards

A limited number of scholarships and awards are available for second- and third-year candidates within the School of Education to support study at the master's and undergraduate levels. Each year a combination of teaching assistantships (TAs), research assistantships (RAs), other forms of graduate assistantships (GAs), and fellowships are available in the School of Education to support full-time doctoral study. The strongest doctoral applicants are nominated by the school for fellowships awarded by the Graduate School. Candidates apply in the spring semester for scholarships and awards for the following school year. Application procedures and deadlines are publicized. All materials are turned into the Office of Student Services (Education 151).

Students are eligible to apply for university-wide financial assistance through the Office of Financial Aid. State and federal programs are available for loan cancellation or forgiveness for Colorado teachers of certain subjects or who teach in designated schools serving students from low-income families. Information about these opportunities may be found at [www.colorado.edu/education](http://www.colorado.edu/education).

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# Academic Standards

Upon enrollment in the Teacher Education Program, a student who fails to maintain a 2.75 GPA (3.00 for graduate students) will be placed on probation or may be suspended. Readmission is subject to program requirements in effect at the time of reapplication. The same conditions apply to students in other colleges and schools who have been admitted to the teacher education program.

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# Programs of Special Interest

## CU Teach

The CU Teach program is a four-year degree/licensure program that allows students to complete a rigorous education in a mathematics or science major and fulfill the requirements for a Colorado initial teaching license in Secondary Mathematics or Secondary Science. It is a unique collaborative program between the College of Arts and Sciences and the School of Education. CU Teach prepares outstanding secondary mathematics and science teachers ready to teach right after earning a bachelor's degree. CU Teach students get immediate hands-on K-12 teaching experience by enrolling in the first course of the CU Teach program: Step 1 (EDUC 2020). Students can enroll in the Step 1 course as early as their freshmen year at CU. In addition to taking courses from research faculty in the School of Education and the College of Arts and Sciences, CU Teach students get support from experienced Mentor Teachers (current K-12 teachers) and Master Teachers (CU faculty who are veteran 6th-12th grade teachers). WE-Teach is the program's student organization.

## Educational Diversity Scholars Program

The Education Diversity Scholars (EDS) program works with the University of Colorado's LEAD Alliance Neighborhood to provide students of color and first-generation college students with social and academic support, as well as advising on financial support and career preparation. The goal of the program is to offer students a welcoming environment and a strong support network in order to help them excel in their chosen fields. By participating in the Diversity Scholars neighborhood, students have access to the personal contact and support of a small community while still being able to take advantage of the benefits of a large university.

## Graduate Student Organizations

The Student Association of Graduate Education (SAGE) sponsors special events for graduate students. Its officers are selected in the fall.

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# Programs of Study

## Programs of Special Interest

Enhance your academic experience with special courses, research opportunities, faculty mentoring, scholarships, and more.

## Teacher Licensure Programs

The School of Education offers course work leading to initial Colorado licensure to undergraduate, postbaccalaureate, and master's degree students.

Course code for this program is EDUC.

## Education as a Minor Field

MA programs outside of the School of Education can include education as a minor if both their major department and the associate dean for graduate studies in the School of Education approve.

Course code for this program is EDUC.

## Graduate Degree Programs

The School of Education offers the following degrees for graduate study:

- Curriculum and Instruction (MA, PhD)
- Educational-Psychological Studies (MA, PhD)
- Research and Evaluation Methodology (PhD)
- Social and Multicultural Bilingual Foundations (MA, PhD)

Course code for this program is GRTE.

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## Minor in Education

The School of Education offers a 19-credit minor open to all undergraduates. The minor comprises 7 credits of core course work, followed by 12 credits in one of two tracks: **Teaching and Learning in Multiple Settings** or **Foundations and Policy**. Courses are taught by faculty known for their teaching excellence. Courses and field experiences in the education minor introduce undergraduates to the complex interactions among the various political, cultural, social, and historical dynamics that shape educational policy and practice. Through the education minor students develop a deep understanding of learning and instructional practice in both formal and informal settings. The education minor is designed to serve students with a passion for social justice who interested in serving in the Peace Corps, leading after-school or community-based youth programs, or working in education and youth policy. Individuals who plan to teach in a K-12 school setting should explore Teacher Licensure Programs.

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## Faculty: Education

Name	Title	Education
ANDREW, Julie	instructor	BA, Carlton College; MS, University of New South Wales, NSW, Australia
ARAGON, Lorenzo	assistant research professor	BA, University of Northern Colorado; MA, University of Colorado Boulder; PhD, University of Colorado Denver
BACA, Leonard M.	professor	STB, Catholic University of America, MA, University of New Mexico; EdD, University of Northern Colorado
BRIGGS, Derek	associate professor	BA, Carleton College; PhD, University of California, Berkeley
BUNNING, Kim	instructor	BA, University of Wyoming; PhD, University of Colorado
CAMILLI, Gregory	professor	BA, MA, PhD, University of Colorado
DiPARDO, Anne	professor	BA, California State University; MA, University of California, Los Angeles; EdD, University of California, Berkeley
DiSTEFANO, Philip	chancellor; professor	MA, West Virginia University; BS, PhD, Ohio State University
DONATO, Ruben	professor	BA, University of California, Santa Cruz; MA, PhD, Stanford University
DUTRO, Elizabeth	associate professor	BS, La Sierra University; MA, San Francisco State University; PhD, University of Michigan
EISENHART, Margaret A.	distinguished professor	BA, Emory University; MA, PhD, University of North Carolina
ESCAMILLA, Kathy C.	professor	BA, University of Colorado Boulder; MS, University of Kansas; PhD, University of California, Los Angeles
FURTAK, Erin	assistant professor	BA, University of Colorado Boulder; MA, University of Denver; PhD, Stanford University
GUTIERREZ, Kris Diane	professor	MA, Arizona State University; PhD, University of Colorado
HAND, Victoria	assistant professor	BA, University of California, San Diego; MA, PhD, Stanford University

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HOPEWELL, Susan	assistant professor	BA, University of Colorado; MA, University of Virginia; PhD, University of Colorado
HOWE, Kenneth R.	professor	BA, MA, PhD, Michigan State University
JUROW, A. Susan	associate professor	BA, New York University; MA, PhD, University of California, Berkeley
KETTMANN KLINGNER, Janette	professor	BA, San Jose State University; MS, PhD, University of Miami
KIRSHNER, Benjamin R.	assistant professor	BA, Brown University; MA, Harvard University; PhD, Stanford University
LANGER, Phillip	professor emeritus	
LeCOMPTE, Margaret D.	professor emeritus	
LINN, Robert L.	distinguished professor emeritus	
LISTON, Daniel P.	professor	BA, Earlham College; PhD, University of Wisconsin
MATHIS, William J.	senior instructor	BA, MA, University of Tennessee; PhD, University of Texas at Austin
MCCLURE BEGLEY, Donna	senior instructor	BS, University of Southern Oregon and University of Alaska; MEd, College of William and Mary; PhD; Southern Illinois University
McGINLEY, William	associate professor	AB, Western Kentucky University; MEd, Idaho State University; PhD, University of Illinois
MIZELL, Linda	assistant professor	BA, MA, Mount Holyoke College; EdD, Harvard Graduate School of Education
MOSES, Michele	associate dean for graduate studies; associate professor	BA, University of Virginia; MEd, University of Vermont; MA, PhD, University of Colorado Boulder
NEWSOME HUTT, Collinus	senior instructor	BA, University of Illinois, Champaign-Urbana; MA, University of Colorado
OTERO, Valerie K.	associate professor	BS, University of New Mexico; MS, PhD, University of California, San Diego
O'CONNOR, Kevin	assistant professor	BA, St. Joseph's University; PhD, Clark University
PENUEL, William	professor	BA, Clark University; EdM, Harvard University; PhD, Clark University
SHEPARD, Lorrie A.	dean; distinguished professor	BA, Pomona College; MA, PhD, University of Colorado

SOLANO-FLORES, Guillermo	associate professor	BA, MA, National University of Mexico; PhD, University of California, Santa Barbara
SOLTERO-GONZALEZ, Lucinda	assistant professor	BA, Universidad Panamerica; MA, PhD, University of Arizona
WEBB, David	assistant professor	BS, University of California, Los Angeles; MA, University of California, Santa Barbara; PhD, University Wisconsin–Madison
WELNER, Kevin G.	professor	BA, University of California, Santa Barbara; JD, PhD, University of California, Los Angeles
WHITCOMB, Jennifer	associate dean of teacher education and administrative services; senior instructor	BA, PhD, Stanford University
WILLMAN, Kent	instructor	BS, St. Joseph's College; MEd, Colorado State University
WOLF, Shelby Anne	professor	BA, University of Richmond; BA, MS, University of Utah; PhD, Stanford University

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# College of Engineering & Applied Science



**Robert H. Davis, dean**

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college website: [engineering.colorado.edu](http://engineering.colorado.edu)

THE COLLEGE OF ENGINEERING AND APPLIED SCIENCE offers the bachelor of science degree in aerospace engineering sciences, architectural engineering, chemical engineering, chemical and biological engineering, civil engineering, electrical engineering, electrical and computer engineering, environmental engineering, mechanical engineering, computer science, applied mathematics, and engineering physics. The first nine of the programs are accredited by the Engineering Accreditation Commission of ABET, [www.abet.org](http://www.abet.org). The tenth is accredited by the Computing Accreditation Commission of ABET, [www.abet.org](http://www.abet.org). The two remaining programs are applied sciences; accreditation by ABET is not usually sought in these areas. The CU-Boulder campus is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools. Degrees in applied mathematics and engineering physics are offered in cooperation with the Departments of Applied Mathematics and Physics in the College of Arts and Sciences.

## Mission

The mission of the College of Engineering and Applied Science is to generate new knowledge in engineering and related fields and to equip students from diverse backgrounds as future leaders and responsible citizens in these fields for the betterment of individuals and society. Its vision is to be a world leader in engineering research and education, with an emphasis on *integrated and discovery learning* and on *engineering for global society*.

The college embraces the following core values:

- Innovative research, creating knowledge to improve the global society
- Integrated learning, where students learn through team-based projects and other hands-on experiences integrated with traditional theory-based curricula
- Discovery, professional, and service learning, where students learn by undertaking research, internships, international experiences, and campus or community projects
- Inclusive excellence of diverse faculty, staff, and students, with high ethical standards of

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integrity, responsibility, honesty, and respect for others from differing backgrounds

The college seeks the following outcomes in their graduates:

- Technical excellence and knowledge in modern engineering, mathematics, and science
- Ability to communicate effectively with diverse peoples and other cultures
- Ability to think critically, analyze data, and formulate and solve complex problems
- Ability to contribute effectively as individuals and in multidisciplinary teams
- Knowledge of contemporary issues and preparation for societal leadership and world citizenship
- Desire and skills for lifelong learning and personal and professional development
- Passion for serving others and commitment to sustainability

Additional information about the academic programs, services, and faculty of the College of Engineering and Applied Science is found at [engineering.colorado.edu](http://engineering.colorado.edu).

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# Engineering Degrees Overview

In most departments of this college, several academic options are offered within each degree program. Some programs of study are oriented toward graduate work, and others toward engineering practice.

Engineers work in a wide variety of disciplines, with the college's 12 undergraduate and eight graduate degree programs reflecting this diversity. The following descriptions summarize these areas.

**Aerospace engineering sciences** prepare students for successful and rewarding careers in aerospace and other high-tech industries, national research laboratories, government services, and academia. This program provides students unique opportunities to develop in-depth technical knowledge, effective communication skills, and a systems engineering perspective that enables them to develop creative solutions to complex problems. The curriculum encompasses core aerospace subjects including fluids, thermodynamics, dynamics, orbital mechanics, structures, and systems; design of air and space vehicles; and exciting multidisciplinary applications including bioastronautics, unmanned systems, remote sensing, and GPS.

**Applied mathematicians** have the expertise and mathematical sophistication necessary to make contributions in a wide variety of fields, including scientific computation, actuarial science, financial modeling, and most areas of science and engineering that have a mathematical basis.

A professional applied mathematician may work with engineers, scientists, programmers, and other specialists. The curriculum at CU-Boulder is designed to have the breadth for such an interdisciplinary career.

Course offerings at the undergraduate level focus on providing students with mathematical tools, problem-solving strategies, and expertise useful in science and engineering. To fulfill requirements, a concentrated area of engineering courses (or approved natural science courses) must be completed. The college has formulated several recommended options within the discipline.

**Architectural engineering** prepares students for leadership careers in the building design, management, and construction industry and for research at the graduate level on building-related topics. This course of study fulfills the academic requirements for registration as a professional engineer.

The architectural engineering curriculum is recommended for those wishing to specialize within the building industry in engineering design (heating, cooling, illumination, electrical, solar, and structures) or construction and contracting (facilities management). The architectural engineering student may select any one of several areas of specialization offered: HVAC (heating, ventilating, and air conditioning), illumination, electrical, building energy, structures, or construction.

**Chemical engineering** prepares students for careers in a range of industries including energy, consumer products, petrochemicals, semiconductors, medicine, environment, and materials. Modern industry depends on chemical engineers to tailor manufacturing technology to the requirements of its products, and chemical engineers play a central role in development of new polymeric materials,

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alternative energy sources, and safe, efficient processes for chemical synthesis.

The undergraduate program in chemical engineering includes curricular options in environmental, materials, microelectronics, computing, bioengineering, and a premedicine curriculum track. There are active and exciting research and educational programs in biotechnology, pollution control, novel membrane separations, and advanced polymeric and ceramic materials.

**Chemical and biological engineering** prepares students for careers in biotechnology, pharmaceuticals, medicine, and materials. This degree program adapts a core chemical engineering curriculum to allow for greater depth in biological aspects of chemical engineering. Exploring the structure of protein molecules, the functioning of cells, and the growth and regeneration of tissues are among the new frontiers that chemical and biological engineering students will address.

In addition to the standard curriculum, a premedicine curriculum is also offered. The chemical and biological engineering department has active research and educational programs in the exciting field of biotechnology, which involves the use of individual cells and their components for producing pharmaceuticals and other important products. The department is also active in biomedical engineering, which involves medical devices, tissues, and biomaterials. A formal cooperative education (co-op) program is offered by the department and its industry partners.

**Civil engineering** offers a wide range of challenging careers for students interested in the planning, design, and supervision of the construction of facilities essential to modern life in both the public and private sectors. Varying widely in nature, size, and scope, such facilities include buildings, bridges, tunnels, highways, transit systems, dams, airports, irrigation projects, water treatment and distribution facilities, collection and treatment of water waste, structures for space exploration, and offshore engineering designs.

In the coming decades, almost two billion more people will populate Earth in both developed and developing countries. This growth will create unprecedented demands and opportunities for new methods and innovations in energy production, food supply, land development, water treatment, transportation systems, materials processing, waste disposal, healthcare delivery, environmental preservation, and structural designs. Civil engineers play both direct and indirect roles in meeting many of these needs, with the goal of providing and improving the quality and infrastructure of life in general.

**Computer science** offers study in the fields of computer architecture, operating systems, networking, mobile computing, computer security, computational biology, robotics, algorithm design, artificial intelligence, software and web engineering, programming languages, database design and data mining, human-computer interaction, computer-supported cooperative work, machine learning, lifelong learning and design, numerical and parallel computation, speech and language processing, scientific computing, and theoretical computer science.

Graduates typically take positions as software engineers for computer manufacturers or software firms, advanced applications programmers in scientific research firms, or technically oriented usability experts or systems designers in commercial or government settings.

**Electrical engineering** offers study of the basic science and technology of information and energy. Its areas of knowledge include information theory and communications systems, computers and digital systems, signal processing and instrumentation, feedback systems and automatic control, electrical and electronic devices and systems, energy conversion and power systems, renewable energy, and electromagnetics and microwave devices. Students learn how this basic knowledge is applied to such modern technologies as computers, telecommunications, biomedical systems, and remote sensing. The curriculum accommodates a variety of student interests including design, production, testing, consulting services, research, teaching, and management. Graduates pursue careers in a large variety of fields in the computer industry, telecommunications, instruments, the biomedical industry, aerospace, and academia. Some go on to careers in other professions such as law

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or medicine.

**Electrical and computer engineering** offers the same curriculum as electrical engineering except that required courses in computer hardware and software replace some upper-division electives. Like electrical engineering, it accommodates broad student interests from design to service and from research to management. Its graduates take positions in fields as diverse as those listed above for electrical engineering.

**Engineering management** equips individuals with technical management expertise, preparing them to be leaders in high technology organizations. The program provides a comprehensive graduate master's degree program and numerous professional graduate certificates for working engineers and technical professionals that can be taken on campus or through distance education. Areas of technical management concentration are in managing innovation, project management, performance excellence, engineering entrepreneurship, quality systems, research and development, and Six Sigma certifications.

**Engineering physics** provides students with a broad exposure to the basic physical theories and mathematical techniques underlying engineering. The program may be specialized to meet the student's interests through engineering electives. Most students become involved in laboratory research, and graduates find opportunities in optics, electronics, magnetics, and other hardware-based job markets. The program also provides excellent preparation for graduate study in physics, applied physics, and other areas of the natural sciences and engineering.

**Environmental engineering** plays a vital role in maintaining the quality of both human environmental systems and the natural environment. Environmental engineering encompasses the scientific assessment and development of engineering solutions to environmental problems impacting the biosphere and land, water, and air quality. Environmental issues affect almost all commercial and industrial sectors, and are a central concern for the public, for all levels of government, and in international relations.

The degree in environmental engineering includes course work in advanced mathematics, biology, chemistry, and physics. In common with other engineering fields, courses in solid mechanics, fluid dynamics, and thermal sciences are central to the environmental engineering degree. Course work specific to environmental engineering includes water and wastewater treatment, hazardous waste storage and treatment, and air pollution control.

**Interdisciplinary Telecommunications** prepares students to play a key role in a wide variety of industries that rely on the Internet and 21st century telecommunications technologies: wireless networks; network architecture; cyber security; network management; regulatory policy; and smart grids. Courses are available on campus or 24-7 from a distance. This cross-discipline curriculum offers graduate specialized certificates, masters, and doctoral degrees. The PhD in Telecom enables students to address the key challenges of our global society's communications and networking infrastructure.

**Mechanical engineering** prepares students for careers in a variety of industrial sectors including transportation, energy, manufacturing, medical, and environmental. Based on their education in the fundamentals of mathematics, physics, and chemistry, mechanical engineers deal with diverse components and systems such as engines and motors, automobiles, computers, power plants, aircraft, medical instruments, robotics, space platforms, and pollution control devices. Career opportunities include work in basic and applied research and development, design, manufacturing, project management, consulting, and teaching. They are employed by a wide variety of industrial, governmental, and educational organizations. A mechanical engineering background also provides a firm foundation for other professional careers such as engineering management, law, and medicine.

**Open Option Program.** The College of Engineering and Applied Science provides the opportunity for new first-year undergraduate students to delay their selection of an engineering major by enrolling in

the open option program. This program is available only to new first-year students; students in the program should select a specific engineering degree program by mid-March of the spring semester, so that they may register in April for fall semester discipline-specific courses.

A first-year experience coordinator in the college provides advising for all engineering open option students. This advising is supplemented with advisors in each engineering degree program. Students selecting the open option program are subject to all College of Engineering and Applied Science academic rules and policies. They are also required to satisfy any remaining minimum academic preparation standards (MAPS) required for graduation. For more information, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (open option).

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# Facilities

Students have an opportunity to study engineering with about 200 faculty members of national and international reputation. They have access to the superb facilities of the College of Engineering and Applied Science, including the ITL Laboratory, a unique, award-winning facility that provides hands-on design experience to undergraduate students, and the Discovery Learning Center, which promotes undergraduate involvement in research with faculty, graduate students, and sponsoring organizations. Each engineering department has laboratories suitable for undergraduate and graduate instruction and experimental research through the doctoral or postdoctoral level. Specific information on these facilities may be obtained from the departments concerned.

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# Computing

Many courses offered by the college place strong emphasis on the use of computers. Entering freshmen receive instruction and undertake academic projects involving computers. While most students choose to obtain personal computers, several hundred computers are available in laboratories in the Engineering Center, and over 1,000 are located throughout the campus for student use.

More computing information may be found under [Campus Facilities](#) and in engineering department summaries. The Office of Information Technology provides its computer recommendations at [oit.colorado.edu/recommendations](http://oit.colorado.edu/recommendations).

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# Academic Excellence

## Dean's List

A student in the College of Engineering and Applied Science who completes at least 12 credit hours of course work for a letter grade during the fall or spring semester on the Boulder campus, and who earns a semester grade point average (GPA) of at least 3.600, will be included on the college dean's list for that semester. Notation of "Dean's List" is also placed on the student's transcript by the Office of the Registrar.

## Honors at Graduation

In recognition of high scholastic achievement by a student, the designations "Summa Cum Laude," "Magna Cum Laude," and "Cum Laude" will be awarded at graduation, and will be recorded on the diploma. The specific qualifications to achieve these designations are reviewed and set by the Undergraduate Education Council, with any changes requiring approval by a majority vote of the faculty representatives on this council. At least 45 semester hours must have been earned on the Boulder campus for the student to secure these designations. Beginning with August 2008 graduates, grades from all CU course work are taken into consideration.

## Scholarships

Undergraduate scholarships are provided by public funds and private donations by alumni, corporations, and friends of the college through gifts to the University of Colorado Foundation, Inc. In some cases, endowments have been established; other scholarships are based on annual gifts. Some companies provide matching funds for gifts from their employees who are alumni. More than 800 scholarships have been made available to qualified students.

For additional information about college-based scholarships, contact the dean's office at **303-735-2440** or see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Undergraduate Scholarships). Students may also contact the Office of Financial Aid at **303-492-5091**.

Anyone interested in providing an undergraduate scholarship or contributing to the scholarship fund may contact the Engineering Development Office, University of Colorado Boulder, 422 UCB, Boulder, CO 80309-0422, **303-492-7899**.

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# Academic Standards

## Academic Policies

Students in the College of Engineering and Applied Science must abide by all college policies and procedures as outlined at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm). Students should refer to this website often since policies, advising guides, and forms may be updated throughout the academic year.

## Ethics

As members of the academic community, students have a responsibility to conduct themselves with the highest standards of honesty and integrity. These qualities are vital to the profession of engineering.

Academic sanctions (which can affect a course grade) and non-academic sanctions (which may include suspension or expulsion) are imposed for the following acts, or intent to engage in such acts: plagiarism; illegal possession and distribution of examinations or answers to specific questions; the presentation of another student's work as one's own; performing work or taking an examination for another student; or the alteration, forging, or falsification of official records. This listing is not complete and includes only some types of academic dishonesty. Any student accused by a course instructor of academic dishonesty will be allowed to remain in the course until such time the student acknowledges an act of academic dishonesty or until a hearing has determined that an act of academic dishonesty has been committed. For additional information, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Academic Honesty) and the Student Honor Code Policy at [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode). See also Academic Integrity and Student Conduct under Campus Policies in the General Information section.

## Academic Standing

To remain in good academic standing in the College of Engineering and Applied Science, a student must maintain satisfactory academic performance as measured by GPA criteria, and satisfactory academic progress toward completion of a bachelor of science degree in the college. For students matriculating in the college fall 2011 semester or later, CU cumulative, semester, and major GPAs should all be at or greater than 2.250 (2.000 for students matriculating in the college prior to fall 2011). Failure to meet these requirements results in the student being placed on academic probation and, if not corrected, on academic suspension. A student may be directly placed on academic suspension if retroactive grade changes lower their cumulative or prior semester GPA, or if their cumulative CU GPA falls below 1.000. Academic progress in this college is determined by grades and averages as reported and calculated by the Office of the Registrar.

### *Academic Probation*

Academic probation is normally the first step taken by the college to express concern that a student is not maintaining satisfactory academic performance. Academic probation is an official warning that the

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student's academic performance must improve or the student will be subject to academic suspension from the college. Once placed on academic probation, a student remains in that status the following **two semesters** (summer term not included) of enrollment as an undergraduate student in the College of Engineering and Applied Science.

## Students Matriculating in the College Fall 2011 Semester or Later

- Probation by the **cumulative grade point average rule** occurs if the student's cumulative University of Colorado GPA is less than 2.250 but above 1.000. For the first semester of academic probation, the student must attain a semester GPA of at least 2.250. For the second semester of academic probation, the student must attain a semester GPA, and cumulative GPA, of at least 2.250. Summer term is not included.
- Probation by the **consecutive semester grade point average rule** occurs if the student has two consecutive semesters (summer term not included) at the University of Colorado with semester GPA less than 2.250. For the first semester of academic probation, the student must attain a semester GPA, and cumulative GPA, of at least 2.250. For the second semester of academic probation, the student must attain a semester GPA, and cumulative GPA, of at least 2.250. Summer term is not included.
- If probation is due to both cumulative and consecutive semester grade point average rules, the student will be placed under the cumulative grade point average rule requirements.

## Students Matriculating in the College Prior to the Fall 2011 Semester

- Probation by the **cumulative grade point average rule** occurs if the student's cumulative University of Colorado grade point average is less than 2.000 but above 1.000. The student must raise his or her cumulative grade point average to at least 2.000 by the end of the next semester of enrollment and maintain that level for two consecutive semesters. Summer term is not included.
- Probation by the **consecutive semester grade point average rule** occurs if the student has two consecutive semesters (summer term not included) at the University of Colorado with semester grade point averages less than 2.000. The student must also raise his/her cumulative grade point average to at least a 2.000 by the end of the next semester of enrollment and maintain that level for two consecutive semesters. Summer term is not included.
- If probation is due to both cumulative and consecutive semester grade point average rules, the student will be placed under the cumulative grade point average rule requirements.

While on academic probation, the student is required to enroll in and complete at least 12 credit hours per fall or spring semester in approved course work that meets engineering degree requirements. Course work taken beyond degree requirements in humanities, social sciences, and ROTC does not count toward this minimum course load requirement, and no courses may be elected with the pass/fail grade option. This requirement may be petitioned for exceptional circumstances; approval will lengthen the period of academic probation.

## *Academic Suspension*

Students will be placed on academic suspension if, while on probation, they fail to meet the academic requirements associated with academic probation. A student will be placed directly on academic suspension if: (1) retroactive grade changes lower the cumulative or prior semester grade point averages, or if (2) the cumulative grade point average is below a 1.000. The College of Engineering and Applied Science takes the action of academic suspension on the premise that the student is currently unable to make academic progress toward a bachelor of science degree. Academic suspension occurs when the college withdraws the student for failing to maintain satisfactory academic progress.

Note: If a new student at CU-Boulder achieves a cumulative GPA below 1.000 following his or her first semester of enrollment at the Boulder campus, this student will be placed on academic probation rather than directly on academic suspension. This exemption is only available to students following their first semester at CU-Boulder. A cumulative GPA below 1.000 at any other time will be cause for immediate academic suspension without a period of academic probation.

The conditions of academic suspension are:

- The period of suspension is indefinite, but must be at least one academic semester (summer term not included) if it is the first suspension and two semesters (summer term not included) for the second academic suspension. College faculty expect the student to reflect upon, and address, any issue(s) prohibiting academic success during the period of academic suspension. Note: A third academic suspension is permanent and the student may not return to this college.
- If the student needs to improve his or her CU GPA in order to be eligible to return to this college, the following two options are available:
  1. On-campus courses offered during summer sessions on any campus of the University of Colorado (excluding Maymester), and
  2. Courses offered through CU-Boulder Continuing Education and Professional Studies (CEPS).
- Students on academic suspension may not be enrolled in more than 16 credit hours at a time.

Note: Course work completed at institutions other than the University of Colorado will NOT affect the CU GPA.

### *Returning to the College from Academic Suspension*

A student seeking to return to the college from academic suspension must have attained a cumulative University of Colorado grade point average of at least 2.250 (2.000 for students matriculating in the college prior to fall 2011). (Note: Students may elect to complete course work at institutions other than the University of Colorado, but these grades will NOT be used in computing a student's GPA.) Once the required CU GPA has been obtained, the student then needs to contact the college's Assistant Dean for Students by e-mail or letter, requesting to return from academic suspension. The student must present convincing evidence of his or her ability to continue successfully and complete an engineering undergraduate degree program. The student also needs to let the college know the semester he or she wishes to return.

A suspended student, upon return to the College of Engineering and Applied Science, returns on academic probation for two semesters (summer term not included). If the student fails to fulfill the terms of that academic probation (cumulative GPA rule or the consecutive semester GPA rule), the student will be suspended once again. While a student may be suspended more than once, a third academic suspension is permanent. A student who has been permanently suspended may not return to the CU-Boulder College of Engineering and Applied Science.

### *Returning to a Different CU-Boulder College or School*

If a student, while on academic probation or suspension, is considering transferring to another CU-Boulder college or school, he or she should follow that college's Intra-University Transfer (IUT) policy and procedures (typically detailed on that college's advising website). If the student elects to leave engineering, this college considers that the student has permanently changed his or her choice of academic major to one offered by the other school or college. Therefore, the student is not permitted to enroll in any courses taught by this college that apply only toward engineering degree requirements. If, at a later date, the student attempts to transfer back to engineering, the current college policy governing Intra-University Transfer (IUT) admission will apply. If an academically suspended engineering student is also a double degree student with another school or college at CU-

Boulder, the student must drop engineering as a degree program if he or she will be enrolling in the other degree program while on academic suspension. The student may attempt to return to engineering in the future if desired; the current college policy governing Intra-University Transfer (IUT) admission will apply.

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# Admission & Enrollment Policies

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## Freshman Applicants

Prospective engineering students must have a mathematical aptitude and keen interest in science and its methods. Curiosity about the natural principles governing the behavior of forces and materials and the ability to visualize structures and concepts are prerequisites. Strong skills are also essential in written and oral communications.

The college seeks applicants who demonstrate a high probability of completing their designated engineering degree program. Admission is based on the evaluation of many criteria; among the most important are the general level of academic performance prior to admission, performance on standardized tests, and other evidence of motivation, potential, academic ability, and accomplishment. These factors are indicated by academic records, test scores, letters of recommendation, and personal accomplishments.

Specific admission requirements are detailed in Undergraduate Admission in the General Information section of this catalog. All students are expected to be enrolled as full-time students and must petition to be enrolled part time.

For more information, see [www.colorado.edu/prospective](http://www.colorado.edu/prospective).

## Confirming Your Choice of Major

When students apply to the College of Engineering and Applied Science from high school, they may indicate to enter the college as “open option” (unsure of engineering major), or they may select a preliminary engineering major. Sometime after completion of the first semester, and by March 15 at the latest, all students should finalize their choice of major in the college. For details regarding this process, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Confirming Your Choice of Major).

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## Transfer Students

Students desiring to transfer from other accredited collegiate institutions are considered for admission on an individual basis if they meet the transfer student competitive admissions requirements outlined in Undergraduate Admission in the General Information section. All transfer students are expected to be enrolled as full-time students and must be admitted to the college prior to the last 45 semester credit hours of their degree program.

For more information, see [www.colorado.edu/prospective](http://www.colorado.edu/prospective).

## Intercampus Transfer Students

Admission criteria for students at other CU campuses are the same as for other transfer students.

The student is advised that the engineering degree requirements differ from one campus to another in the number of credit hours required for the degree, specific course content and titles, and residency required in the college. Where there is a difference in credit hours between courses listed as equivalent, the College of Engineering and Applied Science at CU-Boulder applies the smaller number of credit hours. To ensure the maximum acceptance of credit toward degree requirements and minimize the length of time required to complete the degree, the student planning an intercampus transfer must contact the destination major department as soon as possible once deciding to complete an engineering degree at another University of Colorado campus.

Generally, an intercampus transfer should be accomplished at the end of the first year, with some course selection coordination required between the student and the degree-granting major department during that year. With increased course selection coordination, some students may be able to delay their transfer until the middle or end of the sophomore year. Beyond that point, the student is most likely to lose substantial course credit and time in completing degree requirements.

For additional information, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Intercampus Transfer).

## Intrauniversity Transfer Students

Undergraduate intrauniversity transfers (IUTs) on the Boulder campus of the University of Colorado to the College of Engineering and Applied Science are considered on designated criteria. The applicant's academic record must fulfill the IUT admissions requirements of the College of Engineering and Applied Science. Specific admission criteria and application details may be found at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Intra-University Transfer).

## Former Students

A former student is expected to meet the current requirements outlined in Undergraduate Admissions in the General Information section and must reapply to the university. Courses taken at other collegiate institutions are not necessarily a determining factor in the student's readmission to the University of Colorado, but transcripts on all such work must be submitted.

Interruption of studies may require completion of current degree work in addition to repetition of course work for new degree requirements.

A former student returning to the college after a break in attendance must have course work reevaluated by the major department if it is older than 10 years from the date of his or her return.

# Minimum Academic Preparation Standards (MAPS)

All students entering the University of Colorado who finished high school in the spring of 1988 or after must meet Minimum Academic Preparation Standards (MAPS) specified by each school or college. The College of Engineering and Applied Science has adopted the following standards for students. These standards are defined in high school units; a unit is one full year of high school course work:

- **English:** 4 units
- **Mathematics:** 4 units (includes at least 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions)
- **Natural Science:** 3 units (includes 1 of physics AND 1 of biology or chemistry; or 2 of chemistry AND 1 of physics or biology; or 2 of biology AND 1 of chemistry or physics)
- **Social Science:** 3 units
- **Foreign Language:** 3 of the same foreign language or 2 years in each of two different foreign languages

Students are strongly encouraged to fulfill MAPS requirements prior to entering the College of Engineering and Applied Science. In some cases, students may be admitted even though they have not met all MAPS. If you have a MAPS deficiency, you are required to complete the appropriate MAPS courses prior to your graduation from college through courses taken at CU, other institutions of higher education, or approved credit-by-examination programs. It is the student's responsibility to be aware of any MAPS deficiencies and complete them in a timely manner. The major department has the responsibility to advise the student on which courses must be taken to satisfy any MAPS deficiencies.

For additional information, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Advanced Placement and MAPS).

## Attendance

Successful work in the College of Engineering and Applied Science is dependent upon uninterrupted attendance in all classes. Students who are unavoidably absent should make arrangements with instructors to make up the work missed. *If students stop attending a course in which they are enrolled, they will receive a failing grade (F) if their overall academic performance, including missed work, is at a failing level.*

If a student misses a final examination because of illness or other valid personal emergency, the student must notify the instructor and the dean's office no later than the end of the day on which the final examination is given. Failure to properly notify these officials may result in an *F* in the course.

## Changing Majors

The form necessary for transferring from one undergraduate engineering major to another, or to add an additional engineering major, is available in the dean's office (ECAD 100) and at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Change of Major).

## Class Standing

To be classified as a sophomore in the college, a student must have completed 30 semester credit hours; to be classified as a junior, 60 hours; and to be classified as a senior, 90 hours. A student with more than 120 hours is classified as a fifth-year senior. All transfer students are classified on this basis according to their hours of credit accepted at the University of Colorado. This class standing does not necessarily reflect the academic standing of a student in a degree program.

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## Credit Policies

### *Advanced Placement*

Advanced placement (AP) and college credit may be granted on the basis of the College Entrance Examination Board's (CEEB) Advanced Placement tests. For students who have taken an advanced placement course in high school and who make the required score in the CEEB's Advanced Placement examination, advanced placement and college credit are granted. All advanced placement credit must be validated by satisfactory achievement in subsequent courses, in accordance with the transfer credit policies of the college. For additional information, see [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Advanced Placement and MAPS).

### *College-Level Examination Program Credit*

Prospective students may earn college credit on select College-Level Examination Program (CLEP) examinations, provided that they score at the 67th percentile or above. A list of subjects in which CLEP examinations are accepted may be obtained in the College of Engineering and Applied Science dean's office. All CLEP credit must be validated by satisfactory achievement in subsequent courses, in accordance with the transfer credit policies of the college.

### *Credit for Reserve Officers Training Corps (ROTC)*

Up to 6 semester hours of credit of approved ROTC courses may be counted toward a student's degree requirements in the humanities/social sciences. These approved courses may be found at [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss). With written approval from the student's major department, additional ROTC credit hours may be applied as free electives and/or technical professional electives.

### *Final Grade Appeal*

The college's grade appeal policy may be found at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Appealing a Grade).

### *Incompletes*

The grade of *I* (incomplete) may be given by an engineering faculty member when requested and only with documented circumstances beyond a student's control. A substantial amount of work must have been satisfactorily completed before approval for such a grade is given. If an incomplete grade is given, the instructor is required to document both the conditions precedent to the removal of the incomplete and the time limit for the fulfillment of these conditions. The specified time shall not exceed a one-year period. A copy of the "Incomplete Grade Form" is filed with the dean's office, the student's major department, the instructor, and the student involved.

Course work to complete a grade of *I* must be taken on the same campus on which the grade of *I* was awarded. Credit for a course similar to the course in which the grade of *I* was awarded may not be used to substitute for the incomplete course or be used to remove the grade of *I*.

*If the I grade is not resolved within one year, it reverts to an F.*

### *No Credit Restrictions*

In the College of Engineering and Applied Science, courses required for fulfillment of graduation requirements *cannot be taken for no credit (NC)*. Once a course has been taken for no credit, the course cannot be repeated for credit. Engineering students must petition for approval before enrolling for any course *NC*.

### *Pass/Fail Option*

The primary purpose for offering courses on a *pass/fail* grading option is to encourage students to broaden their educational experience by selecting elective courses with this grade option without

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serious risk to their academic record. Individual departments may have rules that should be checked before registering for the *pass/fail* option. The college *pass/fail* policy is:

1. The maximum number of credit hours a student may elect with the *pass/fail* option shall be designated by the student's major department, but no more than 16 semester hours of *pass/fail* credit can be applied toward degree requirements. (Study abroad *pass/fail* credit is exempt from this limitation.)
2. Students should obtain advance approval via petition prior to selecting the *pass/fail* option. Course work taken *pass/fail* without appropriate approval may be reverted to the letter grade earned.
3. All students who wish to register for the *pass/fail* option must do so during the university registration or schedule adjustment period.
4. Students on academic probation may not elect the *pass/fail* grade option.

## *Transfer Credit*

After a prospective transfer student has applied and submitted transcripts to the University of Colorado, the Office of Admissions issues a transfer credit evaluation listing those courses acceptable for transfer by University of Colorado Boulder standards. A copy of this evaluation is made a part of the student's college record. The student's major department will then indicate which of those courses are acceptable in meeting engineering degree requirements. It is the responsibility of the transfer student to request final validation of the transfer credit hours by the major department and confirm that this validation is noted in the student's college file.

If at any time a student wishes to have a course not previously accepted reconsidered for transfer, the student should consult with the faculty transfer credit evaluator in the major department and petition the dean through the department for approval of the course.

**Nontransferable Credit Hours.** Students desiring to transfer credit hours from engineering technology programs should note that such credit hours are accepted only upon submission of evidence that the work involved was fully equivalent to that offered in this college.

Some technology courses are taught with titles and textbooks identical to those in similar engineering courses. These courses may still not be equivalent to engineering courses because the areas of academic emphasis are divergent.

In order to assist engineering technology students with transfer problems, the following guidelines have been established:

1. Courses on basic subjects such as mathematics, physics, foreign languages, literature, or history may be acceptable for transfer credit if they were taught as part of an accredited program for all students and were not specifically designated for technology students.
2. Students who have taken courses with technology designations that may be valid equivalents for engineering courses have these options:
  - They may petition for permission to waive the course requirement. The course requirement can be waived if students demonstrate that, by previous course work, individual study, or work experience, they have acquired the background and training normally provided by the course. No credit is given for a waived course, but students may benefit from the waiver by being able to include more advanced work in their curriculum. Other students may profit by repeating the course at this college and thus establishing a fully sound basis for what follows.
  - The appropriate University of Colorado academic department may recommend to the dean's office that credit be transferred to count toward the requirements for a related course in its curriculum. Credit cannot be given for vocational/technical or remedial courses under rules of

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the university.

- The student may seek credit for the course by examination.

For more information on transfer of credit policies, see Transfer of College-Level Credit in the Undergraduate Admission section.

## *Work Experience*

It is the academic policy of the College of Engineering and Applied Science that credits accrued in the official records of a student that were awarded for work or co-op experience do not apply toward degree requirements.

## Petition Policy

A student desiring a waiver of college or departmental policies must request and secure approval for this waiver through a petition procedure. Petitions are first presented to the student's major department for review, followed by review at the dean's office. It is the student's responsibility to obtain official notification of the petition decision from the dean's office. Petition forms and information on the petition procedure are available in the dean's office, in the academic department office, or at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Petition Form).

## Registration and Enrollment

To ensure the prompt completion of degree requirements and satisfaction of the four-year guarantee, the undergraduate student is expected to register for, and complete each semester, a full-time course load as outlined in the relevant major department curriculum. All students are expected to be enrolled full time and must petition to be enrolled part time. Part-time enrollment (less than 12 credit hours) will negatively impact the student's financial aid and scholarships, and is likely to negatively impact student health insurance, on-campus housing, and the four-year graduation guarantee. Students must also petition to be enrolled in more than 19 credit hours in any given semester.

## *Sequence of Courses*

Students are expected to follow the curriculum recommended by their major department.

A student who receives a grade of *D+* or lower in a course that is prerequisite to another may not enroll in the succeeding course without an approved petition from the student's major department, the instructor of the succeeding course, and the dean's office. (Check with the major department for more stringent requirements on prerequisite course grades.)

All courses are not necessarily offered each semester. According to college policy, undergraduate courses having an enrollment of fewer than 20 students may be cancelled. Students can minimize scheduling problems by closely following the curricular sequence recommended by their major department. If a course is unavailable, a student may petition to enroll for equivalent study.

## *Grading System, Pass/Fail, and Drop/Add Procedures*

See Registration in the General Information section for the University of Colorado uniform grading system and for additional *pass/fail* option information and drop/add procedures. Specific dates and procedures may be found at [registrar.colorado.edu](http://registrar.colorado.edu).

Only under circumstances beyond the student's control are petitions for dropping courses approved after the drop deadline. Students in their first semester at CU-Boulder may be approved to drop a course through the 10th week of the semester.

## Repetition of Courses

Students are not to register for credit in courses in which they already have received a final grade of C- or higher, unless the major department requires a higher grade in the course. When students take a course for credit more than once, all grades are used in determining their University of Colorado GPA (unless the Course Repetition Program had been utilized). A final grade of *F* in a required course necessitates that the course be repeated and a satisfactory final grade attained. Students may not register for credit in any course they have previously completed for no credit (*NC*).

*A student may not enroll more than three times in a course that applies toward degree requirements; furthermore, after the third attempt, a student may not substitute an equivalent course.*

## Summer Courses

An expanded selection of summer session courses is offered for new and continuing students and for those who must remove academic deficiencies. For information about courses, see [www.colorado.edu/summer](http://www.colorado.edu/summer). Students on academic suspension may not register for Maymester courses.

## Withdrawal from the University

Engineering undergraduate students may withdraw only during the first six weeks of the semester. After this time, withdrawals are permitted by this college only upon presentation of evidence to verify that the withdrawal is necessary because of documented conditions clearly beyond the student's control (medical, psychiatric, or extended family emergency).

If a student withdraws, college permission may be required for reenrollment. Students who interrupt their course of study may be required to complete all current degree requirements and to repeat courses previously completed.

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# CU System Course Equivalencies Table

The following course-by-course equivalency table should assist in advising students anticipating an intercampus transfer to the College of Engineering and Applied Science at the CU-Boulder campus. Note there may be credit hour differences between equivalencies, thus students should inquire about credit hours applicable toward degree requirements with their destination major department.

<i>CU-Boulder Course</i>	<i>CU-Colorado Springs Equivalent Course</i>	<i>CU Denver Equivalent Course</i>
APPM 1350-4 Calculus 1 for Engineers	MATH 1350 or (MATH 1310 + 1320)	MATH 1401
APPM 1360-4 Calculus 2 for Engineers	MATH 1360	MATH 2411
APPM 2350-4 Calculus 3 for Engineers	MATH 2350	MATH 2421
APPM 2360-4 Differential Equations with Linear Algebra	MATH 3130 + 3400	MATH 3195 or (MATH 3191 + 3200)
CHEN 1211-3 General Chemistry for Engineers	CHEM 1030*	CHEM 1130* or 2031*
CHEM 1221-2 General Chemistry Laboratory	CHEM 1030*	CHEM 2038*
CHEM 3311-3 Organic Chemistry 1	CHEM 3310	CHEM 3411
CHEM 3321-1 Organic Chemistry 1 Laboratory	CHEM 3330	CHEM 3418
CHEM 3331-3 Organic Chemistry 2	CHEM 3320	CHEM 3421
CHEM 3341-1 Organic Chemistry 2 Laboratory	CHEM 3340	CHEM 3428
PHYS 1110-4 General Physics 1 + PHYS 1120-4 General Physics 2	PES 1110 + 1120 + 2130	PHYS 2311 + 2331
PHYS 1140-1 Experimental Physics 1	PES 1160 + 2160	PHYS 2321 + 2341
PHYS 2130-3 General Physics 3	PES 3130	PHYS 2811
AREN 1027-3 Engineering Drawing	None	CVEN 1025
AREN 1316-1 Introduction to Architectural Engineering	ENGR 1502	None
CVEN 1317-1 Introduction to Civil and Environmental Engineering	ENGR 1502	None
CVEN 2012-3 Introduction to Geomatics	None	CVEN 2212
CVEN 2121-3 Analytical Mechanics 1	None	CVEN 2121
CVEN 3111-3 Analytical Mechanics 2	None	CVEN 3111
CVEN 3161-3 Mechanics of Materials 1	None	CVEN 3121
CVEN 3313-3 Theoretical Fluid Mechanics	None	CVEN 3313
CVEN 3323-3 Hydraulic Engineering	None	CVEN 3323
CVEN 3414-3 Fundamentals of Environmental Engineering	None	CVEN 3401

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CVEN 3424-3 Water and Wastewater Treatment	None	CVEN 3414
CVEN 3525-3 Structural Analysis	None	CVEN 3505
CVEN 3602-3 Transportation Systems	None	CVEN 3602
CVEN 3698-3 Engineering Geology	None	CVEN 4780
CVEN 3708-3 Geotechnical Engineering 1	None	CVEN 3708
CVEN 3718-3 Geotechnical Engineering 2	None	CVEN 4718
CSCI 1000-1 CS as a Field of Work and Study	CS 3050	None
CSCI 1300-4 Computer Science 1 : Programming	CS 2060 or ECE 1021	CSCI 1410 + CSCI 1411
CSCI 2270-4 Computer Science 2 : Data Structures	CS 1450	CSCI 2312 + CSCI 2421
CSCI 2400-4 Computer Systems	CS 2160	CSCI 2525
CSCI 2824-3 Discrete Structures	None	CSCI 2511
CSCI 3104-4 Algorithms	CS 4720	CSCI 3412
CSCI 3155-4 Principles of Programming Languages	CS 3160	CSCI 3415
CSCI 3202-3 Introduction to Artificial Intelligence	None	CSCI 4202
CSCI 3287-3 Database and Information Systems	CS 4420	CSCI 3287
CSCI 3308-3 Software Engineering Methods and Tools	None	CSCI 3508
CSCI 3434-3 Theory of Computation	CS 4700	CSCI 4034
CSCI 3656-3 Numerical Computation	CS 4600	CSCI 4650
CSCI 3753-4 Operating Systems	CS 4500	CSCI 3453
ECEN 1030-4 C Programming for EE/ECE	ECE 1021	None
ECEN 1100-1 Freshman Seminar	None	ELEC 1201
ECEN 1400-3 Introduction to Digital and Analog Electronics	ECE 1001	None
ECEN 2250-3 Introduction to Circuits and Electronics	ECE 2205	ELEC 2132 or CSCI 2132
ECEN 2260-3 Circuits as Systems	ECE 3205	ELEC 2142
ECEN 2270-3 Electronics Design Laboratory	ECE 3205 (lab part) + ECE 3230 + ECE 3240	ELEC 2552 + ELEC 3715 + ELEC 3735
ECEN 2350-3 Digital Logic	ECE 1411 + ECE 2411	ELEC 1510 or CSCI 1510
ECEN 3010-3 Circuits and Electronics for Mechanical Engineers	MAE 2055	MECH 3030 + MECH 3032
ECEN 3030-3 Electrical/Electronic Circuits for Non-Majors	None	ELEC 3030
ECEN 3170-3 Energy Conversion 1	ECE 3910 or ECE 4160	ELEC 3164
ECEN 3250-3 Microelectronics	ECE 3210	ELEC 3215
ECEN 3300-3 Linear Systems	ECE 3510	ELEC 3316
ECEN 3320-3 Semiconductor Devices	ECE 3020	ELEC 4025
ECEN 3350-3 Programming of Digital Systems	ECE 3430	ELEC 1520
ECEN 3360-3 Digital Design Laboratory	ECE 3420 + ECE 3440	ELEC 4411 + ELEC 2531
ECEN 3400-3 Electromagnetic Fields	ECE 3110	ELEC 3133
ECEN 3410-3 Electromagnetic Waves and Transmission	ECE 3120 or ECE 4110	ELEC 4133
ECEN 3810-3 Introduction to Probability Theory	ECE 3610	ELEC 3817

GEEN 1100-3 Social Impact of Technology	None	ENGR 3400
GEEN 1300-3 Introduction to Engineering Computing	None	MECH 2030 or CVEN 2200
GEEN 1400-3 First-Year Engineering Projects	ENGR 1001	None
GEEN 1500-2 Introduction to Engineering	ENGR 1502	ENGR 1000
MCEN 1000-1 Introduction to Mechanical Engineering	ENGR 1502 or MAE 1502	ENGR 1000
MCEN 1025-3 Computer-Aided Design and Fabrication	None	MECH 1025
MCEN 2023-3 Statics and Structures	MAE 2103	MECH 2023
MCEN 2024-3 Materials Science	MAE 2200	MECH 3024
MCEN 2043-3 Dynamics	MAE 2104 or MAE 4402	MECH 2033
MCEN 2063-3 Mechanics of Solids	MAE 3201	MECH 3043
MCEN 3012-3 Thermodynamics	MAE 2301	MECH 3012
MCEN 3021-3 Fluid Mechanics	MAE 3130	MECH 3021
MCEN 3022-3 Heat Transfer	MAE 3310	MECH 3042
MCEN 3025-3 Component Design	MAE 3501	MECH 3035
MCEN 3030-3 Computational Methods	None	MECH 4110
MCEN 3032-3 Thermodynamics 2	MAE 3302	MECH 3022

\*Students planning to major in chemical engineering, chemical and biological engineering, or environmental engineering at CU-Boulder should take:

CHEM 1030 + 1060 at the **Colorado Springs campus**

or

(CHEM 1130 + 2038) or (CHEM 2031 + 2061 + 2038) at the **Denver campus**.

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# Undergraduate Degree Requirements

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Fundamentals taught in the freshman year are of prime importance in the more advanced classes, and every effort is made to place all freshman students in appropriate courses.

It is strongly recommended that students avoid the likelihood of later scheduling problems by carefully following the recommended curriculum in their major or in the open option program.

Each freshman is exposed to a broad university background, completing course work outside the College of Engineering and Applied Science in science, mathematics, social science, and the humanities.

## Advising

All students are advised by professional staff advisors and faculty mmentors from their respective major department or program. Students are encouraged to meet with an advisor at least once a semester.

Advising information is available at the administrative offices of the College of Engineering and Applied Science, ECAD 100, telephone **303-492-5071**, directly through the major departments, or at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm).

Advisors are readily available to assist students with academic, vocational, or personal concerns. Students are assigned departmental advisors for academic planning and should consult with the department chair or designated faculty or staff representative if there is uncertainty over who is the student's advisor or if the student wants a change in advisor.

## Four-Year Graduation Guarantee

The College of Engineering and Applied Science at the University of Colorado Boulder is committed to providing an undergraduate educational experience among the best offered by any comprehensive research university in the country.

The College of Engineering and Applied Science offers 12 bachelor of science degree programs, each of which may be completed within eight full-time semesters. Many students elect to extend their

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studies at the University of Colorado beyond eight semesters to take advantage of research and employment opportunities, add minor programs, complete double-degree programs, and/or to pursue specialized plans of study.

For new freshmen who do not wish to extend their studies beyond eight semesters, the University of Colorado extends a guarantee that required or essential courses, or acceptable alternative courses, will be available so each student can complete all course work required for a bachelor of science degree from the College of Engineering and Applied Science no later than the end of the eighth consecutive semester of enrollment, when the student follows the degree plan recommended by the major department. In the event the University of Colorado is not successful in meeting the terms of this guarantee, the university will reimburse the student all tuition and course fees for those courses remaining to successfully complete the previously designated bachelor of science degree.

Full details regarding the guarantee and qualifications may be found at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Four Year Guarantee).

## Degree Requirements

- For the BS degree, the satisfactory completion of the prescribed and elective work in any curriculum as determined by the appropriate academic department. A student must complete a minimum number of semester hours, not less than 128, of which the last 45 must be Boulder course work earned after admission to the university and the college.
- The recommendation of the faculty of the academic department (or program) offering the degree. The campus designation on the diploma and transcript shall correspond to the campus designation of the academic department initiating the degree recommendation.
- The recommendation of the faculty of the college.
- The cumulative GPA of an engineering student includes all academic courses attempted at the University of Colorado (unless the Course Repetition Program has been utilized). A cumulative GPA of 2.250 (2.000 for students matriculating in the college prior to fall 2011 semester) is required in courses used to fulfill degree requirements. In addition, a separately computed GPA of 2.250 (2.000 for students matriculating in the college prior to fall 2011 semester) must be attained in those courses taken from the student's major department. For students in the applied mathematics program, the major department is the applied mathematics department; for students in the engineering physics program, the major department is the physics department. For students majoring in environmental engineering, all chemical, civil, environmental, and mechanical engineering courses will be considered in lieu of those from a single department.
- Humanities and social sciences degree requirements may be found at [engineering.colorado.edu/hss](http://engineering.colorado.edu/hss). All electives should be selected with the approval of an academic advisor and from the lists of approved courses.
- Students who graduated from high school in the spring of 1988 and thereafter must complete any minimum academic preparation standards (MAPS) deficiencies prior to graduation. Students should refer to [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Advanced Placement and MAPS) and consult with an academic advisor or the dean's office (ECAD 100) to determine any MAPS deficiencies and how to satisfy these deficiencies.
- Some majors require successful completion of an educational outcome measurement prior to graduation. Students should contact their major department to determine whether an outcome measurement is required and when it must be taken.

## Graduation

It is the student's responsibility to be certain that all degree requirements are fulfilled, to notify the

major department upon completion of 100 semester hours applicable to BS degree requirements, to fill out the Application for Diploma form at the beginning of the next-to-last semester before graduation, and to keep the departmental advisor and the dean's office in-formed of any change in graduation plans.

All incompletes must be completed and all Continuing Education course grades must be officially received no later than three weeks prior to the graduation ceremony. It is the student's responsibility to contact the appropriate instructor concerning the removal of incomplete grades. Graduation periods are in December, May, and August.

## Double Degrees

A student in the College of Engineering and Applied Science may be able to major in two engineering disciplines or obtain one degree in engineering and obtain one in another field, such as business, music, or one of the arts and sciences disciplines. Full degree requirements must be met for each college/major. The degrees are awarded concurrently.

### *Double Degrees from Engineering and Another College*

Students may obtain bachelor's degrees in engineering and in the academic program of another college, with the approval of the relevant colleges/major departments.

### *Double Majors within the College of Engineering and Applied Science*

It is possible for an undergraduate student to complete degree requirements for two or more majors within the College of Engineering and Applied Science, with the approval of the relevant major departments. Students must complete at least 15 additional credit hours for each additional major. The decision to earn more than one major in the college should be carefully weighed, since qualified students may be able to obtain a master's degree for a similar number of credit hours.

## Minors

The college offers minors in computer science, computer engineering, electrical engineering, signals and systems, and electrical renewable systems.

More information is available at [engineering.colorado.edu/students/advising.htm](http://engineering.colorado.edu/students/advising.htm) (Minor Programs).

## Premedical Option

Several engineering departments have an option by which a student may meet all requirements for entry into medical or other health professions schools while earning a degree in engineering. Engineering departments with this option will approve inclusion of appropriate biological and bioengineering courses in the student's program of technical electives. The courses listed below are usually prescribed by medical and dental schools and must be completed with superior grades.

### *Required Courses and Semester Credit Hours*

- General chemistry—2 (*with labs*)
- Organic chemistry—2 (*with labs*)
- General or introductory biology—2 (*with labs*)
- English composition and literature (one of each)—2
- Physics—2 (*with labs*)

Calculus (required or recommended)—1

- Statistics (strongly recommended)—1
- Biochemistry (required or strongly recommended)—1
- Genetics (strongly recommended)—1

Students can typically meet these requirements by carefully substituting electives in their engineering curriculum. Interested students should consult with a prehealth advisor in the Pre-professional Advising Office at the University Club on the Boulder campus early in their undergraduate career in order to accomplish the other elements of preparation for applying to a health professional school. Assistance with requirements for clinical experience and specialized letters of recommendation can be obtained from this office.

## Concurrent BS and MS Degree Program in Engineering

Students with strong academic records who plan to continue in the Graduate School usually find it advantageous to apply for admission to the concurrent BS/MS degree program. Excellent students plan a graduate program beginning in their junior year. Many departments allow up to 6 credit hours of graduate course work to be applied to the BS degree. This program also provides opportunities to work with faculty on independent study or research projects.

Application is made to the Graduate School through the appropriate academic department. Application and admission may occur during the junior year; consult individual departments for their exact timing. The college requires a minimum GPA of 3.250 for admission to this program; some departments may have higher requirements. Requirements for the two degrees are the same as those for two degrees taken separately: 128 credit hours for the BS degree and 24–30 hours including thesis (Plan I) or 30 credit hours (Plan II) for the MS degree. Up to 6 credit hours of graduate course work may be double counted (i.e., applied toward the BS degree as well as applied toward the MS degree).

All students choose or are assigned a faculty advisor to help them develop a program of study best suited to their interests. Students in each program are encouraged to pursue independent study on research programs or in areas of specialization beyond those offered in formal courses. Students are allowed to structure their senior and graduate years in an order that is optimal for their program, as long as all requirements for both the BS and MS degrees are completed by the end of the concurrent BS/MS program. The BS and MS degrees must be awarded concurrently at the completion of both degree programs.

A minimum GPA of 3.000 must be maintained for continuation in the program; if the GPA falls below 3.000, all hours completed with a passing grade while in the program count only towards fulfillment of the BS degree.

Tuition rates for resident students in this program are at the undergraduate rate until students accumulate a certain number of credit hours. Students are then considered to be graduate students for purposes of tuition and financial aid. For additional details on this program, contact the appropriate engineering academic department or the Graduate School.



# Graduate Study in Engineering

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- [Master of Engineering, Master of Science, and Doctor of Philosophy](#)
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The College of Engineering and Applied Science offers degree programs for the master of engineering (ME), master of science (MS), and doctor of philosophy (PhD) degrees. There are degree programs in each of the following departments or fields:

- aerospace engineering sciences
- chemical and biological engineering
- civil engineering
- computer science
- electrical, computer, and energy engineering
- engineering management
- mechanical engineering
- telecommunications

The master of science in applied mathematics is offered through the Department of Applied Mathematics in the College of Arts and Sciences.

Graduate programs within each engineering department offer a variety of options, providing a number of alternative careers.

The **aerospace program** places a strong emphasis on astrodynamics and satellite systems; bioastronautics; remote sensing; Earth and space sciences; and aerospace engineering systems, including aerodynamics, controls, structures, and mechanics of materials.

Key activities in **chemical and biological engineering** include membrane and thin-film science, biomedical engineering and biotechnology, surface science, biofuels and biorefining, polymeric and ceramic materials engineering, microelectronics, nanomaterials, and fluids.

Fields emphasized in **civil engineering** include geotechnical engineering and geomechanics, structural mechanics and engineering, building systems engineering, construction management and engineering, environmental and geoenvironmental engineering, hydrology, environmental fluid mechanics, civil engineering systems, and engineering science.

Strengths in **computer science** include computer architecture, operating systems, networking,

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mobile computing, computer security, computational biology, robotics, algorithm design, artificial intelligence, software and web engineering, programming languages, database design and data mining, human-computer interaction, computer-supported cooperative work, machine learning, lifelong learning and design, numerical and parallel computation, speech and language processing, scientific computing, and theoretical computer science.

Areas of focus in **electrical, computer, and energy engineering** include photovoltaic, wind, and renewable energy systems, power machines and systems, electromagnetic theory, microwave and optical guided wave devices, antennas, remote sensing, biomedical engineering, communications and signal processing, medical imaging, computer architecture and software optimization, optical devices, optoelectronics, nanomaterials and nanodevices, biophotonics, robotics, man/machine interfaces, high-performance autonomous vehicles, and computer aided design for VLSI.

**Engineering management** offers a core management curriculum in leadership, project management, quality, and finance. Areas of concentration are available in managing innovation, project management, performance excellence, engineering entrepreneurship, quality systems, software management, research and development, and Six Sigma methodologies. These courses are designed for engineers and technical professionals preparing for management assignments in high-technology fields.

**Mechanical engineering** core areas of concentration include air quality, bioengineering, design, energy and environment, materials, mechanical engineering fundamentals (e.g., heat transfer, fluid mechanics), mechanics of materials, microsystems, and simulation-based mechanical engineering sciences. Within these core areas specific expertise includes air quality measurements and modeling, biomedical devices, electronic packaging, mechatronics and robotics, pollution prevention, membrane sciences, combustion sciences, energy conversion, nondestructive structural evaluation, micro-electro-mechanical systems, nanotechnology, computational fluid dynamics, product design, and engineering education.

**Telecommunications** offers a cross-discipline curriculum from electrical engineering, computer science, business, economics, policy, and law for master's and doctoral degrees. The Interdisciplinary Telecommunications Program offers students access to its world-class telecommunications laboratory where students design, plan, analyze, and manage telecommunications systems including the Internet. Students enter this program from a wide variety of technical, information technology, and liberal arts undergraduate studies. Students have the opportunity to select two areas of emphasis, such as wireless networks, network architecture, cyber security, and regulatory policy, among others. Graduates receive job offers not only in the telecommunications sector but also in other rapidly growing industries that rely on the integration of two-way telecommunications technology into existing and newly created information infrastructures. This includes healthcare, e-commerce, social networking, and utilities.

## Graduate Degree for Science Majors

Science graduates who have good academic records and strong backgrounds in mathematics and science may be eligible for admission as graduate students in engineering or may be able to qualify with some extra course work. Information may be obtained from the appropriate academic department office.

## Distance Learning and Professional Development Programs

The Center for Advanced Engineering and Technology Education (CAETE) offers 24-7 distance education for students seeking graduate engineering education. For over 28 years, thousands of students have earned master's degrees and graduate specialized certificates from the highly ranked

College of Engineering and Applied Science.

While pursuing graduate education goals with 24-7 distance education, students can:

- Pursue a master's degree, a graduate specialized certificate, or take individual courses in aerospace engineering, computer science, electrical and computer engineering, engineering management, and interdisciplinary telecom
- Choose to watch lectures in full rich media whenever and wherever they are—studying when and where it's convenient
- Download lectures to virtually any portable device—ideal for the traveling professional
- Engage in discussions and activities with motivated, experienced peers
- Learn from practicing engineers and experienced research faculty with the latest information and methodology
- Balance family and work demands while achieving their academic goals
- Earn the education necessary to increase their earning potential

Access to over 100 previously recorded courses via a virtual library is available for academic course work or for purchase by companies for in-house training.

Students may enroll in a course before being accepted into a graduate program but should apply for admission before finishing a third course. Courses taken before admission are considered transfer credit. Nine transfer credit hours will be accepted toward a graduate degree program. All applicable courses taken after admission will count toward the degree requirements.

Noncredit courses are available in such fields as networking, project management, and other engineering and technical areas.

For more information visit the CAETE website at [cuengineeringonline.colorado.edu](http://cuengineeringonline.colorado.edu), call **303-492-6331**, e-mail [caete@colorado.edu](mailto:caete@colorado.edu), or write to CAETE, University of Colorado Boulder, 435 UCB, Boulder, CO 80309-0435.

## Master of Engineering, Master of Science, and Doctor of Philosophy

Students wishing to pursue graduate work in engineering leading to candidacy for advanced degrees should read carefully the requirements for advanced degrees in the Graduate School section. Some departments also have available explanatory material on their advanced degree programs.

**Prerequisites.** To enroll for an advanced degree in any department of the College of Engineering and Applied Science and the interdisciplinary telecommunications program, candidates either must have previously earned a bachelor's degree in a curriculum that includes the necessary prerequisites for that branch of engineering or must qualify for the concurrent BS and MS program. If the candidate's preliminary education was taken at some other institution, the degree of qualification for advanced work is determined by the department concerned and by the dean of the Graduate School.

Graduates of engineering technology programs should note that the equivalent of a BS degree in an appropriate engineering field is required for entry into the Graduate School. Because the goals and orientation of engineering programs differ from those of technology programs, technology graduates should expect to make up deficiencies before being admitted to graduate study in engineering. Students may not be admitted to the Graduate School while making up deficiencies, but can enroll as non-degree students.

For admission as a regular degree student, an undergraduate GPA of at least 3.000 is normally

required.

**Language Requirement.** PhD candidates should note that some engineering departments have foreign language requirements.

**Course Work.** Graduate work in each department of the College of Engineering and Applied Science falls into two classes:

1. Courses that are offered for candidates who have chosen to major in the particular department
2. Courses that are offered for candidates who have chosen their major in some other department, but who are pursuing a certificate or other complementary course work

Graduate students majoring in any department may not use toward graduate degrees those courses listed as required undergraduate work in the same department. They may, however, use up to 6 hours taken at the 3000–4000 level toward a master's degree. These course must be taken from an engineering department other than that in which they received their bachelor's degree, and must have the approval of the department granting the degree and the dean of the Graduate School.

**Availability of Courses.** All courses are not necessarily offered every year. They are available only if there is sufficient demand.

**Qualifying Examinations.** Graduate students who plan to become candidates for the MS or PhD degree may be required to take a qualifying examination in the appropriate field of specialization during the first semester in which they are registered as candidates for a graduate degree. Individual departments should be consulted concerning the timing or requirement of this examination. The purpose of this examination is to enable the advisor and student to plan a suitable program of study.

## Teaching Assistant English Proficiency and Intelligibility

The College of Engineering and Applied Science requires that all graduate teaching assistants be proficient and intelligible in spoken English. In order to ensure that this is the case, all prospective teaching assistants whose native language is not English, or others for whom the department graduate program coordinator believes that spoken language intelligibility is a concern, regardless of native language, will be tested for spoken language intelligibility prior to or at the beginning of the semester in which the teaching assistantship is awarded. In the event that a prospective teaching assistant does not demonstrate a satisfactory level of proficiency, as determined by the Graduate Education Council of the college, that student will be required to participate in training designed to improve intelligibility.

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# Programs of Special Interest

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## Professional Registration

The need for professional registration depends on the field of engineering and the nature of practice in that field. Engineers in private professional practice generally need to be registered. Currently, registration is required in all states for the legal right to practice professional engineering. Although there are variations in state laws, graduation from an accredited curriculum in engineering, subscription to a code of ethics, and four years of qualifying experience are minimum requirements for registration. Two days of examinations covering the engineering sciences and the applicant's practical experience are also required in most states and territories. A student begins this professional registration process by taking the Fundamentals of Engineering (FE) eight-hour examination during senior year in this college.

## Active Learning

The College of Engineering and Applied Science defines active learning as “enhancing knowledge, skills, and understanding through practical experience.” The college’s goal is to provide all students with the opportunity to participate in enrichment experiences and partnerships with individual faculty and professionals in discovery, service, and professional learning. Several programs are in place to financially support students engaged in undergraduate research or “discovery learning” with faculty, graduate students, and research sponsors. Students seeking professional learning experiences such as internships and co-op assignments with a participating employer also typically earn hourly wages, while those pursuing service learning opportunities in the college, community, or beyond could earn wages or course credit.

International active learning opportunities include assisting developing communities through Engineers Without Borders, a national nonprofit organization started at CU-Boulder; and arranging an international internship through the International Engineering Certificate Program. For more information about active learning programs and opportunities, visit [engineering.colorado.edu/activelearning](http://engineering.colorado.edu/activelearning).

In addition, the college offers a First Year Engineering Projects course as a general engineering elective, which provides students with collaborative, hands-on experience in designing and building engineering devices early in the engineering curriculum, and most undergraduate majors in the

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college require completion of a senior capstone design course.

## Integrated Teaching and Learning Program

The Integrated Teaching and Learning (ITL) Program emphasizes hands-on, inquiry-based learning experiences throughout the K–16 engineering curriculum. The ITL Program encompasses college-wide curricular initiatives and has created a unique learning environment to enable and support them—the Integrated Teaching and Learning Laboratory (ITLL).

The interdisciplinary ITL Laboratory is a 34,000 sq. ft. hands-on learning environment that features interactive laboratory plazas and supports hands-on experimentation, pervasive data acquisition and analysis capability, design studies, team work areas, active learning spaces, and state-of-the-art manufacturing and electronics fabrication capability. It is heavily used by engineering students of all disciplines and is supported by a dedicated team with an unwavering focus on outstanding service.

The ITL Program features an innovative interdisciplinary undergraduate curriculum that includes a First-Year Engineering Projects course that engages student teams to experience the design process in a hands-on way, culminating in a public design expo each semester. The nationally recognized K–12 ITL engineering program focuses on attracting and preparing more diverse and well-prepared youth to careers in engineering and technology. Visit [itll.colorado.edu](http://itll.colorado.edu).

## Study Abroad

In today's international environment, engineers frequently work and travel in foreign nations or with foreign engineers. Therefore, it is desirable that engineering students familiarize themselves with foreign cultures by selecting appropriate courses or by studying abroad. The University of Colorado has over 50 programs that enable students to undertake course work in engineering. These include programs at the Universities of New South Wales, Wollongong, and Murdoch in Australia; the Universidad de Costa Rica in the Americas; the Universities of East Anglia, Lancaster, and Sussex in England; Uppsala University in Sweden; the American University of Cairo in Egypt; the University of Ghana; the Universidad Politecnica de Madrid; the Instituto Tecnológico y de Estudios Superiores de Monterrey in Mexico, and others. All participants in the university study abroad programs remain enrolled at the university; the *pass/fail* grade option is used by this college for course work taken during study abroad (but is exempt from college and major department *pass/fail* limitations). Financial aid from the university can be applied to the program costs in some cases, and special study abroad scholarships may be available for program participants. More information about studying abroad is available at the Office of International Education, University of Colorado Boulder, 123 UCB, Boulder, CO 80309-0123, **303-492-7741**, or [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

Engineering departments may also assist students wishing to study engineering at the Ecole National des Ponts et Chaussées in Paris; the Ecole Polytechnique Feminine in Paris; and the University of Oviedo in Spain; plus new engineering exchanges in TU Darmstadt, Germany; University of Newcastle, England; ESTP in Paris; and Catholic University in Santiago, Chile. The college participates in the Global Engineering Exchange Program (Global E<sup>3</sup>), which allows engineering students to take engineering courses at over 40 international universities. Please contact the engineering dean's office for more information or visit [engineering.colorado.edu/international](http://engineering.colorado.edu/international).

With the proper preparation, students may complete one or two semesters of engineering education during study abroad. All students preparing for study abroad must petition their major department about specific courses planned away from CU and ensure that the college residency requirement is satisfied.

## Student Organizations

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The following honorary engineering societies have active student chapters in the College of Engineering and Applied Science:

- Chi Epsilon, civil and architectural engineering society
- Eta Kappa Nu, electrical engineering society
- Omega Chi Epsilon, chemical engineering society
- Pi Tau Sigma, mechanical engineering society
- Sigma Gamma Tau, aerospace engineering society
- Tau Beta Pi, engineering society

Student chapters of the following professional or social societies meet frequently to present papers, speakers, films, and other programs of technical interest:

- American Indian Science and Engineering Society
- American Institute of Aeronautics and Astronautics
- American Institute of Chemical Engineers
- American Society of Civil Engineers
- American Society of Heating, Refrigerating, and Air Conditioning Engineers
- American Society of Mechanical Engineers
- American Solar Energy Society
- Architectural Engineering Institute
- Asian Engineering Society
- Associated Energy Engineers
- Associated General Contractors
- Association for Computing Machinery
- Association for Women in Mathematics
- Biomedical Engineering Society
- Engineering Ambassadors
- Illuminating Engineering Society of North America
- Institute of Electrical and Electronics Engineers
- National Society of Architectural Engineers
- National Society for Black Engineers
- Sigma Tau, engineering social fraternity
- Sigma Xi, scientific research society
- Society of Environmental Engineers
- Society of Hispanic Professional Engineers and Scientists
- Society for Industrial and Applied Mathematics
- Society of Manufacturing Engineers
- Society of Mexican-American Engineers and Scientists
- Society of Physics Students
- Society of Women Engineers
- Structural Engineers Council

A student organization, the University of Colorado Engineering Council (UCEC), represents students in the College of Engineering and Applied Science. UCEC supervises matters of interest to all undergraduate students through the control board, its legislative body. Students in this college also publish the *Colorado Engineer Magazine*, first published in 1904.

# The BOLD Center

The college-wide BOLD (Broadening Opportunity through Leadership and Diversity) Center focuses on the college's inclusion-centered access, retention, and performance initiatives. The BOLD Center creates a vibrant and inclusive community of students from a wide range of backgrounds, preparing engineers with diverse perspectives to be innovative leaders in a global society. Through BOLD-inspired and -led initiatives, the college is dedicated to becoming a leader in attracting, preparing, and expanding opportunities for students historically underrepresented in engineering—including students from low-income families and those who are the first in their family to attend college. The BOLD Center team focuses deeply on measurable outcomes to significantly improve upon historical student access, retention, and performance results.

**BOLDly Moving Forward.** The BOLD Center achieves breakthroughs in attracting, preparing, and expanding opportunities for historically underrepresented students in engineering through academic offerings that inspire and motivate student success. Building strong community among students who might otherwise feel isolated is also a BOLD key to student success. BOLD promotes student engagement, achievement, and retention in engineering through a focus on community building, leadership, and professional development activities, coupled with strong academics and an expectation for achieving excellence.

**Why be BOLD?** Through the inclusive BOLD community, students connect with engineering student societies, tap into internships and mentoring opportunities, explore career services, acquire effective study habits, and pursue volunteer opportunities. The BOLD Center offers free tutoring for all engineering students in the Student Success Center. BOLD participation scholarships are available through an application process. Visit [bold.colorado.edu](http://bold.colorado.edu).

## Engineering Honors Program

The Engineering Honors Program provides an educational experience that transcends the classroom and is designed to match the unique abilities, needs, and ambitions of the college's best students. The program is for students who want to belong to and contribute to an honors culture that cares more about learning than grades; more about maximizing their opportunities than meeting minimum requirements; more about being thoughtful, critical, engaged, and intentional than passively defined by the vague expectations of others. Central to fulfilling this mission is the Engineering Honors Program Residential College in Andrews Hall, which includes a residential faculty member, classrooms, special study spaces, and the highest percentage of upper-division students living on campus.

Being part of the Engineering Honors Program will mean all of the following:

- being part of a community of talented and dedicated students
- participating in special honors courses
- having the opportunity to do advanced research
- having a faculty mentor
- having exposure to industry leaders
- having greater access to internships
- completing an Honors Portfolio

There will be a combination of college-wide and department-specific honors experiences beginning in the student's very first semester. Incoming first-year students are selected to participate in the Engineering Honors Program via an online application process ([www.cuhonorsengineering.com](http://www.cuhonorsengineering.com)). For those who want to join the program after their first year, each department will have its own application process either at the end of the second or beginning of the third year.

## Herbst Program of Humanities

The Herbst Program of Humanities enriches and broadens the technical education offered in the College of Engineering and Applied Science through discussion-based classes and seminars on the great works in literature, art, history, and political and social thought. As a program of applied humanities, Herbst encourages students to engage in immediately relevant and significant conversations about our world.

The Herbst Program offers courses at all undergraduate levels, but its centerpiece is a 3-credit course open to juniors and seniors. HUEN 3100 is limited to 12 students and is devoted almost entirely to roundtable discussions of original texts, primarily in literature and philosophy, but with secondary attention given to art, music, and architecture. The seminar helps students improve their writing skills, gain confidence and skill in civil discourse on controversial issues, see more clearly the inadequacy of dogmatic responses to complex questions, and develop intellectual rigor on non-technical issues. HUEN 3100 satisfies the college's writing requirement.

The Herbst Program offers several different courses for students in their first or second year. HUEN 1010 Introduction to the Humanities satisfies the college writing requirement and explores such diverse forms of humanistic expression as short novels, poems, visual art, music, drama, and philosophy. In HUEN 2020 The Meaning of Information Technology, students consider the impacts and ethics of emerging communication technologies. HUEN 2100, 2120, and 2130 span invention and discovery from the Stone Age through the 20th century. HUEN 2210 Engineering Science and Society explores the ethics and social implications of engineering work. A variety of HUEN 2843 and 3843 Special Topics classes are offered each semester, on such issues as Leonardo da Vinci, The Journey in Literature and Film, and Leadership in Literature. The Herbst Program also offers summer term, study abroad, and Maymester courses.

The Herbst Program was initially funded by an endowment established by Clarence Herbst in 1989, and is sustained by the generous support of a variety of donors, including Linda Vitti Herbst, and by the College of Engineering and Applied Science. See [engineering.colorado.edu/herbst](http://engineering.colorado.edu/herbst).

## Quadrangle Engineering and Sciences Living & Learning Community

Offered in cooperation with the College of Engineering and Applied Science and Housing & Dining Services, the Quadrangle Community is comprised of four small residence halls: Aden, Brackett, Cockerell, and Crosman. This community offers on-site tutoring, access to a computer lab configured to match that in engineering computer labs, enhanced academic support services, wireless computer access, and calculus work groups in residence. There is a minimal fee for this Living & Learning Community. Interested students should contact Housing & Dining Services for application information.

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## Faculty: Aerospace Engineering Sciences

Name	Title	Education
AKOS, Dennis M.	assistant professor	BS, MS, PhD, Ohio University
ARGROW, Brian M.	department chair; director of RECUV; professor	BS, MS, PhD, University of Oklahoma
AXELRAD, Penina	professor	BS, MS, Massachusetts Institute of Technology; PhD, Stanford University
BEDARD, Alfred J.	associate professor adjunct	BS, Boston College; MS, PhD, University of Colorado
BIRINGEN, Sedat	professor	BS, MS, Robert College, Turkey; Diploma, von Karmán Institute for Fluid Dynamics; DSc, University of Brussels
BORN, George H.	director of CCAR; professor	BS, MS, PhD, University of Texas
CHU, Xinzhaoh	associate professor	BS, PhD, Peking University
CULP, Robert D.	professor emeritus	
DOOSTAN, Alireza	assistant professor	BS, MS, Sharif University of Technology; MA, PhD, The Johns Hopkins University
EMERY, William	professor	BS, Brigham Young University; PhD, University of Hawaii
FELIPPA, Carlos A.	professor	BS, Universidad Nacional de Cordoba, Argentina; MS, PhD, University of California, Berkeley
FORBES, Jeffery M.	professor	BS, University of Rhode Island; MS, University of Illinois; PhD, Harvard University
FREW, Eric	associate professor	BS, Cornell University; MS, PhD, Stanford University
GERREN, Donna Sue	senior instructor	BS, MS, University of Colorado; MSE, University of Michigan; PhD, University of Kansas
HAMLINGTON, Peter	assistant research professor	BA, University of Chicago; MS, PhD, University of Michigan
HUSSEIN, Mahmoud I.	assistant professor	BS, The American University in Cairo; MS, Imperial College of Science, Technology and Medicine, London; MS, MS, PhD, University of Michigan–Ann Arbor
JANSEN, Kenneth	professor	BS, University of Missouri–Columbia; MS, PhD, Stanford University

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E.		
KANTHA, Lakshmi	professor	BS, Bangalore University, India; MS, Indian Institute of Science; PhD, Massachusetts Institute of Technology
KILLEEN, Timothy	research professor	BS, PhD, University College London
KLAUS, David	associate director of BioServe; associate professor	BS, West Virginia University; MS, PhD, University of Colorado
KOSTER, Jean N.	professor	Dip-Ing, Dok-Ing, University of Karlsruhe, Germany
LARSON, Kristine	professor	AB, Harvard University; PhD, University of California, San Diego
LAWRENCE, Dale A.	professor	BS, Colorado State University; MS, PhD, Cornell University
LEBEN, Robert R.	research professor	BS, MS, Pennsylvania State University; PhD, University of Colorado
LI, Xinlin	professor	BS, University of Science and Technology of China; MS, Shanghai Institute of Optics and Fine Mechanics; PhD, Dartmouth College
MASLANIK, James	research professor	BS, MS, Pennsylvania State University; PhD, University of Colorado
MAUTE, Kurt	associate professor	Dipl.-Ing, PhD, University of Stuttgart
McGRATH, Michael Thomas	professor adjunct	BS, University of Colorado
MORGENTHALER, George W.	professor emeritus	
NEREM, R. Steven	associate director of CCAR and professor	BS, Colorado State University; MS, PhD, University of Texas at Austin
PALO, Scott	associate professor	BS, Clarkson University; MS, PhD, University of Colorado
PARK, Kwang-Chun	professor	BS, Inha Institute of Technology, Korea; MS, Stanford University; PhD, Clarkson College
SCHAUB, Hanspeter	associate professor	BS, MS, PhD, Texas A&M University
SCHEERES, Daniel J.	professor	BS, Calvin College; BSE, MSE, PhD, University of Michigan
SCHWARTZ, Trudy	senior instructor	BS, MS, University of Colorado
SNYDER, Howard	professor emeritus	
STARKEY, Ryan	assistant professor	BS, University of Alberta, Edmonton; MS, PhD, University of Maryland
STODIECK, Louis	director of BioServe; research	BS, MS, PhD, University of Colorado

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professor

THAYER, Jeffrey  
P.

associate  
professor

BS, State University of New York; MS, PhD, University of  
Michigan

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# Faculty: Chemical and Biological Engineering

Name	Title	Education
ANSETH, Kristi S.	distinguished professor	BS, Purdue University; PhD, University of Colorado
BOWMAN, Christopher N.	professor	BS, PhD, Purdue University
BRYANT, Stephanie J.	assistant professor	BS, University of Texas at Austin; PhD, University of Colorado
CLOUGH, David E.	professor	BS, Case Institute of Technology; MS, PhD, University of Colorado
DAVIS, Robert H.	dean, professor	BS, University of California, Davis; MS, PhD, Stanford University
DeGRAZIA, Janet	senior instructor	BA, Barnard College; MS, PhD, University of Colorado
FALCONER, John L.	professor	BES, Johns Hopkins University; MS, PhD, Stanford University
FOGLER, Scott	professor adjunct	BS, University of Illinois; MS, PhD, University of Colorado Boulder
GEORGE, Steven M.	professor	BS, Yale University; PhD, University of California, Berkeley
GILL, Ryan	assistant professor	BS, Johns Hopkins University; MS, PhD, University of Maryland
GIN, Douglas	professor	University of British Columbia; PhD, California Institute of Technology
HRENYA, Christine M.	associate professor	BS, Ohio State University; PhD, Carnegie Mellon University
JAYARAMAN, Arthi	assistant professor	BE, Birla Institute of Technology and Science; PhD, North Carolina State University
KOMPALA, Dhinakar S	associate professor	BTech, Indian Institute of Technology, Madras; MS, PhD, Purdue University
MAHONEY, Melissa J.	assistant professor	BS, Northwestern University; PhD, Cornell University
MEDLIN, Will	assistant professor	BS, Clemson University; PhD, University of Delaware
MUSGRAVE, Charles	associate professor	BS, University of California, Berkeley; MS, PhD, California Institute of Technology

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NOBLE, Richard D.	professor	BE, ME, Stevens Institute of Technology; PhD, University of California, Davis
NUTTELMAN, Charles	instructor	BS, MS, PhD, University of Colorado
RAMIREZ, Fred	professor adjunct emeritus	
RANDOLPH, Theodore W.	professor	BS, University of Colorado, PhD, University of California
SANI, Robert L.	professor	BS, MS, University of California, Berkeley; PhD, University of Minnesota
SCHWARTZ, Daniel K.	professor	AB, AM, PhD, Harvard University
STANSBURY, Jeffrey W.	professor	BS, PhD, University of Maryland
STOYKOVICH, Mark	assistant professor	BS, Massachusetts Institute of Technology; PhD, University of Wisconsin–Madison
WEIMER, Alan W.	professor	BS, University of Cincinnati; MS, PhD, University of Colorado

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# Faculty: Civil, Environmental, and Architectural Engineering

Name	Title	Education
AMADEI, Bernard	professor	Dipl Eng, School of Applied Geology and Mine Prospecting, E.N.S.G., France; MS, University of Toronto; PhD, University of California, Berkeley
AMY, Gary L	professor emeritus	
BALAJI, Rajagopalan	associate chair; assistant professor	BS, Regional Engineering College, India; MS, Indian Statistical Institute; PhD, Utah State University
BALL, L. Duane	professor emeritus	
BIELEFELDT, Angela R.	associate professor	BS, Iowa State University; MSCE, PhD, University of Washington
BRANDEMUEHL, Michael J.	professor	BS, MS, PhD, University of Wisconsin–Madison
CHASE, Thomas	associate professor	BS, MS, Colorado State University
CHINOWSKY, Paul S.	professor	BS, MS, California Polytechnic State University; PhD, Stanford University
CHUNG FENG, Chuan	professor emeritus	
COROTIS, Ross	professor	BS, MS, PhD, Massachusetts Institute of Technology
CRIMALDI, John P.	associate professor	BSE, Princeton University; MS, PhD, Stanford University
DASHTI, Shideh	assistant professor	BS, Cornell University; MS, PhD, University of California, Berkeley
DIEKMANN, James E.	professor	BS, MS, University of Missouri; PhD, University of Washington
DILAURA, David L.	professor emeritus	
DOW, John O.	associate	

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	professor emeritus	
FRANGOPOL, Dan M.	professor emeritus	
GERSTLE, Kurt H.	professor emeritus	
GOBLE, George G.	professor emeritus	
GUPTA, Vijay	professor	BE, University of Roorkee, India; MS, Colorado State University; PhD, University of Arizona
HALEK, Milan F.	senior instructor	BA, University of Colorado; MS, Czechoslovakia Technical University
HALLOWELL, Matthew	assistant professor	BS, MS Bucknell University; PhD, Oregon State University
HEARN, George	associate professor	BS, The Cooper Union; MS, PhD, Columbia University
HENZE, Gregor	associate chair; professor	BS, Technical University of Berlin; MS, Oregon State University; PhD, University of Colorado
HERNANDEZ, Mark	professor	BS, MS, PhD, University of California, Berkeley
KO, Hon-Yim	professor emeritus	
KRARTI, Moncef	professor	Dipl Ing, Ecole Nationale des Ponts és Chaussées; MS, PhD, University of Colorado Boulder
KREIDER, Jan F.	professor emeritus	
LIEL, Abbie	assistant professor	BSE, Princeton University; MSc, University College London; PhD, Stanford University
LINDEN, Karl G.	professor	BS, Cornell University; MS, PhD, University of California, Davis
McCARTNEY, John	assistant professor	BS, MS, University of Colorado; PhD, The University of Texas at Austin
McKNIGHT, Diane M.	professor	BS, MS, PhD, Massachusetts Institute of Technology
MOLENAAR, Keith	department chair; professor	BS, MS, PhD, University of Colorado Boulder
MONTOYA, Lupita	assistant professor	BS, California State University; MS, PhD, Stanford University
NEUPAUER, Roseanna	associate professor	BS, Carnegie Mellon University; SM, Massachusetts Institute of Technology; MS, PhD, New Mexico Institute of Mining and Technology
PAK, Ronald Y. S.	professor	BE, McMaster University, Canada; MS, PhD, California Institute of Technology

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PFEFFER, William T.	professor	BA, University of Vermont; MA, University of Maine, PhD, University of Washington
PORTER, Keith A.	associate research professor	BS, University of California, Davis; MEng, University of California, Berkeley; PhD, Stanford University
RAJARAM, Harihar	professor	BTech, Indian Institute of Technology, Madras; MS, University of Iowa; ScD, Massachusetts Institute of Technology
REGUEIRO, Richard	assistant professor	BSE, University of Pennsylvania, SM, Massachusetts Institute of Technology; PhD, Stanford University
ROSARIO-ORTIZ, Fernando	assistant professor	BS, University of Puerto Rico; MS, California Institute of Technology; DEnv, University of California, Los Angeles
RYAN, Joseph N.	professor	BS, Princeton University; MS, PhD, Massachusetts Institute of Technology
SAOUMA, Victor A.	professor	BE, American University of Beirut; PhD, Cornell University
SILVERSTEIN, Joann	professor	BA, Stanford University; BS, MS, PhD, University of California, Davis
SIVASELVAN, Mettupalyam	assistant professor	BTech, Indian Institute of Technology; MS, PhD, State University of New York at Buffalo
STRZEPEK, Kenneth M.	professor	ScB, SM, PhD, Massachusetts Institute of Technology
STURE, Stein	Croft Professor	BS, MS, PhD, University of Colorado
SUMMERS, Luis L.	professor emeritus	
SUMMERS, R. Scott	professor	BS, MS, University of Cincinnati; PhD, Stanford University
TULIN, Leonard G.	professor emeritus	
VASCONEZ, Sandra L.	senior instructor	BA, King's College; MS, Rensselaer Polytechnic Institute; MA, University of Denver



# Faculty: Computer Science

Name	Title	Education
ANDERSON, Kenneth M.	associate chair; associate professor	BS, MS, PhD, University of California, Irvine
BENNETT, John K.	professor	BSEE, MEE, Rice University; MS, PhD, University of Washington
BLACK, John R.	associate professor	BS, California State University, Hayward; PhD, University of California, Davis
BRADLEY, Elizabeth	professor	BS, MS, PhD, Massachusetts Institute of Technology
BROWN, Timothy X.	associate professor	BS, Pennsylvania State University; PhD, California Institute of Technology
BYRD, Richard H.	professor	BA, MA, PhD, Rice University
CAI , Xiao-Chuan	professor	BS, Peking University; MS, PhD, New York University
CHANG, Bor-Yuh Evan	assistant professor	BS, Carnegie Mellon University; MS, PhD, University of California, Berkeley
CLAUSET, Aaron	assistant professor	BS, Haverford College; PhD, University of New Mexico
COLUNGA, Eliana	assistant professor	BS, MSc, El Instituto Tecnológico y de Estudios Superiores de Monterrey; PhD, Indiana University
CORRELL, Nikolaus J.	assistant professor	MS, Eidgenössische Technische Hochschule Zürich; PhD, Ecole Polytechnique Fédérale de Lausanne
DIWAN, Amer S.	associate professor	BA, Middlebury College; MS, PhD, University of Massachusetts Amherst
DOWELL, Robin D.	assistant professor	BS, Texas A&M University; DSc, Washington University in St. Louis
EHRENFEUCHT, Andrzej	distinguished professor	MA, University of Warsaw, Poland; PhD, Mathematical Institute of P.A.N., Warsaw
EISENBERG , Michael A.	professor	BA, Columbia University; MS, PhD, Massachusetts Institute of Technology
ELLIS, Clarence A.	professor emeritus	

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FISCHER, Gerhard	professor	MS, University of Heidelberg; PhD, University of Hamburg
FOSDICK, Lloyd D.	professor emeritus	
GOLDBERG, Debra S.	assistant professor	BS, Yale University; MS, University of Denver; MS, PhD, Cornell University
GRUNWALD, Dirk C.	professor	BS, MS, PhD, University of Illinois, Urbana-Champaign
HAN, Richard Y.	associate professor	BS, Stanford University; MS, PhD, University of California, Berkeley
HUNTER, Lawrence	professor	BS, MS, PhD, Yale University
JESSUP, Elizabeth R.	professor	BA, Williams College; MS, MPhil, PhD, Yale University
KING, Roger A.	professor	AB, Occidental College; MS, PhD, University of Southern California
KNIGHT, Robin D.	associate professor	BS, University of Otago, New Zealand; PhD, Princeton University
LEWIS, Clayton H.	professor	AB, Princeton University; MS, Massachusetts Institute of Technology; PhD, University of Michigan
LV, Qin	assistant professor	BE, Tsinghua University; MA, PhD, Princeton University
MAIN, Michael G.	professor	BS, MS, PhD, Washington State University
MARTIN, James H.	department chair; professor	BS, Columbia University; PhD, University of California, Berkeley
McBRYAN, Oliver	professor emeritus	
MISHRA, Shivakant	associate professor	BTech, Indian Institute of Technology Bombay; MS, Southern Illinois University; PhD, University of Arizona
MOZER, Michael C.	professor	BS, Brown University; MA, PhD, University of California, San Diego
MULLIGAN, Jane	research assistant professor	BS, Acadia University; MS, PhD, University of British Columbia
NEMETH, Evi	associate professor emerita	
NUTT, Gary J.	professor emeritus	
PALEN, Leysia A.	associate professor	BS, University of California, San Diego; MS, PhD, University of California, Irvine
PALMER, Martha S.	professor	BA, MA, University of Texas; PhD, University of Edinburgh
REPENNING, Alexander	research associate professor	BS, Engineering College, Brugg-Windisch, Switzerland; MS, PhD, University of Colorado Boulder
SANDERS, Bruce W.	senior instructor	

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	emeritus	
SANKARANARAYANAN, Sriram	assistant professor	BTech, Indian Institute of Technology Kharagpur; MS, PhD, Stanford University
SCHNABEL, Robert B.	professor emeritus	
SICKER, Douglas C.	associate professor	BS, MS, PhD, University of Pittsburgh
SIEK, Jeremy	assistant professor	BS, MS, University of Notre Dame; PhD, Indiana University
SIEK, Katie A.	assistant professor	BS, Eckerd College; MS, PhD, Indiana University
SUMNER, Tamara R.	associate professor	BA, BS, University of California, Santa Cruz; MS, PhD, University of Colorado Boulder
TUFO, Henry M.	associate professor	BS, Duke University; MS, University of Vermont; MS, PhD, Brown University
WAITE, William M.	professor emeritus	
WARD, Wayne H.	research professor	BA, Rice University; MS, PhD, University of Colorado Boulder
WINKLMANN, Karl A.	senior instructor emeritus	

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# Faculty: Electrical, Computing, and Energy Engineering

Name	Title	Education
AVERY, James	professor emeritus	
AVERY, Susan	professor emerita	
BARNES, Frank S.	distinguished professor	BS, Princeton University; MS, Engineer Degree, PhD, Stanford University
BENNETT, John	professor	BS, ME, Rice University; MS, PhD, University of Washington
BRADLEY, Elizabeth	professor	BS, MS, PhD, Massachusetts Institute of Technology
BROWN, Thompson R.	senior instructor	BS, Wichita State University
BROWN, Timothy X	professor	BS, Pennsylvania State University; MS, PhD, California Institute of Technology
CATHEY, W. Thomas	professor emeritus	
COGSWELL, Carol	research professor	MA, PhD Equivalent, University of Oregon
DAMERON, Ruth H.	senior instructor	BS, Wheaton College; MS, Syracuse University
DEMUTH, Howard	professor adjunct	BS, University of Colorado; MS, PhD, Stanford University
ERICKSON, Robert W.	professor	BS, MS, PhD, California institute of Technology
FILIPOVIC, Dejan	associate professor	Dipl Eng, University of Nis, Yugoslavia; MS, PhD, University of Michigan
FUCHS, Ewald F.	professor emeritus	
GASIEWSKI,	professor	BS, MS, Case Western Reserve University; PhD, Massachusetts

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Albin J.		Institute of Technology
GOPINATH, Juliet T.	assistant professor	BS, University of Minnesota; SM, PhD, Massachusetts Institute of Technology
GRUNWALD, Dirk	associate professor	BSc, MSc, PhD, University of Illinois, Urbana-Champaign
HACHTEL, Gary D.	professor emeritus	
HAUSER, John E.	associate professor	BS, United States Air Force Academy; MS, PhD, University of California, Berkeley
HAYES, Russell	professor emeritus	
HERZFELD, Ute	associate professor research	MS, Dr.Rer.NAT., Johannes Gutenberg Universität, Mainz, Germany
HEURING, Vincent P.	associate professor emeritus	
HUGHES, Shannon	assistant professor	BA, BS, Rice University; PhD, Princeton University
KAPTEYN, Henry C.	professor	BS, Harvey Mudd College; MA, Princeton; PhD, University of California, Berkeley
KUESTER, Edward F.	professor	BS, Michigan State University; MS, PhD, University of Colorado
LIGHTNER, Michael R.	department chair, professor	BS, MS, University of Florida; PhD, Carnegie Mellon University
LIU, Youjian	associate professor	BE, Beijing University of Aeronautics and Astronautics, China; MS, Peking University; MS, PhD, Ohio State University
MAJERFELD, Arnoldo	professor emeritus	
MAKSIMOVIC, Dragan	associate professor	BS, MS, University of Belgrade; PhD, California Institute of Technology
MARDEN, Jason	assistant professor	BS, MS, PhD, University of California, Los Angeles
MATHYS, Peter	associate chair; associate professor	Dipl EI Ing, PhD, Swiss Federal Institute of Technology, Zurich
McCLURE, Robert	associate professor	BS, MS, Montana State University; MS, University of California, Davis; PhD, University of Colorado
MEYER, David G.	associate chair; associate professor	BS, University of Wyoming; MS, PhD, Stanford University
MEYER,	associate	MS, ENSIMAG, Grenoble; PhD, INRIA, Rennes

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Francois G.	professor	
MICKELSON, Alan R.	associate professor	BS, University of Texas at El Paso; MS, PhD, California Institute of Technology
MIHRAN, Richard T.	professor adjunct	BS, Case Western Reserve University; MS, PhD, University of Colorado
MODEL, Garrett	professor	BS, Stanford University; MS, PhD, Harvard University
MULLIS, CT	professor emeritus	
MURNANE, Margaret	professor	BSc, MSc, University College Cork, Ireland; PhD, University of California, Berkeley
NEWHALL, William G.	professor adjunct	BS, MS, PhD, Virginia Polytechnic Institute and State University
PAO, Lucy Y.	professor	BS, MS, PhD, Stanford University
PARK, Wounjhang	associate professor	BS, Seoul University; MS, Dongguk University; PhD, Georgia Institute of Technology
PIESTUN, Rafael	professor	EE, Universidad de Republica, Uruguay; MSc, PhD, Technion–Israel Institute of Technology; Post Doc, Stanford University
PIKET-MAY, Melinda	associate professor	BS, University of Illinois; MS, PhD, Northwestern University
PLESZKUN, Andrew R.	associate professor	BS, Illinois Institute of Technology; MS, PhD, University of Illinois
POPOVIC, Zoya	distinguished professor	BS, University of Belgrade, Yugoslavia; MS, PhD, California Institute of Technology
POPOVIC, Milos	assistant professor	BS, Queen's University, Kingston, Ontario, Canada; MS, PhD, Massachusetts Institute of Technology
ROGALLA, Horst	research professor	Diploma, PhD, University of Muenster, Germany
SHANG, Li	associate professor	BE, ME, Tsinghua University; PhD, Princeton University
SIEK, Jeremy	assistant professor	BS, MS, University of Notre Dame; PhD, Indiana University



# Faculty: Engineering Management

Name	Title	Education
AMBLER, Wayne	associate professor	BA, Cornell University; MA, University of Toronto and Boston College; PhD, Boston College
KIRSHLING, Wayne R.	scholar-in-residence; attendant-rank professor	BS, United States Air Force Academy; MS, Stanford University; MBA, University of Colorado at Colorado Springs; DBA, University of Colorado Boulder
LAWTON, Barbara B.	program chair; Lockheed-Martin Professor	BA, American University; MA, Pennsylvania State University; PhD, University of Wyoming
LUFTIG, Jeffrey T.	Deming professor of management	BS, State University of New York College at Buffalo; MEd, Bowling Green University; PhD, University of Minnesota
STOLDT, Conrad	associate professor	BA, University of Colorado Boulder; PhD, Iowa State University

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# Faculty: Herbst Humanities Program

Name	Title	Education
DOUGLASS, Scot	associate professor, Herbst Program of Humanities and Department of Comparative Literature/Humanities	BS, University of Arizona; ThM, Dallas Seminary; PhD, University of Colorado
FREDRICKSMEYER, Hardy	senior instructor, Herbst Program of Humanities	BA, University of Colorado Boulder; MA, Columbia University and University of Texas, Austin; PhD, University of Texas, Austin
GIOVANNELLI, Leland	senior instructor, Herbst Program of Humanities	BA, St. John's College, Annapolis; MA, PhD, University of Chicago
LANGE, Anja	senior instructor; Herbst Program of Humanities	PhD, University of Colorado
SIEBER, Diane	associate dean for education; associate professor	BA, University of Virginia; MA, PhD, Princeton University

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# Faculty: Mechanical Engineering

Name	Title	Education
BORDEN, Mark	assistant professor	BS, University of Arizona; PhD, University of California, Davis
BRANCH, Melvyn C.	professor emeritus	
BRIGHT, Victor	department chair; professor	BS, University of Colorado; MS, PhD, Georgia Institute of Technology
BROWER, Timothy L.	senior instructor	BS, Idaho State University; MS, Montana State University; PhD, Colorado State University
BUNCH, J. Scott	assistant professor	BS, Florida International University; MS, PhD, Cornell University
CARLSON, Lawrence E.	professor emeritus	
CASTRO, Francisco	instructor	BS, University of Colorado Denver; MS, PhD, University of Colorado Boulder
DAILY, John W.	professor	BS, MS, University of Michigan; PhD, Stanford University
DATTA, Subhendu K.	professor emeritus	
DING, Yifu	assistant professor	BS, MS, Fudan University; PhD, University of Akron
DUNN, Martin L.	professor	BS, Montana State University; MS, PhD, University of Washington
FERGUSON, Virginia	assistant professor	BS, MS, PhD, University of Colorado Boulder
GEERS, Thomas L.	professor emeritus	
HANNIGAN, Michael	assistant professor	BS, Southern Methodist University; MS, PhD, California Institute of Technology
HENZE, Daven K.	assistant professor	PhD, California Institute of Technology
HERTZBERG,	associate professor	BSE., University of Michigan; MS, PhD, University of California, Berkeley

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Jean R.		
KASSOY, David R.	professor emeritus	
KOTYS-SCHWARTZ, Daria	instructor	BS, MS, Ohio State University; PhD, University of Colorado Boulder
KREITH, Frank	professor emeritus	
LEE, Se-Hee	associate professor	PhD, Seoul National University
LEE, Yung-Cheng	professor	BS, National Taiwan University; MS, PhD, University of Minnesota
MILFORD, Jana B.	professor	BS, Iowa State University; MS, PhD, Carnegie Mellon University
MILLER, Shelly L.	associate professor	BS, Harvey Mudd College; MS, Claremont College; MS, PhD, University of California, Berkeley
MURRAY, Todd	associate professor	BS, MSE, PhD, Johns Hopkins University
PAWLAS, Gary	instructor	BS, University of Cincinnati; MSME, University of Colorado Boulder; PhD, University of Toledo
PELLIGRINO, John	research professor	BS, City College of New York; MS, PhD, University of Colorado Boulder
QI, H. Jerry	associate professor	BS, MS, PhD, Tsinghua University; ScD, Massachusetts Institute of Technology
RAJ, Rishi	professor	BS, University of Newcastle-upon-Tyne; BS, Allahabad University; PhD, Harvard University
REAMON, Derek	senior instructor	BS, MS, PhD, Stanford University
RENTSCHLER, Mark E.	assistant professor	BS, University of Nebraska; MS, Massachusetts Institute of Technology; PhD, University of Nebraska
SHANDAS, Robin	research professor	BS, University of California, Santa Barbara; MS, PhD, University of California, San Diego
TAN, Wei	assistant professor	BS, East China University of Science and Technology; MS, PhD, University of Illinois, Chicago
VASILYEV, Oleg V.	professor	MS, Moscow Institute of Physics and Technology; MS, PhD, University of Notre Dame
WEIDMAN, Patrick D.	professor emeritus	
XIAO, Jianliang	assistant professor	BS, MS, Tsinghua University; PhD, Northwestern University
YANG, Ronggui	associate professor	BS, Xi'an Jiaotong University; MS, Tsinghua University; MS, University of California, Los Angeles; PhD, Massachusetts Institute of Technology
ZABLE, Jack	industry professor of mechanical engineering design	BS, City College of New York; MS, PhD, Purdue University

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## Faculty: Telecommunications

Name	Title	Education
BAKER, Kenneth	scholar-in-residence	BS, University of Maryland; MS, PhD, Virginia Tech
BARNES, Frank S.	professor	BS, Princeton University; MS, Engineer's Degree, PhD, Stanford University
BERNTHAL, Brad	associate clinical professor	BA, University of Kansas; JD, University of Colorado
BROWN, Timothy X	director; professor	BS, Pennsylvania State University; MS, PhD, California Institute of Technology
CRAIN, Andrew	scholar-in-residence	BA, University of Wisconsin; JD, University of Michigan
GATES, Harvey M.	assistant professor adjunct	BS, University of New Mexico; MS, PhD, University of Denver
HATFIELD, Dale N.	professor adjunct	BS, Case Institute of Technology; MS, Purdue University
RYAN, Patrick S.	scholar-in-residence	BA, Monterrey Institute of International Studies; JD, University of Texas at Austin; PhD, Katholieke Universiteit, Leuven
SANTOS, Jose	lab instructor	MS, University of Colorado Boulder
SAVAGE, Scott	associate professor	BB, Edith Cowen University, Australia; MEc, University of Western Australia; PhD, Curtin University of Technology, Australia.
SICKER, Douglas	associate professor	BS, MS, University of Pittsburgh; PhD, University of Pittsburgh
WEISER, Phillip	associate professor	BA, Swarthmore College; JD, New York University School of Law
ZAHEDI, Sadaf	scholar-in-residence	BS Sharif University of Technology; MS, PhD, University of California, Los Angeles

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# Graduate School



**John Stevenson, dean**  
26 UCB • phone: 303-492-7401 • fax: 303-492-5777  
school website: [www.colorado.edu/graduateschool](http://www.colorado.edu/graduateschool)

GRADUATE WORK at the University of Colorado began on a small scale in 1892. Following years of development, the Graduate School was organized in 1909 with a separate faculty. Each of the three campuses of the University of Colorado system now offers graduate degree programs, and a dean is in residence on each campus. The Graduate School at CU-Boulder is governed by its own set of [Graduate School Rules](#).

## Funding for Graduate Study

CU-Boulder administers various forms of financial assistance for graduate students: fellowships, traineeships, scholarships, research and teaching assistantships, and awards from outside agencies.

### *Financial Aid for Graduate Study*

The University of Colorado offers several types of financial assistance for graduate students who demonstrate financial need. Students apply for assistance by submitting a financial aid application (the FAFSA) as soon as possible after January 1.

The Colorado Graduate Grant Program is open to graduate students who are Colorado residents. Nonresidents are eligible for student fee grants. To receive assistance, students must be nominated by their departments.

Graduate students may apply for long-term loans through the Stafford Loan (formerly GSL) program or the Perkins Loan program (formerly the National Direct Student Loan) and for part-time jobs through the college work-study program.

### *Graduate Part-Time Instructors and Teaching Assistants*

Many departments employ graduate students as graduate part-time instructors (GPTIs) or as teaching assistants (TAs). GPTIs must possess a master's degree or the equivalent and have demonstrated competence in classroom teaching. Teaching assistants are not required to have previous teaching experience. In order to be eligible to be a GPTI or a TA, one must be a fully

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enrolled graduate student, with a cumulative GPA of at least 3.000. Compensation is based on the percentage of time worked, and includes a tuition waiver and partial insurance benefit.

### *Research Assistants*

In many departments, research activities provide opportunities for graduate students to work part time as research assistants. All research assistants must maintain a cumulative GPA of at least 3.00 and be full-time regularly enrolled graduate students. Compensation is based on percentage of time worked and includes a tuition waiver and partial insurance benefit.

### *Scholarships and Fellowships*

**The Chancellor's Graduate Fellowship Program**, instituted in 1984–85, attracts outstanding students for graduate study at the University of Colorado. Selected students receive a stipend of \$25,000 for two academic years and a full waiver of all tuition, fees, and insurance. Recipients must be entering master's or doctoral degree students and be nominated by their department.

Additional fellowships are available from private sources. Fellowships, traineeships, and scholarships are also offered by some departments. Applications for financial support are due in the departments by the announced deadlines; most departments must receive applications by January 15.

Information on other funding opportunities is available on the Graduate School website at [www.colorado.edu/graduateschool/funding](http://www.colorado.edu/graduateschool/funding).

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# Requirements for Advanced Degrees

## On This Page:

- [Graduate Faculty Appointments for Courses and Exams](#)
- [Master's Degrees](#)
- [Doctor of Philosophy, Doctor of Musical Arts, and Doctor of Audiology](#)

A graduate student is responsible for becoming informed about and observing all regulations and procedures required by the graduate program pursued. Ignorance of a rule does not constitute a basis for waiving that rule. Any exceptions to the policies stated in this catalog must be approved by the dean of the Graduate School.

Additionally, all research must comply with campus and federal research regulations. See the research administration website at [www.colorado.edu/VCResearch/integrity](http://www.colorado.edu/VCResearch/integrity).

## Graduate Faculty Appointments for Courses and Exams

All courses, 5000-level or above, completed to fulfill graduate degree requirements must be taught by members of the graduate faculty. In addition, any faculty member serving on a master's or doctoral examination/defense committee must hold a current graduate faculty appointment. Membership on the university faculty does not automatically constitute an appointment to the graduate faculty. Contact your departmental graduate program assistant for questions concerning these appointments.

## Master's Degrees

A student enrolled in a master's program must satisfy the degree requirements of both the Graduate School and the major department. The requirements listed below are the minimum standards of the Graduate School; additional requirements are set forth by the major department.

### *Minimum Requirements*

The minimum requirement for the master's degree is 30 credit hours. A student may complete a Plan I (thesis) option, or a Plan II (course work) option. At least 24 hours must be completed at the 5000 level or above; these 24 hours must include a minimum of 4, but not more than 6, thesis hours for those students completing a Plan I degree. A maximum of 6 credit hours may be completed at the 3000 or 4000 level at the discretion of the academic department.

Independent study course work cannot exceed 25 percent of the course work required for the master's degree.

### *Master's Thesis*

A thesis, which may be research or expository, critical, or creative work, is required of every master's degree candidate under Plan I. Every thesis presented in partial fulfillment of the requirements for an

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advanced degree must accomplish the following:

- represent the equivalent of 4–6 semester hours of work, and
- comply in mechanical features with the specifications for theses and dissertations available in the Graduate School.

The final grade is withheld until the thesis is completed; if the thesis is not finished at the end of the term in which the student is registered, an in-progress (*IP*) grade is reported.

### *Language Requirement*

There is no campuswide foreign language requirement for the master's degree. The decision regarding the foreign language requirement for each graduate degree is the responsibility of the graduate program.

### *Time Limit*

Master's degree students have four years (six years for students pursuing an ME) from the semester in which they are admitted and begin course work to complete all degree requirements. The phrase "all degree requirements" includes the filing of the thesis with the Graduate School if Plan I is followed. Students who fail to complete the degree in this four-year period may be dismissed from their program with the concurrence of the major advisor and/or appropriate departmental personnel. To continue, the student must file a petition for an extension of the time limit with the dean of the Graduate School. Such petitions must be endorsed by the student's major advisor and/or other appropriate departmental personnel and may be granted for up to one year.

Students who have not completed the degree within their time limit, and who have received approval for an extension, must have any course work completed more than five years prior to the completion of the degree requirements evaluated by their department for relevance and applicability. At the discretion of the department the student may be required to validate these courses as part of the completion of their degree requirements.

Students who need to leave CU-Boulder for a period of time may apply to the Time Off Program for up to one year. Participation in the Time Off Program does not extend the student's time limit, but may be used as a reason to request an extension.

Students whose registration at CU-Boulder is interrupted by military service may apply to the dean of the Graduate School for an extension.

### *Minimum Registration Requirement*

Master's degree minimum registration requirements can be met only by full-time registration at CU-Boulder for at least two semesters, at least three summer sessions, or a combination of at least one semester and two summer sessions/part-time semesters.

For purposes of deciding minimum registration credit toward a graduate degree, a student must be registered as a full-time student. One semester of minimum registration credit may be earned for full-time registration during the fall or spring semesters or two summer semesters/part-time semesters.

To be a full-time master's student, a student must carry one of the following course loads: a minimum of 5 credits of graduate course work, 8 credits of combined undergraduate and graduate course work, 12 hours of undergraduate course work, at least 1 master's thesis hour, or at least 1 hour of "Master's Candidate for Degree." Full- and half-time standards may be different for students receiving federal or state financial aid. Students should contact the Office of Financial Aid to see if these standards apply. These different standards are for financial aid purposes only.

### *Candidacy and Graduation*

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To be granted a master's degree, a student must become a candidate for that degree by filing an Application for Admission to Candidacy with the Graduate School no later than the posted graduation deadlines during the semester in which he or she plans to have the degree conferred. Students must meet all posted graduation deadlines in order to receive a degree in any given semester.

### *Comprehensive-Final Examination*

Each candidate for a master's degree is required to take a comprehensive-final examination/thesis defense after the requirements for the degree have been substantially completed or to present an approved degree plan which meets the requirements of the field and represents an intellectually coherent graduate education as determined by the major department. The examination/defense may be given near the end of the student's last semester while the candidate is still taking required courses for the degree, provided satisfactory progress is being made in those courses. The approved degree plan must be approved by the department chair, graduate director, and major advisor on the Degree Plan Approval Form. The Degree Plan Approval option is available only in select departments.

The following rules apply to the comprehensive-final examination:

1. A student must be registered on the Boulder campus as a regular degree-seeking student during the semester the examination is passed.
2. Notice of the examination/defense must be filed by the major department in the Graduate School at least two weeks prior to the examination/defense. The examination/defense must be scheduled no later than the posted deadline for the semester in which the degree is to be conferred.
3. The exam is given by a committee of three graduate faculty members appointed by the department with approval of the dean of the Graduate School. The chair of the committee must have a regular or tenured graduate faculty appointment.
4. The examination, which may be oral, written, or both, must cover the thesis (which should be essentially complete), other work completed in courses and seminars in the major field, and all work presented for the degree.
5. A student must have an affirmative vote from the majority of the committee members to pass. A student who fails the comprehensive-final examination may attempt it once more after a period of time determined by the examining committee.

## Doctor of Philosophy, Doctor of Musical Arts, and Doctor of Audiology

The doctor of philosophy (PhD), the doctor of musical arts (DMusA), and the doctor of audiology (AuD) are the highest academic degrees conferred by CU-Boulder. The requirements stated below are minimal requirements for all candidates for the PhD degree; additional conditions are found in department announcements. Additional requirements for the doctor of musical arts are available from the College of Music. Additional requirements for the doctor of audiology are available from the Department of Speech, Language, and Hearing Sciences.

### *Admission*

A student admitted to the Graduate School for the master's program must reapply for admission for the doctoral program.

### *Minimum Course Requirement*

The minimum requirements for the PhD or DMusA degree are 30 credit hours of course work at the 5000 level or above. Those students pursuing the PhD shall complete a minimum of 30 credit hours

of dissertation work beyond the minimum course work requirement. The minimum transfer requirements for the AuD degree are 108 credit hours of course work at the 5000 level or above.

Unless otherwise specified by departmental requirements, all courses taken at the 5000 level or above that were taken for the master's degree at CU-Boulder may be applied toward the PhD degree. Course work taken in pursuit of a doctoral degree cannot be applied toward a subsequent master's degree.

### *Dissertation Credit-Hour Requirement*

To complete the requirements for the PhD degree, a student must register for a minimum of 30 dissertation credit hours. Distribution of those hours is as follows:

1. A student may not register for more than 10 dissertation credit hours in any one semester.
2. Not more than 10 dissertation credit hours taken in semesters prior to the semester in which the comprehensive examination is passed may be counted in the 30 dissertation hours required for the degree.
3. Not more than 10 dissertation hours of credit taken the semester in which the comprehensive examination is passed may be included in the 30 dissertation credit hours required for the degree.

### *Minimum Registration Requirement*

The minimum registration requirement for doctoral students is six semesters beyond the attainment of an acceptable bachelor's degree. Two semesters of minimum registration credit may be allowed for a master's degree from an accredited institution; however, at least four semesters of minimum registration credit, two of which must be consecutive in one academic year, must be earned for work taken at CU-Boulder.

For purposes of deciding minimum registration credit toward a graduate degree, a student must be registered as a full-time student. One semester of minimum registration credit may be earned for full-time registration during the fall or spring semester or during two summer semesters. Doctoral students who have not passed the comprehensive examination are considered full time during the spring and fall semesters if they are enrolled for at least 5 credit hours of course work at the graduate level, 8 credit hours of combined undergraduate and graduate hours, 12 credit hours of course work at the undergraduate level, or at least 1 doctoral dissertation hour. DMA students who have not passed their comprehensive exam may also be considered full time if they are taking 1 hour of course work numbered 8200–8399 or TMUS 8019. Doctoral students who have passed the comprehensive examination must register for at least 5 doctoral dissertation hours to be considered full-time students. DMA students who have passed their comprehensive examination must register for 1 hour of course work numbered 8200–8399 or TMUS 8029 to be considered full time. Doctor of audiology students are considered full-time students if they are enrolled for at least 5 credit hours of course work at the graduate level, 8 hours of course work of combined undergraduate and graduate hours, or 12 credit hours of course work at the undergraduate level. Full- and half-time standards may be different for students receiving federal or state financial aid. Students should contact the Office of Financial Aid to see if these standards apply. These different standards are for financial aid purposes only.

### *Preliminary Examination*

Each department determines for itself (by examination or other means) that students who wish to study for the doctoral degree are qualified. The means by which each department makes this evaluation are specified in departmental requirements. Students who are thus evaluated are notified immediately of the results.

### *Language Requirement*

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There is no campuswide foreign language requirement for the doctoral degree. The decision regarding the foreign language requirement for each graduate degree is the responsibility of the graduate program.

## *Comprehensive Examination*

Before admission to candidacy for the doctoral degree, students must pass a comprehensive examination in the field of concentration and related fields.

The following rules apply to the doctoral comprehensive examination.

1. Students must be registered (pass/fail or credit) on the Boulder campus as regular degree-seeking students when they pass the comprehensive examination.
2. Notice of the examination must be filed by the major department with the Graduate School at least two weeks before the examination.
3. The examination is conducted by an examining board appointed by the chair of the major department and approved by the dean of the Graduate School. The board consists of the major advisor and additional members as necessary to a minimum of five. The chair must have a regular or tenured graduate faculty appointment. Successful candidates must receive affirmative votes from a majority of the members of their examination board. A candidate who fails the examination may attempt it once more after a period of time determined by the examination board.
4. The examination, which may be oral, written, or both, tests mastery of a broad field of knowledge, not merely formal course work. The oral part is open to members of the graduate faculty.

## *Admission to Candidacy*

A student must formally apply for admission to candidacy for the doctoral degree on forms supplied by the Graduate School at least two weeks before attempting the comprehensive examination. Before being admitted to candidacy a student must earn at least three semesters toward the minimum registration requirement, and pass the comprehensive examination.

## *Continuous Registration Requirement*

A PhD student is required to register continuously for a minimum of 5 dissertation hours in the fall and spring semesters of each year, beginning with the semester following the passing of the comprehensive examination and extending through the semester in which the dissertation is successfully defended (final examination). DMusA students must maintain continuous registration for at least 1 credit of course work numbered 8200–8399 (or TMUS 8029). AuD students must maintain continuous registration for appropriate course work in the fall and spring semesters of each year through the semester in which the final exam is passed.

1. A student not required to maintain full-time status and not using campus facilities may claim off-campus status, which allows registration for 3 rather than the minimum of 5 dissertation credit hours. Off-campus status (3 credits of dissertation hours) is considered part-time. All CU-Boulder considerations for part-time status apply.
2. A student who fails to register continuously for dissertation credit hours after passing the comprehensive examination must retake and pass the comprehensive examination in order to regain status as a student in good standing in the Graduate School. The department may require that the student validate course work more than five years old. At its discretion, the department may petition the dean of the Graduate School for a time limit for completion of all degree requirements of up to one year after the retaking of the comprehensive exam. The department must petition the dean of the Graduate School to waive the requirement to retake the comprehensive exam.

3. A PhD student must be registered full time for a minimum of 5 dissertation hours during the semester (including summer session) in which the dissertation defense is passed. DMusA students must be registered full time in course work numbered 8200–8399 ( or TMUS 8029) during the semester in which the dissertation defense is passed. AuD students must be registered full time for 5 hours of graduate level course work or 8 hours of combined undergraduate and graduate hours during the semester in which the final exam is passed.

### *Dissertation Requirements*

A PhD student must write a dissertation based upon original investigation, showing mature scholarship and critical judgment, as well as familiarity with tools and methods of research. The subject must be approved by the student's major department.

1. Every dissertation presented in partial fulfillment of the requirements for an advanced degree must represent the equivalent of at least 30 semester hours of work.
2. The student is responsible for notifying the Graduate School of the exact title of the dissertation on or before the posted deadlines during the semester in which the doctoral degree is to be conferred.
3. The dissertation must comply in mechanical features with the specifications for theses and dissertations available in the Graduate School.
4. After the dissertation defense, the student is responsible for submitting the dissertation and signature page on or before the posted deadline during the semester in which the doctoral degree is to be conferred.

The final grade is withheld until the dissertation is completed. In progress (*IP*) grades are assigned during each semester until the defense is successfully completed and the final copy of the dissertation is accepted by the examination committee, at which time the final grade for all dissertation hours is submitted to the Graduate School.

### *Dissertation Defense/Final Exam*

After the dissertation has been accepted for defense by the student's committee, a final examination on the dissertation and related topics is conducted. For AuD students, a final examination is conducted in place of the dissertation defense.

The following rules apply to the dissertation defense.

1. A student must be registered as a full-time, regular degree-seeking student at CU-Boulder, for a minimum of 5 dissertation hours during the semester in which the final examination is passed. DMusA students must be registered full time in course work numbered 8200–8399 ( or TMUS 8029) during the semester in which the dissertation defense is passed. Doctor of audiology students should be registered during the final exam for 5 credit hours of course work at the graduate level or 8 hours of combined undergraduate and graduate hours.
2. Students must notify the Graduate School of their final oral examination at least two weeks before their scheduled examination date.
3. This examination is wholly or partly oral, the oral part being open to anyone.
4. The examination is conducted by a committee appointed by the chair of the major department and approved by the dean of the Graduate School, which consists of at least five persons, one of whom must be from outside the student's major department. Three of the members must be CU-Boulder graduate faculty. The chair and outside member of the committee must have regular or tenured graduate faculty appointments. The other committee members must have either regular or special graduate faculty appointments. The chair and a majority of the committee must be present on the Boulder campus for the examination. More than one dissenting vote disqualifies the candidate in the final examination.

5. A student who fails the examination may attempt it once more after a period of time determined by the examining committee.

### *Time Limit*

Doctoral degree students are expected to complete all degree requirements within six years from the semester in which they are admitted and begin course work in the doctoral program. The phrase “all degree requirements” includes the filing of the dissertation and all accompanying forms with the Graduate School. Students who fail to complete the degree in this six-year period may be dismissed from their program with the concurrence of the major advisor and/or appropriate departmental personnel. To continue, the student must file a petition for an extension of the time limit with the dean of the Graduate School. Such petitions must be endorsed by the student’s major advisor and/or other appropriate departmental personnel and may be granted for up to one year. If the dean of the Graduate School and the department chair/program director cannot agree on whether a student should continue, the Graduate School’s executive advisory council makes the final decision.

Students who need to leave CU-Boulder for a period of time may apply to the Time Off Program for up to one year. Doctoral students who are required to maintain continuous registration may petition for an exception in order to participate in the Time Off Program for parental leave or other extenuating circumstances. Participation in the Time Off Program does not extend the student’s time limit, but may be used as a reason if applying for an extension.

Students whose registration at CU-Boulder is interrupted by military service may apply to the dean of the Graduate School for an extension of time.

### *Graduation*

Students must meet all posted graduation deadlines in order to receive a degree in any given semester.

### *Sequestration of Dissertations*

Dissertations approved by the departments and the Graduate School are released to ProQuest/UMI and kept on file electronically at Norlin Library.

Occasionally, the primary academic advisor, after consultation with the student, may find it necessary to sequester the student’s dissertation to protect university rights to intellectual property. The university accepts the obligation to protect potentially publishable creative works and potentially patentable subject matter from premature public disclosure so as to preserve entitlement to patent protection while the technology is being evaluated. This sequestration should take place only when it is absolutely required and only for the minimum time necessary.

With just cause, the student may request that an embargo be placed on the publication/sale of the thesis for a reasonable amount of time. This request is made upon the electronic submission of the document.



# Academic Standards

## Grade Point Average

A student is required to maintain at least a *B* (3.00) average in all work attempted while enrolled in the Graduate School, and must have at least a 3.00 cumulative average to receive a graduate degree.

## Nonacceptable Grades

1. A student who receives a grade of *C* or below in a course may petition to repeat that course once, provided the course has not been previously applied toward a degree.
2. Courses in which grades below *B-* (2.700) are received are not accepted for doctoral programs.
3. Courses in which grades below *C* (2.000) are received are not accepted for master's degree programs or for the removal of academic deficiencies.
4. Courses taken toward the fulfillment of requirements for graduate degrees may not be taken *pass/fail*.

## Probation

A student whose cumulative GPA falls below 3.000 is placed on academic probation. The student has two semesters in which to raise the cumulative GPA to 3.000 or above. If the student's cumulative GPA is at or below 2.500, a dean's administrative stop is placed on the student's record, and the student may be withdrawn from course work for upcoming semesters.

If, after the two-semester probationary period, the student's cumulative GPA is still below 3.000 or if other conditions placed by the major department or Graduate School are not met, a dean's administrative stop will be placed on the student's record and he or she may be subject to dismissal.

A provisionally admitted student whose GPA falls below 3.000 has a dean's administrative stop placed on his or her record pending a review by the major department and the Graduate School.

## No Credit

Course work to be applied toward an advanced degree may not be taken for *no credit (NC)*. Courses taken for *no credit* cannot be used toward the minimum credit load requirement for full-time or half-time status.

## Pass/Fail

No course work to be applied toward an advanced degree may be taken *pass/fail*.

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# Student Ethics

Students are expected to adhere to the highest codes of personal and professional ethics. Students who do not adhere to written guidelines regarding academic honesty and/or academic or research ethics may be dealt with according to the appropriate policy documents. Students found guilty of misconduct in any of these areas may have sanctions imposed, or may be dismissed from CU-Boulder.

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# Admission & Enrollment Policies

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## Application Procedures

Students seeking admission to a CU-Boulder master's or doctoral program apply directly to the appropriate department, not the Graduate School. An applicant for admission must present complete application materials that include:

1. Complete the graduate application, available online at [admissions.colorado.edu/graduate](http://admissions.colorado.edu/graduate).
2. One official transcript of all academic work completed to date.
3. A \$50 nonrefundable application fee (check or money order). No application will be processed unless this fee is paid. The application fee for international students is \$70.
4. Three or four letters of recommendation. Please check with your program to obtain the required number of recommendations needed.
5. Test scores and other materials as required by specific departments.

A completed application must be in the major department by the published deadline for the term for which admission is sought. Most departments have an application deadline that is several months before the start of the desired admission term. Qualified applicants may find that their application cannot be processed for a specific term if enrollment levels have been reached.

## Admission Requirements

A graduate student may be admitted to CU-Boulder as either a regular degree student or a provisional degree student.

### *Regular Degree Students*

Qualified students may be recommended for admission to regular degree status by approved programs of the Graduate School provided they meet the following criteria:

1. They hold a baccalaureate degree from an accredited college or university or have done work equivalent to that required for such a degree.
2. They show promise of ability to pursue advanced study and research, as judged by their scholastic record.
3. They have had adequate preparation to enter graduate study in the chosen field.

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4. They have at least a 2.750 (on a 4.000 scale) undergraduate GPA (for engineering, 3.000).  
(Note: Applicants who cannot meet criterion 4 may still secure regular admission if they have completed 9 semester hours of relevant graduate course work with at least a 3.250 average.)
  5. They meet additional requirements for admission established by the major department.

### *Provisional Degree Students*

Students who do not meet the requirements for admission as regular degree students may be recommended for provisional degree status by their major department. With the concurrence of the dean of the Graduate School, these students are admitted for a probationary term of either one or two semesters of full-time study (or the equivalent for part-time students). At the end of the specified probationary period, provisional degree students must be either admitted to regular degree status or dismissed from the graduate program. Provisional students are subject to the same standards of performance required of regular degree students, plus any other requirements imposed by the program faculty as conditions of admission.

Credit earned by persons in provisional degree status may count toward a degree at CU-Boulder.

To meet the standard terms of provisional admission, the student must generally complete 12 hours in two semesters (or equivalent for part-time students) with a 3.000 cumulative GPA. Program faculty may recommend additional or alternative conditions as appropriate.

### *Admission to a Concurrent Bachelor's/Master's Degree Program*

A number of CU-Boulder departments offer concurrent bachelor's/master's degrees, which enable CU undergraduate students to pursue undergraduate and graduate programs simultaneously and to receive both degrees in a shorter time period than it would take to pursue them separately.

Highly qualified undergraduate students may be recommended for admission to a concurrent bachelor's/master's degree program at the end of their sophomore year or the beginning of their junior year. Such students are not formally admitted to the Graduate School. Standards for admission as well as eligibility to remain in the program are specified in each department's program guide.

### *Admission to a Dual Degree Program*

The Graduate School, in conjunction with the faculty of each department and the deans of schools and colleges where appropriate, approves dual degree programs that combine previously approved graduate degree programs in two areas or departments.

Qualified graduate students may be recommended for admission to an approved dual degree program upon meeting the qualifications of each graduate program and any special qualifications as outlined by each program's approved guidelines. Minimum standards and qualifications for admission and continuation may be found in each department's approved program guide. Students wishing to complete degrees in more than one department that have no approved dual degree program or interdisciplinary major combination must complete all the requirements for both degrees with no shared or overlapping course work.

### *Admission of Seniors*

A CU-Boulder senior who is not pursuing the concurrent bachelor's/master's degree, but who has satisfied the undergraduate residence requirement and does not need more than 6 semester hours of advanced subjects to meet the requirements for a bachelor's degree, may be admitted to the Graduate School. Students who just wish to take a graduate-level class will need the instructor's signature in a "special action form" obtained from the department.

### *Admission of Nondegree Students to Regular Degree Status*

Students with nondegree status who wish to apply for regular student status must complete their

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application for admission before completing 9 semester hours as nondegree students at CU-Boulder.

### *Admission of Former and Suspended Students*

Students who were previously admitted to a graduate degree program but who did not complete that degree and who have not been continuously registered at CU-Boulder must complete the following steps before being readmitted:

1. Clarify their status with the department to determine their eligibility to return and pursue the same degree.
2. Submit an application to the department (departmental approval is required) before enrollment levels are met or deadlines passed for the term in which they expect to return to CU-Boulder.

A regular degree student who is dismissed for failure to maintain a 3.000 grade point average is eligible to apply for readmission after one year. Approval or rejection of this application rests jointly with the student's major department and the dean of the Graduate School. The final decision will be made by the dean based on the recommendations of the department.

### *Students Transferring from Other CU Campuses*

Students transferring from another CU campus to CU-Boulder must apply to and be accepted by the Boulder campus.

### *Students Changing Major Departments*

Students who want to change major departments must apply to and be accepted by the new department. When adding a second major in an approved interdisciplinary major combination, this must be noted on the application.

### *Admission of Faculty Members*

No member of the faculty above the rank of instructor may be working toward an advanced degree from CU-Boulder.

## Credit Policies

### *Transfer Credit*

Transfer credits from accredited institutions are accepted by CU-Boulder only after approval by the department chair/program director and the dean of the Graduate School, and under conditions outlined below. Transfer credit is defined as any credit earned at another accredited institution, credits earned on another campus of the CU system, or credits earned as a nondegree student within the CU system. Students seeking a degree from CU-Boulder must complete the majority of their course work while enrolled as degree-seeking students.

The following rules apply to transferring credit to CU-Boulder graduate programs:

- The maximum amount of work that may be transferred to CU-Boulder depends upon the graduate degree sought (individual departments may have more restrictive limits).

### *Degree and Semester Credit Hours*

MA, ME, MS, MMus, MMusEd, or DMA—9

MFA—18

PhD or AuD—21

AuD students with MA and audiology certification—30

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Work already applied toward a graduate degree received from CU-Boulder or another institution cannot be accepted for transfer toward another graduate degree of the same level at CU-Boulder. In addition, work completed for a doctoral degree may not be applied toward a subsequent master's degree. Extension work completed at another institution cannot be transferred, and correspondence work, except to make up deficiencies, is not recognized.

- All courses accepted for transfer must be graduate-level courses. A course in which a grade of *B-* or lower was received will not be accepted for transfer. Transfer course work that is to be applied to a graduate degree at CU-Boulder and was completed more than five years prior to being accepted to the program will be evaluated by the major department as to current relevance and applicability to the degree requirements. At the discretion of the department, a student may be asked to validate transfer credits prior to approval.
- Credit may not be transferred until the student has completed 6 credits of graduate course work as a regular, degree-seeking student at the Boulder campus with a 3.000 GPA. Transferred credits do not reduce the minimum registration requirement, but may reduce the amount of work to be done in formal courses.
- Excess undergraduate credits from another institution may not be transferred to the CU-Boulder Graduate School.

### *Graduate Credit for CU-Boulder Seniors*

With the exception of students enrolled in a concurrent bachelor's/master's degree program, seniors at CU-Boulder may earn graduate credit for a limited amount of graduate-level work (up to 9 semester hours), provided such work is completed with a grade of *B* or above in course work at CU-Boulder; comes within the five-year course time limit; has not been applied toward another degree; and is recommended for transfer by the department concerned, and such transfer is approved by the dean of the Graduate School.

## Registration

Registration procedures are sent to new graduate students when they confirm their intent to enroll. Please refer to Registration in the General Information section for further information.

Late registration is held only if enrollment levels have not been reached. Graduate students (including candidates for degrees and students taking only thesis hours) who fail to complete registration and pay fees during regular registration may be charged a late registration fee.

### *Concurrent Registration*

Boulder campus students unable to obtain courses required for their degree program on the Boulder campus may register for up to two courses or 6 credit hours, whichever is greater, on another University of Colorado campus. The course work must be required for their degree program; they must have their dean's permission; they must be enrolled for at least one course on the Boulder campus; and enrollment levels must not have been reached on the other campus. Contact the Office of the Registrar for additional information.

### *Reciprocal Exchange Agreement Program*

Reciprocal registration enables University of Colorado graduate students to attend classes at other Colorado institutions, including Colorado School of Mines, Colorado State University, and the University of Northern Colorado. For more information, contact the Office of the Registrar.

### *Withdrawal*

A graduate student who desires to withdraw from the university should go to Regent Administrative Center 125 for a withdrawal interview. A student who discontinues attendance in a course without officially withdrawing is marked as having failed that course. Except under extreme circumstances, graduate students are not permitted to withdraw after the last day of classes.



## Programs of Study

The Graduate School currently oversees 100 graduate and professional programs. The school works to guarantee a standard of quality and cohesion across all disciplines, ensuring the continuing integrity and value of a CU-Boulder graduate degree. The Graduate School also helps make possible the many connections between the campus and outside constituencies, in the state, the nation, and the world.

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# Graduate Degree Programs Overview

## Degrees

The Graduate School of the University of Colorado Boulder offers instruction leading to the following advanced degrees:

- Master of Arts (MA)
- Master of Business Administration (MBA) (through Leeds School of Business)
- Master of Engineering (ME)
- Master of Fine Arts (MFA)
- Master of Music (MMus)
- Master of Music Education (MMusEd)
- Master of Science (MS)
- Doctor of Audiology (AuD)
- Doctor of Musical Arts (DMusA)
- Doctor of Philosophy (PhD)

## Programs

### *MA programs in:*

- [Anthropology](#)
- [Art History](#)
- [Asian Languages and Civilizations](#)
- [Classics](#)
- [Communication](#)
- [Comparative Literature](#)
- [Ecology and Evolutionary Biology](#)
- [\\*Economics](#)
- [Education](#)
  - [Curriculum and Instruction](#)
  - [Education, Equity, and Cultural Diversity](#)
  - [Educational and Psychological Studies](#)
- [English](#)
  - [English \(see MFA for Creative Writing\)](#)
- [French](#)
- [Geography](#)
- [German Studies](#)

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## History

- Journalism
- Linguistics
- Mathematics
- \*Molecular, Cellular, and Developmental Biology
- Philosophy
- Political Science
- \*Psychology
- Religious Studies
- \*Sociology
- Spanish
- Speech, Language, and Hearing Sciences
- Theatre

*\*Master's degree offered as part of the PhD program only.*

## *ME programs in:*

- Chemical Engineering
- Computer Science
- Electrical, Computer, and Energy Engineering
- Engineering Management
- Mechanical Engineering
- Telecommunications

## *MFA programs in:*

- Creative Writing
- Dance
- Studio Arts

## *MMus*

- Music

## *MMusEd*

- Music Education

## *MS programs in:*

- Aerospace Engineering Sciences
- Applied Mathematics
- \*Astrophysical and Planetary Sciences
- Atmospheric and Oceanic Sciences
- \*Biochemistry
- Business Administration

## Accounting

- Accounting–Taxation
- Chemical Engineering
- \*Chemistry
- Civil, Environmental, and Architectural Engineering
- Computer Science
- Electrical, Computer, and Energy Engineering
- Environmental Studies
- Geological Sciences
- Information and Communication Technology for Development
- Integrative Physiology
- Mechanical Engineering
- Museum and Field Studies
- Physics
- Telecommunications

*\*Master's degree offered as part of the PhD program only.*

## *DAu*

- Audiology

## *DMA*

- Musical Arts

## *PhD programs in:*

- Aerospace Engineering Sciences
- Anthropology
- Applied Mathematics
- Asian Languages and Civilizations
- Astrophysical and Planetary Sciences
- Biochemistry
- Business Administration
- Chemical Engineering
- Chemical Physics
- Chemistry
- Civil, Environmental, and Architectural Engineering
- Classics
- Cognitive Science Studies
- Communication
- Communication-Media Studies (through Journalism)
- Comparative Literature
- Computer Science
- Ecology and Evolutionary Biology
- Economics

- Education
  - Curriculum and Instruction
  - Educational and Psychological Studies
  - Education, Equity, and Cultural Diversity
  - Educational Foundations, Policy, and Practice
  - Research and Evaluation Methodology
- Electrical, Computer, and Energy Engineering
- English
- Environmental Studies
- French
- German Studies
- Geological Sciences
- Geophysics and Hydrologic Science
- History
- Integrative Physiology
- Linguistics
- Mathematics
- Mechanical Engineering
- Molecular, Cellular, and Developmental Biology
- Music
- Neuroscience
- Philosophy
- Physics
- Political Science
- Psychology
- Sociology
- Spanish
- Speech, Language, and Hearing Sciences
- Technology, Media, and Society
- Telecommunications
- Theatre

Inquiries regarding admission to graduate programs should be addressed to the graduate department in which the applicant wishes to study (see the *University of Colorado Boulder Directory* for campus addresses or see [www.colorado.edu](http://www.colorado.edu)).

### *Concurrent Bachelor's/Master's Program*

## Concurrent Bachelor's/Master's Degree Programs

Concurrent BS/MS and BA/MA degree programs are offered in several departments at CU-Boulder. These programs allow a student to receive both a bachelor's and master's degree in five years of study without compromising the academic integrity of either degree.

Currently approved concurrent degree programs in arts and sciences include:

- applied mathematics
- art history
- Asian languages and cultures
- classics

- cognitive psychology
- ecology and evolutionary biology
- engineering physics/physics
- film/art history
- French
- Germanic studies
- integrative physiology
- linguistics
- physics/engineering physics
- mathematics
- religious studies

Currently approved concurrent degree programs in business include:

- accounting/accounting
- finance/accounting
- information systems/accounting
- information systems/telecommunications
- all departments in engineering.

These concurrent degree programs are open only to highly qualified CU-Boulder undergraduates. Students are formally admitted at the end of their sophomore year or the beginning of their junior year. They are admitted through the admission procedure of their department and do not go through the normal process of admission to Graduate School. When students have completed the program requirements, they receive both a bachelor's and a master's degree simultaneously. Students wishing to continue studying toward a doctorate must formally apply for admission to the Graduate School.

Students interested in a concurrent bachelor's/master's program should inquire in the department.

## *Dual Degree Programs*

### Dual Degree Programs

In an environment where there is a rapidly increasing desire for interdisciplinary and professional skills, receiving two master's degrees in complementary fields can be a real asset. Contact the individual departments for details.

## *Combinations with MBA*

- Art and Art History/MBA
- Anthropology/MBA
- Computer Science/MBA
- Environmental Studies/MBA
- German/MBA
- Juris Doctor/MBA
- Telecommunications/MBA
- Theatre and Dance/MBA

## *Combination within the Graduate School*

- Applied Math/MCD Biology

- Audiology/Speech, Language, and Hearing Sciences (both through the Department of SLHS)
- Engineering Management/Telecommunications
- Music (two areas)
- Religious Studies/Asian Languages/History (any two)

### *Combination with Law*

- Environmental Studies/Law
- Telecommunications/Law

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<a href="#">Biotechnology</a>	
<a href="#">Cognitive Science</a>	PhD
<a href="#">Critical Theory</a>	
<a href="#">Distance Learning &amp; Professional Development</a>	ME, MS
<a href="#">Embedded Systems</a>	
<a href="#">Engineering Management</a>	ME
<a href="#">Environment, Policy, and Society</a>	
<a href="#">Geophysics</a>	PhD
<a href="#">Graduate Teacher Program</a>	
<a href="#">Human Language Technology</a>	
<a href="#">Hydrologic Sciences</a>	PhD
<a href="#">Molecular Biophysics</a>	
<a href="#">Neuroscience</a>	PhD
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<a href="#">Telecommunications</a>	ME, MS, PhD

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# Biotechnology

The graduate certificate program in biotechnology provides integrated, interdisciplinary training that encompasses both modern biological sciences and biochemical engineering. The goal of the program is to help students acquire the skills and credentials to undertake crossdisciplinary research in modern industrial, academic, and government biotechnology research laboratories and the perspective to serve as leaders in the advancement of beneficial applications of modern biotechnology.

The graduate biotechnology program is offered cooperatively by the Departments of Chemical and Biological Engineering, Chemistry and Biochemistry, and Molecular, Cellular, and Developmental Biology. The program awards a certificate, not a separate degree; each student enrolls in a participating department and meets the degree requirements for that department.

A student must take 6 semester credit hours of graduate biotechnology courses, including CHEN 5830 Introduction to Modern Biotechnology *and* CHEN 5831 Biotechnology Case Studies. For the remaining credits, bioscience graduate students choose from bioengineering courses, and bioengineering students choose from bioscience courses.

During their first year, students take laboratory rotations in participating faculty laboratories. At least one laboratory rotation must be outside the student's home department. Students receive up to 7 semester credit hours of independent study or laboratory-methods credit for these rotations.

All students are expected to undertake internships with local biotechnology companies. These internships usually take place during the summer after the first year of graduate study.

For more information on the biotechnology certificate program, contact Professor Ryan Gill, Department of Chemical and Biological Engineering, University of Colorado Boulder, 424 UCB, Boulder, CO 80309-0424; **303-492-2627**.

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# Cognitive Science

## *Graduate Degree Program(s)*

### Doctoral Degree in Cognitive Science

The cognitive science academic program includes a combined PhD degree between cognitive science and a core discipline, as well as a combined PhD plan of study tailored for students interested in cognitive neuroscience. In addition, there are two certificates at the graduate level of study. The first of these is a certificate in general issues in cognitive science that can be tailored to the individual student's area of interest. The cognitive science curriculum for this certificate is designed to provide broad as well as in-depth training in the cognitive sciences. The second graduate certificate is in Human Language Technology (HLT) and is specifically designed to provide interested graduate students with a rich and broad background in computational tools for human language processing. These programs are administered by the Institute of Cognitive Science (ICS) of the University of Colorado Boulder. Graduate students in cognitive science are admitted to graduate programs in participating departments that have cognitive science faculty and must meet the requirements for admission and degree completion in their home department.

Students wishing to attain a degree or certificate in cognitive science must formally apply to the director of Academic Programs of ICS. To be admitted they must be a student affiliate of ICS, which requires being a graduate student in good standing in a member department, and they must be sponsored by an ICS faculty member. Students who enter the Graduate School without a master's degree may be admitted to the program upon completion of their first year of study; students with a master's degree may be admitted during their first year.

The degree and certificate programs in cognitive science require students to demonstrate acceptable performance in interdisciplinary course work and courses outside their home department. The courses must be offered by the departments of computer science; education; linguistics; philosophy; psychology; speech/language/hearing sciences; architecture, planning, and design; or another department in which there is an ICS faculty member. Details about requirements for the degree and certificate programs can be obtained through the Director of Academic Programs for ICS, or by contacting the ICS main office.

For further information contact the University of Colorado Boulder, Institute of Cognitive Science, 344 UCB, Boulder CO 80309-0344; **303-492-5063**.

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# Distance Learning & Professional Development

## Center for Advanced Engineering and Technology Education (CAETE)

The Center for Advanced Engineering and Technology Education (CAETE) is the distance learning and professional studies arm of the College of Engineering and Applied Science. CAETE provides convenient and flexible education for working professionals. Courses are delivered in the campus classroom and via the Internet to students across the country and abroad.

Academic course sequences may lead to a graduate certificate or master's degree in the following areas:

### *Certificates*

- Computer and Network Security
- Embedded Systems (classroom only)
- Engineering Management
- Engineering Entrepreneurship
- Leadership and Ethical Decision Making
- Managing Applied Research in Technology
- Managing Research and Development
- Performance Excellence in Technology Management
- Power Electronics
- Project Management
- Quality Systems for Product and Process Engineering
- Six Sigma
- Software Engineering
- Technology Ventures and Product Management
- Wireless Networks and Technologies

### *Degrees*

- Aerospace Engineering, MS
- Computer Science, ME
- Electrical, Computer, and Energy Engineering, ME and MS
- Engineering Management, ME
- Telecommunications, ME and MS

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CAETE also provides access to over 100 pre-recorded courses via their virtual library. These courses are available for academic course work, or purchase by companies for in-house training.

For additional information refer to the engineering and applied science section or contact CAETE at **303-492-6331**, [caete@colorado.edu](mailto:caete@colorado.edu), or [caete.colorado.edu](http://caete.colorado.edu).

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# Hydrologic Sciences

The CU-Boulder Hydrologic Sciences Graduate Program focuses on quantitative studies of water in the environment including its role in geologic and biogeochemical processes, ecosystem functions, and global elemental cycling. The program is interdisciplinary and interdepartmental. It is intended for science and engineering graduate students, both currently enrolled and prospective. It allows students to obtain recognition for their accomplishments in hydrologic sciences and demonstrates the quantitative multidisciplinary education desired by many prospective employers.

Students can choose to enroll for a full Hydrologic Sciences PhD degree or obtain a hydrologic sciences graduate certificate while concurrently obtaining a master's or doctoral degree in an associated academic department. Prerequisites and course requirements are identical for the PhD degree and graduate certificate.

Students are members of the broader CU-Boulder Geophysical Sciences Program, which has two specialization options: solid-Earth geophysics and hydrologic sciences. All hydrologic sciences students are admitted through one of the participating departments: civil, environmental, and architectural engineering; ecology and evolutionary biology; environmental studies; geography; or geological sciences.

Students may apply for admission either concurrently with their application to one of the participating departments or after admission by a department. The program is designed to encourage students with a variety of undergraduate backgrounds to enter the field. Nevertheless, all students in the program must have a substantial background in math and physics, including fluid dynamics. At the time of acceptance, the student will be informed of any undergraduate deficiencies that they will need to address within the first year in the program.

Most hydrologic sciences students conduct research with participating departments, research institutes, and centers (e.g., INSTAAR), or partner government agency labs in the Boulder area (e.g., USGS and NOAA). Primary supervision of the student's research may be provided by any faculty member approved by the department.

Additional information is available at [hydrosciences.colorado.edu/about/index.php](http://hydrosciences.colorado.edu/about/index.php), or by contacting the Graduate Coordinator, Hydrologic Sciences Graduate Program, University of Colorado Boulder, 450 UCB, Boulder, CO 80309-0450, [hydrgrd@colorado.edu](mailto:hydrgrd@colorado.edu).

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# Women and Gender Studies

## *Certificate Program*

### Women and Gender Studies Certificate

The graduate certificate in women and gender studies offers a graduate-level education in the systematic approach to the study of gender from an interdisciplinary perspective. It provides an intellectual context in which students study feminist theory and methodology at an advanced level. At the same time, the certificate program bridges the gap between discipline-centered studies and the interdisciplinary foundations of women and gender studies, thereby enhancing the student's ability to conduct gender-based research.

Students wishing to take part in the women and gender studies certificate program must be currently enrolled in a graduate disciplinary degree or professional degree program at CU-Boulder. Requirements for the certificate are 9 credit hours of course work in women and gender studies and one additional course equaling 3 credit hours to be approved by the women and gender studies graduate advisor, for a total of 12 credit hours. For details about the certificate program, visit [wgst.colorado.edu/graduate](http://wgst.colorado.edu/graduate).

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# Museum and Field Studies

The interdisciplinary museum and field studies program leading to a master of science degree is administered by the University Museum, in conjunction with the departments of anthropology; history; art history; ecology and evolutionary biology; and geological sciences; as well as other departments. The program provides a strong background in a chosen field as well as theoretical and practical grounding in museology.

Internships are offered at a variety of museums in the region, including natural history, history, and art museums. Students completing the MS are trained as collection managers, curatorial assistants, registrars, museum educators, exhibit technicians, and administrators.

**Program Tracks.** Two tracks are available: a collection/field track and an administrative/public track.

- The **collection/field track** offers training for students interested in the curatorial and research aspects of museum work, such as floristic or faunistic studies of the past and present, material culture of the past and present, and biological inventory. The curriculum gives students academic training as well as experience in all areas of museum work. Field experience is offered through the curatorial and field practica.
- The **administrative/public track** offers education for students interested in the public aspects of the museum such as program development and evaluation, exhibition planning and design, education, and the organization and management of museums. The curriculum offers both academic training in a discipline and hands-on experience with all aspects of the public museum.

## Graduate Degree Program(s)

Master's Degree in Museum and Field Studies

**Admission.** Students must meet all university requirements for admission to graduate school and have a baccalaureate degree and at least a B (3.00) grade-point average in previous academic work. The baccalaureate degree should be in anthropology, biology, geology, geography, history (including archival studies), classics, fine arts, or education, although other majors will be considered. Acceptance to the program is decided by the admissions committee of the University Museum in consultation with the student's department. The student must be accepted by an advisor in his or her discipline.

**Requirements.** The degree in museum and field studies is a two-year program requiring a total of 32 credit hours. Students may choose either the thesis or nonthesis plan. Depending on the track and plan, students complete from 9 to 15 credit hours in a department and from 13 to 22 credit hours in museology courses. One hundred fifty work hours of internship are required. The thesis plan requires the completion and successful defense of a thesis; the nonthesis plan requires the completion of a paper or a project.

For current course information, consult the Museum section under the College of Arts and Sciences. For new course or admissions information, write the Museum and Field Studies Program, University Museum, University of Colorado Boulder, 218 UCB, Boulder, CO 80309-0218; call **303-492-5437**; e-mail [mfsinfo@colorado.edu](mailto:mfsinfo@colorado.edu); or visit [cumuseum.colorado.edu/MFS](http://cumuseum.colorado.edu/MFS).

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## Certificate Program

### Museology Professional Certificate

The professional certificate in museology provides professional museum training for CU-Boulder graduate students and for museum professionals who seek to upgrade their skills and credentials. The museology certificate serves a range of disciplines in the arts and sciences, education, and engineering, as well as the Colorado museum community.

The curriculum for the professional certificate consists of the core museology sequence for the Museum and Field Studies degree program:

- MUSM 5011 Introduction to Museum Studies
- Three of the following five courses:
  - MUSM 5030 Museum Education
  - MUSM 5031 Exhibit Development
  - MUSM 5041 Museum Administration
  - MUSM 5051 Collections Management
  - MUSM 6110 Seminar in Museum Issues

This 12-credit curriculum is supplemented by a 75-hour internship (which may be waived for comparable professional experience).

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# Journalism & Mass Communication Program



*Christopher Braider, director*

478 UCB • phone: 303-492-5007 • fax: 303-492-0969

website: [journalism.colorado.edu](http://journalism.colorado.edu)

THE JOURNALISM AND MASS COMMUNICATION PROGRAM (JMC) offers a next-generation media education that prepares its graduates to collaborate within the professional world, engage the public, and produce positive social change.

JMC uses innovative teaching technologies, empowering strategies for responsible democratic engagement, and an integrated curriculum to foster excellence among its students. Students are trained for successful careers in advertising, broadcast, print and online media, photojournalism, public relations, and media analysis.

By encouraging students to apply civic responsibility in their media work, the Journalism and Mass Communication Program seeks to empower audiences through honesty, integrity, and a commitment to social progress. Students learn the significance of their role as media professionals, gaining an appreciation of the profound interactions between mass communication and society in order to approach their work with respect, openness, and a broader cultural perspective. Included in a broad array of professional and conceptual courses are offerings in global media. A large percentage of the program's students study abroad.

JMC is also home to two internationally recognized centers: the Center for Media, Religion and Culture; and the Center for Environmental Journalism.

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# Academic Excellence

## Director's List

Students in the Journalism and Mass Communication Program who have completed at least 12 credit hours of CU-Boulder course work for a letter grade in any single semester with a term grade point average of 3.750 or better are included on the dean's list and receive a notation on their transcript and a letter from the director.

## Honors

Journalism and Mass Communication Program students may graduate with general honors and/or JMC honors. Students interested in general honors must consult the Honors Program office. JMC may award the bachelor's degree with honors to students who have a 3.500 cumulative GPA and a 3.500 GPA in journalism and mass communication courses, complete an independent study in journalism and mass communication involving scholarly research, and demonstrate a high degree of professional skill. Application for JMC honors must be made to the student's advisor the semester prior to the one in which the honors project would be done. Transfer students must complete at least 60 hours in residence. Complete information on honors requirements is available at the main office.

Students who achieve a 3.750 overall GPA will graduate with distinction. Students whose academic records rank in the upper 10 percent are eligible for election to Kappa Tau Alpha in recognition of outstanding scholastic achievement.

## School Awards and Scholarships

Alumni and friends of JMC have made it possible to provide more than three dozen annual scholarships and awards to officially admitted students in the Journalism and Mass Communication Program sequences. The deadline for application is February 20.

- A. Gayle Waldrop Award
- Arthur B. Levis Scholarship
- Barrie Hartman News Editorial Scholarship
- Boulder Press Club
- Bob and Gloria Palmer Scholarship
- Brian Hostetler Memorial Scholarship
- Chris M. & Chris J. Burns Memorial Scholarship
- Colorado Broadcasters Association
- Colorado Press Women Scholarship
- Courtney Erin Klee Memorial Scholarship
- Denver Woman's Press Club Scholarship
- Dan Creedon Sports Scholarship

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- Dominic Manzanares Memorial Scholarship
- Don Ridgway/CHSPA
- Dottie Roberts Foundation Scholarship
- Ed Sardella Broadcast News Scholarship
- Eugene Cervi Memorial Scholarship
- Fred Casotti Sports Information Scholarship
- Gerald C. Bean Memorial Scholarship
- Gladys Van Vranken Parce Memorial Scholarship
- Jerry and Lorna Gray Scholarship
- J. Ember and Agnes Sterling Memorial Scholarship
- J. Winton Lemen Memorial Scholarship
- Karsh & Hagan Advertising Scholarship
- Larry and Brigitte Zimmer Sports Announcing Scholarship
- L. C. Paddock Memorial Scholarship
- Leach Family Scholarship
- Lehman Communications Corporation Scholarship
- Mabee Memorial Scholarship
- Marcella G. Hertzog/Georgene Carlson Memorial Scholarship
- Nonie Lann Scholarship
- North American Snowsport Journalism Scholarship
- Philip John Coffey Scholarship Fund
- Ralph Allen Scholarship
- Raymond B. Johnson Memorial Scholarship
- Rick and Linda Reilly News Editorial Scholarship
- Teddy Ebersol Scholarship
- William S. Hemingway Scholarships
- William W. White Awards

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# Academic Standards

## Scholastic Suspension

Journalism students, both majors and pre-majors, are subject to suspension if they do not maintain a cumulative university GPA of 2.250 and a cumulative journalism and mass communication GPA of 2.500.

Students whose GPAs fall below either of these levels are normally placed on probation for one semester, during which they have an opportunity to raise their averages to the required levels. Students whose averages continue below the required levels are subject to suspension from the Journalism and Mass Communication Program and will be notified in writing.

Scholastic records will be reviewed as soon as possible after each semester, and students will be informed in writing if they are to be placed on probation or suspension.

The normal period of suspension is two regular semesters (one academic year, excluding summer sessions). The period of suspension will be stated in the suspension notice to the student. A student suspended a second time will be reinstated only on the basis of unusual circumstances, which the student should state in a petition to the assistant dean of JMC.

## Academic Dishonesty

The Journalism and Mass Communication Program maintains the highest standards of intellectual honesty. Acts of academic dishonesty are referred to the Honor Council. The policies and procedures governing acts of academic dishonesty can be found on the Web at [www.colorado.edu/academics/honorcode](http://www.colorado.edu/academics/honorcode).

## Policy on Grade Appeals

The following shall be the official policy of the Journalism and Mass Communication Program regarding grade appeals.

When a student believes that a grade has been improperly assigned, and discussions between the instructor and the student have not led to any resolution of the problem, then:

1. The student shall have the option of making a formal written appeal to the assistant dean of JMC. The appeal must specify the remedy desired by the student, and it must be submitted within 45 days of the end of the academic term in which the course was taken.
2. The assistant dean will meet with the student and with the faculty member who taught the course. The instructor will be asked to submit a formal, written response to the student's written appeal. If the assistant dean is unable to broker a solution mutually acceptable to both student and instructor, then:
  - a. The director shall appoint an ad hoc Student Ethics committee, which will review the dispute.

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The committee shall consist of two impartial faculty members competent in the subject matter of the course in question. The assistant dean will chair the committee and provide the committee with the student's written appeal and the written response from the faculty member.

3. Within 45 days, the committee will submit a report and recommendation to the director, and the director will recommend to the instructor either 1) that the originally assigned grade stand; or 2) that a new grade be assigned.
4. In cases where a change of grade is recommended and the instructor does not wish to accept the recommendation of his/her colleagues, the director shall make the final decision.

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# Admission & Enrollment Policies

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## Requirements for Admission

Students will apply to Journalism and Mass Communication in one of five sequences or to Journalism and Mass Communication open option. Students who are not eligible for admission directly into the major or journalism open option will be placed in either Journalism and Mass Communication pre-journalism or College of Arts and Sciences open option

### *Prejournalism and Mass Communication*

Students in prejournalism and mass communication students are enrolled in JMC but must apply to one of the five sequences through a competitive application/admit process during their second semester of freshman year or their sophomore year. They must have completed or be working toward completing 30 semester hours with a GPA of at least 2.250, based on a minimum of 12 credit hours. These students should consult with advisors in the school.

Before they can apply for admission to the sequences, prejournalism and mass communication majors must make satisfactory progress in courses that meet the core areas of study requirements in the College of Arts and Sciences. Students must also complete or have in progress two journalism prerequisite classes (JOUR 1001 and either JOUR 2403 or 2601, depending on the sequence) with a GPA of at least 2.500. Students will also be expected to have been making progress toward their additional field of study

Students wishing to apply to the Journalism and Mass Communication Program must fill out an application packet by October 1 for spring admission and February 20 for fall admission. Students must apply to the specific sequence. Meeting these minimum requirements does not guarantee a student admission to JMC. A student will be permitted to apply to the JMC program a maximum of three times.

### *Transfer Students*

Students applying to transfer into the Journalism and Mass Communication Program from another institution must have 30 semester hours of college credit and must have completed the equivalent of the two introductory courses in journalism with a GPA of at least 3.000, both overall and in journalism courses, before they apply. Students without 30 hours of credit should apply to the JMC's prejournalism major. See the Undergraduate Admission section of the catalog for [transfer student admission standards](#).

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## Attendance Regulations

Students are expected to attend classes regularly and to comply with the attendance regulations specified by their instructors at the beginning of each semester. A student who does not attend any of the first week's sessions of a class during a term may be dropped from the class.

## Credit Policies

### *Pass/Fail*

In addition to the university's general policies, majors in the Journalism and Mass Communication Program may not take any MAPS, arts and sciences core requirements, certificate or minor courses, business, additional field of study, or journalism and mass communication courses *pass/fail*, but any other course may be taken *pass/fail*. Up to 6 hours may be taken *pass/fail*, except for transfer students, for whom the limit is one hour in every eight attempted at the University of Colorado. Only 6 hours of *pass/fail* may be taken in any one semester.

### *Transfer Credits*

Credit in subjects transferred from other institutions to the University of Colorado is limited to the amount of credit given for similar work at the University of Colorado. Transfer credits in journalism and mass communication courses are limited to 12 semester credits from four-year institutions and 6 semester credits from two-year institutions. All transfer credit is subject to approval of the assistant dean of JMC. For additional information on transfer of credit policies, please see the Transfer of College-Level Credit section.

## Residence Requirement

A candidate for a degree from the Journalism and Mass Communication Program must earn the last 30 hours in residence at the University of Colorado. This may include courses taken on the Boulder, Denver, or Colorado Springs campus.

## Senior Requirement

Seniors must file to graduate with both a written form and an online form by October 15 for May and August graduation and March 1 for December graduation. Graduation packets are available at the Journalism and Mass Communication Program office. These students must also meet with the assistant dean or the coordinator of student services the semester prior to graduation to complete the graduation check-out form.

## Withdrawal

Students may withdraw at any time prior to the start of the final examination period. Students are encouraged to participate in the Stay Connected program through the Registrar's office when their withdrawal from the university is temporary.

## Advising

Majors and pre-majors are encouraged to consult an advisor each registration period. Advising is available from faculty and staff throughout the academic year, and major advising sheets are provided for each sequence. However, students are ultimately responsible for fulfilling all degree requirements.

## Requirements for Graduation

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours, which includes the additional field of study, is required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work, which may also include all the arts and sciences core except the upper-division written core. Forty-five of the 120 credit hours must be upper-division.

## Double-Degree Programs

Students may complete requirements in two fields and receive two degrees from the university. Such double-degree programs are available combining journalism and mass communication with business, music, or disciplines in the College of Arts and Sciences. The double degree between the Journalism and Mass Communication Program and the College of Arts and Sciences requires 145 hours. All other double degrees require 150 hours. Students must make application for a double-degree program in both JMC and the Leeds School of Business, the College of Arts and Sciences, or the College of Music. Any other combined program must be arranged by consulting both programs.

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# Overview of the JMC Program

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## Diversity

JMC is actively committed to helping media organizations reflect the diversity of the communities they serve. It does this through focused recruitment and retention efforts aimed at preparing underrepresented students with the skills and support to excel as media professionals.

## Media Opportunities

JMC takes full advantage of its proximity to Denver, a major media market. Distinguished media professionals regularly serve as adjunct faculty. Hundreds of Denver and Boulder media organizations provide wide-ranging internship and career opportunities. Students consistently are offered highly competitive internships at leading Denver television and radio stations, newspapers, advertising agencies, public relations firms, and government, nonprofit, and corporate public information offices. Competitive internships are available locally and nationally to students at award-winning newspapers, magazines, advertising and public relations firms, government and social service agencies, radio and television stations, cable television systems, video production houses, online media, and other operations, including *USA TODAY*, *The Wall Street Journal*, *The Washington Post*, *National Geographic*, *Sports Illustrated*, *Newsweek*, ABC, MTV, NewLine Cinema, National Public Radio, Leo Burnett, TBWA\Chiat\Day, CBS, NBC, CNN, Bloomberg, C-SPAN, and Discovery Channel.

## Facilities and Equipment

Technology is changing the way information is delivered, and the Journalism and Mass Communication Program is at the forefront of this shift, incorporating new technologies into its curriculum to make newsgathering, broadcasting, public relations, and advertising more accessible to audiences. Students use technology to create new media possibilities, renewing audience trust by collaborating with them to communicate important information. All lab courses—reporting, editing, advertising, public relations, radio, television, new media, and photojournalism—contain no more than 20 students. Broadcast students use a state-of-the-art digital broadcast studio in CU's ATLAS center with its 1,000-square-foot studio furnished with the latest equipment.

## Accreditation

The Journalism and Mass Communication Program is accredited by the Accrediting Council on

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Education for Journalism and Mass Communications. It is a fundamental principal of the ACEJMC that education for journalism be broadly based. Undergraduate students take about two-thirds of their college course work outside of the school and approximately one-third in the school.

## Student Activities

Many successful alumni proudly trace their careers back to student-run media and professional organizations here. *CU Sports Magazine* is a weekly televised program that follows collegiate athletics. KVCU, the university's 24-hour radio station, broadcasts to the Denver area. *Cultural Currents* is a newsletter that focuses on issues of diversity in media coverage and personnel. *NewsTeam Boulder* is a twice-weekly cable news show produced by students in the advanced broadcast classes. The *CU Independent* is a student-run online news source for the campus, at [www.cuindependent.com/](http://www.cuindependent.com/).

All news-editorial students complete internships at local daily newspapers and magazines as reporters, copy editors, online editors, or photographers. Students participate in chapters of the Advertising Club, Society of Professional Journalists, the Multi-ethnic Media Organization (MEMO), Association for Women in Communication, and Journalism Board, the student government organization.

## Internships

An ambitious year-round program helps students locate quality internships suited to their specific career goals. Many students complete two or more internships by graduation. Students perform internships at magazines, weekly and daily newspapers, advertising and public relations firms, businesses, and at government and nonprofit agencies. Others do broadcast and cable television internships in Denver. Opportunities for multimedia internships abound.

Students regularly obtain nationally competitive internships through the Politics Journalism Semester in Washington, D.C., the Dow Jones Newspaper Fund, American Society of Magazine Editors, the Advertising Club of New York, and the Chips Quinn Scholars.

In recent years students have served as interns *The Wall Street Journal*, *USA TODAY*, *Skiing*, *Backpacker*, *Sports Illustrated*, *The Today Show*, High Noon Entertainment, MTV, Fox Sports, NBC, ABC, CBS, CNN, The Children's Hospital, and IBM and top ad agencies throughout the United States. These include Crispin Porter + Bogusky, Goodby, Silverstein & Partners, DDB, BBDO, TBWA\Chiat\Day, Young & Rubicam, Saatchi & Saatchi, Leo Burnett, Publicis, and Arnold Worldwide.

Internships are also available in communities throughout the state, including Colorado's mountain resort areas.

## Careers

Graduates of the Journalism and Mass Communication Program hold key positions throughout the United States in advertising, news, entertainment, government, education, business, and law. Many participate in the alumni Career Network to help new graduates get started in their field by providing advice and contacts. The Student Resource Center fields local and national job opportunities through its contacts with employers and hosts on-campus interviews with a wide variety of employers. With the student Journalism Board, it sponsors major career and internship events each year. The center also assists students and graduates by offering individual counseling and a regular series of workshops on résumé preparation, interviewing, and career planning specifically for media careers. The center maintains a library of media directories and career planning resources and offers students extensive lists of websites related to media jobs.

## Centers

Through the **Center for Environmental Journalism**, JMC seeks to enrich and elevate the quality, range, and significance of media coverage of environmental issues. The CEJ is home to the prestigious Ted Scripps Fellowships in Environmental Journalism, which provide working journalists with a one-year opportunity to deepen their understanding of environmental science, policy, law, and journalism.

**The Resource Center for Media, Religion, and Culture** is a clearinghouse of information for those interested in exploring the intersection of religious and media-related practices in the everyday lives of contemporary adults and their families.

## Study Abroad Programs

Journalism and Mass Communication, in conjunction with the Office of International Education, encourages students to participate in the university's study abroad programs. Study abroad usually is undertaken during the junior year. Since an additional semester may be necessary to meet graduation requirements, prospective majors are urged to plan early and seek advising from the journalism and mass communication assistant dean or coordinator of student services. Programs are offered in more than 70 countries worldwide. Information and application forms are available at the Office of International Education, University of Colorado Boulder, 123 UCB, Boulder, CO 80309-0123, or [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

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# Journalism and Mass Communication

Course code for this program is JOUR.

## *Bachelor's Degree Program(s)*

### Undergraduate Study in Journalism and Mass Communication

The Journalism and Mass Communication Program (JMC) enrolls 650 students in five sequences. Students begin with a broad education in the liberal arts through the College of Arts and Sciences core requirements and finish with a robust additional field of study and superior professional preparation and media studies instruction. The field of study will be a concentration in content area outside of JMC such as political science, philosophy, history, economics, and so forth. It will consist of a minimum of 30-36 semester hours, depending on the field selected. Students should start their additional field of study during their freshman year.

In addition to the required courses, JMC offers all students a wide range of classes in many aspects of media practice including photojournalism, electronic and digital journalism, advertising creative development, consumer behavior, publication design, magazine article writing, public relations principles and projects, and communication law.

Media criticism and analysis are also broadly represented in the curriculum through courses such as media institutions and economics, media ethics, mass communication history, media culture and globalization, and special-topics offerings.

Students who intend to apply to JMC complete their freshman year of undergraduate work (a minimum of 30 semester hours) typically in JMC as prejournalism and mass communication majors.

Upon completion of their studies, students receive a bachelor of science degree in journalism from one of five sequences:

- Advertising
- Broadcast News
- Broadcast Production
- Media Studies
- News-Editorial

and an emphasis in an additional field of study.

## Sequences

### *Advertising*

The advertising major prepares students through a holistic approach that is rooted in theory and grounded in practice. Students examine approaches to creative thinking, branding, and consumer engagement and explore the rapidly evolving digital landscape and its impact on business and

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culture. Then they draw on that base of knowledge to solve real-world problems for both commercial clients and non-profit organizations.

The major offers courses in such areas as creative concepts, art direction, branding, media, and consumer insight, and students regularly intern at Colorado agencies and global agencies such as Ogilvy & Mather, JWT, and BBDO. The program's focus, however, is not on technical skills but on ideas and creative problem solving in the broadest sense. That is why graduates have been able to launch successful careers in everything from advertising and arts management to health policy and law. Those choosing to pursue advertising careers have taken positions at a variety of Colorado firms and at such national agencies as Goodby, Silverstein & Partners, Wieden & Kennedy, BBH, Crispin, Porter + Bogusky, Leo Burnett, and BBDO.

The advertising program was named one of the country's "renowned advertising programs" by the American Association of Advertising Agencies. Students in the creative track have also consistently taken home more awards than those at any other four-year university in the international One Show College Competition, the premier creative competition sponsored by New York's One Club.

### **Course Requirements for Advertising Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

#### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2403 Principles of Advertising—3
- JOUR 4651 Mass Communication Law (junior standing prerequisite)—3
- One upper-division conceptual course—3

#### **Advertising Requirements (16 hours)**

- JOUR 3403 Branding and Positioning (JOUR 2403 prerequisite)—3
- JOUR 3453 Introduction to Creative Concepts (JOUR 2403 prerequisite)—3
- JOUR 3463 Advertising Media (JOUR 3403 and 3453 prerequisites) or JOUR 3503 Intermediate Creative (JOUR 3403 and 3453 prerequisites)—3
- JOUR 4403 Campaigns (JOUR 3463 or 3503 prerequisites)—4
- JOUR 4931 Internship (JOUR 3453 or 3463 prerequisite)—3

#### **Journalism Electives (maximum of 12 hours)**

#### **Additional Requirements (10 hours)**

- ECON 1000 Introduction to Economics or ECON 2010 Principles of Microeconomics—4
- BCOR 2400 Fundamentals of Marketing—3
- MKTG 3250 Buyer Behavior—3

#### **Additional Field of Study (30-36)**

### *Broadcast News*

The broadcast news sequence prepares students for careers as news producers, reporters, photographers, editors, and writers for radio and television news organizations and cable TV

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systems. The curriculum covers several aspects of broadcast journalism, including broadcast news writing, videography and editing, television reporting, and producing and mass communication law. Students produce and anchor live newscasts twice a week and have won regional Emmys for their work. Many students intern at major market network affiliates. Students regularly win nationally competitive internships, and some have recently interned at ABC, CBS, CNBC, CNN, Fox Sports, MTV, NBC, MSNBC, PBS, and for *Inside Edition* and Bloomberg.

### **Course Requirements for Broadcast News Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

#### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2601 Principles of Journalism—3
- JOUR 4651 Mass Communication Law (junior standing prerequisite)—3
- One upper-division conceptual course—3

#### **Broadcast News Requirements (12 hours)**

- JOUR 3604 Radio and Television News (JOUR 2601 prerequisite)—3
- JOUR 3644 Principles of Production (JOUR 2601 prerequisite)—3
- JOUR 4354 TV Reporting (JOUR 3604, JOUR 3644 prerequisites)—3
- JOUR 4624 NewsTeam (JOUR 4354 prerequisite)—3

#### **Electives and Internships (4–16 hours)**

- JOUR 4931 Internship (JOUR 3604, JOUR 3644 prerequisites)—1-3

#### **Additional Field of Study (30-36)**

### *Broadcast Production*

The broadcast production sequence prepares students for production careers in radio, television, cable, private industry, and independent firms, including positions in programming, advertising, promotion, and management. The curriculum includes broadcast news writing, broadcast production principles, mass communication law, and advanced television production. Students direct and handle production duties for a live newscast twice a week and broadcast a weekly sports magazine. Many intern at Denver network affiliates and production facilities, including those of local professional sports teams. Students cover many collegiate sporting events on campus, where they produce, direct, and host programs, for which they have won numerous local and regional Emmy awards. Students intern at national news and entertainment organizations including Warren Miller Entertainment in Boulder, High Noon Entertainment in Denver, ESPN, Fox Sports, MTV, Sony Pictures Television, and *Entertainment Tonight*.

### **Course Requirements for Broadcast Production Majors**

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### **Journalism Core Requirements (12 hours)**

- JOUR 1001-3 Contemporary Mass Media—3
- JOUR 2601-3 Principles of Journalism—3
- JOUR 4651-3 Mass Communication Law (junior standing)—3
- One upper-division conceptual course—3

### **Broadcast Production Requirements (12 hours)**

- JOUR 3604 Radio and Television News (JOUR 2601, junior standing prerequisites)—3
- JOUR 3644 Principles of Production (JOUR 2601, junior standing prerequisites)—3
- JOUR 3674 TV Production 2 (JOUR 3644 prerequisite)—3
- Plus an additional upper-division conceptual course—3

### **Journalism Electives and Internships (4–16 hours)**

- JOUR 4931 Internship (JOUR 3644 prerequisite)—1-3

### **Additional Field of Study (30-36)**

## *Media Studies*

The media studies major prepares students for careers as analysts, evaluators, and producers of media messages and policies in government and private industry and for graduate education in the social sciences, humanities, and law. The curriculum covers courses in media, history, law, policy, institutions, industries, and culture. Students may gain practical experience by taking media practice courses and at campus media such as KVCU-AM, the *CU Sports Magazine* weekly television broadcast, as well as through internships. In recent years, media studies majors have interned at the Discovery Channel, Bravo, *Late Night with Conan O'Brien*, *The Financial Times*, Rocky Mountain Planned Parenthood, Kenney Marketing and Advertising, Ogilvy Public Relations Worldwide, *Aspen Magazine*, Boulder County AIDS Project, and KCNC-TV Community Affairs.

### **Course Requirements for Media Studies**

A total of 120 credit hours with a minimum of 30 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### **Journalism Core Requirements (12 hours)**

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2403 Principles of Advertising or 2601 Principles of Journalism—3
- JOUR 4651 Media Communication Law—3
- One upper-division conceptual course—3

### **Media Studies Core Requirements (6 hours)**

- JOUR 4301 Media Ethics—3
- JOUR 4321 Media Institutions and Economics—3
- Media Theory Requirements (6–9 hours)
- JOUR 2403 Principles of Advertising—3
- JOUR 3771 Mass Media History—3

- JOUR 4201 International Mass Communication—3
- JOUR 4331 Women and Popular Culture—3
- JOUR 4453 Advertising and Society—3
- JOUR 4711 Mass Communication and Culture—3
- JOUR 4874 The Meaning of IT (Information Technology)—3
- JOUR 4871 Special Topics (conceptual only)—3

### **Media Practice (0–3 hours)**

Students are strongly encouraged to take ONE of the following:

- JOUR 3102 Press Photography—3
- JOUR 3453-3 Advertising Copy and Layout (JOUR 2403 prerequisite and instructor permission)—3
- JOUR 3473 Advertising Research (JOUR 2403 prerequisite and instructor permission)—3
- JOUR 3614 Radio Programming and Production—3
- JOUR 4102 Advanced Photography (JOUR 3102 prerequisite)—3
- JOUR 4272 Public Relations—3
- JOUR 4282 Public Relations Programs (JOUR 4272 prerequisite)—3
- JOUR 4562 Electronic Journalism—3
- JOUR 4802 Editorial and Opinion Writing (instructor permission prerequisite)—3
- JOUR 4802 Magazine Writing (instructor permission prerequisite)—3
- JOUR 4831 Publication Design and Production—3
- JOUR 4872 Digital Newsroom—3
- JOUR 4873 Motion Design (instructor permission prerequisite)—3
- JOUR 4873 Experience Design Workshop (instructor permission prerequisite)—3

### **Journalism Electives and Internships (1–13 hours)**

Any JOUR course, including those listed above under Media Theory and Media Practice will fulfill the elective category. Media Studies majors who wish to gain practical experience are also strongly encouraged to do an internship (JOUR 4931, 1-3 hours) and/or to work for a semester or more for one of the campus media: *CUIdependent* (instructor permission prerequisite); KVCU radio; *Sports Mag*; or *Cultural Currents*. For internships offered through news-editorial, broadcast, or advertising, students will need to take additional prerequisites (see major sheet for each sequence's requirements).

### **Additional Field of Study (30-36)**

#### *News-Editorial*

The news-editorial major prepares students for careers as reporters, editors, and photographers for newspapers, websites, news services, magazines, trade and technical publications, company publications, the government, and public relations firms. Beyond required courses in the principles of journalism, reporting, editing, and media law, students may choose electives ranging from photography and magazine writing to the digital newsroom and legislative reporting. Photo students have repeatedly placed nationally in the Hearst Journalism Awards Program. News-editorial students regularly obtain internships through national programs including the Dow Jones Newspaper Fund, the Politics & Journalism Semester in Washington, D.C., the Scripps Howard Foundation, and the Chips Quinn Scholars minority internship program. Others recently interned at The Associated Press, *USA TODAY*, *Huffington Post*, *Smithsonian Magazine*, *MLB.com*, *People* magazine, *Rolling Stone*, *The New York Times*, *The Wall Street Journal*, *National Geographic*, and *Sports Illustrated*. Students

intern year-round at Boulder outdoor recreation and healthy lifestyle magazines including *SKI*, *Skiing*, *Freeskier*, *Backpacker*, *VeloNews*, *Climbing*, and *Women's Adventure*.

## Course Requirements for News-Editorial Majors

A total of 120 credit hours with a minimum of 28 hours in journalism and 80 nonjournalism hours are required for graduation. Sixty-five of the 80 nonjournalism hours must be in arts and sciences course work. Forty-five of the 120 credit hours must be upper-division. Within the 80 credit hours of nonjournalism course work, 30-36 credit hours must be in the additional field of study. The last 30 hours toward the degree must be taken after admission to the school.

### Journalism Core Requirements (12 hours)

- JOUR 1001 Contemporary Mass Media—3
- JOUR 2601 Principles of Journalism—3
- JOUR 4651 Mass Communication Law (junior standing)—3
- One upper-division conceptual course—3

### News-Editorial Requirements (12 hours)

- JOUR 3001 Public Affairs Reporting (JOUR 2601 prerequisite)—3
- JOUR 3552 News Editing (JOUR 3001 prerequisite)—3
- JOUR 4002 Reporting 2 (JOUR 3001 prerequisite)—3
- JOUR 4502 Reporting 3 (JOUR 3552, JOUR 4002 prerequisites)—3

### Journalism Electives and Internships (4–16 hours)

- JOUR 4931 Internship (JOUR 3001, JOUR 3552 prerequisites)—1-3

### Additional Field of Study (30-36)

## Graduate Degree Program(s)

### Master's Degrees in Journalism

More than 70 students are earning master of arts degrees with the Journalism and Mass Communication Program in two degree programs: newsgathering and mass communication research.

### Master's Degree in Newsgathering

The newsgathering option is designed for students with limited academic or professional experience in news reporting and writing. It prepares students to work in a wide variety of professional settings including newspapers and magazines, broadcast and cable media outlets, online publishing, and corporate communications. Students in the newsgathering program select an emphasis in print, broadcast, or a combination. Newsgathering students complete internships at radio, television, and award-winning daily newspapers along Colorado's Front Range. The program culminates with a professional project. Students complete a minimum of 36 graduate semester hours and should be able to finish the degree in two years

### Master's Degree in Mass Communication Research

The mass communication research option offers an opportunity for critical reflection on contemporary media structures, performance, policy, and practice. It provides graduate-level study in communication theory, research methods and relevant realms of culture, law, history, politics, and ethics. The research track is designed for students interested in an in-depth study of media or for those who wish to enhance an undergraduate or professional media background. The program is

especially recommended for students desiring to continue their studies toward a PhD and for professionals seeking to teach at the college level or develop an area of reporting specialization.

Total required hours: 33.

**Prerequisites:** None, unless students wish to update their knowledge in specific areas or lack background in the course of study they choose to pursue.

**Deadlines for Master's Programs:** The domestic application deadline is February 1. International applications must be submitted by December 1. Applications received after February 1 will be considered on a space-available basis.

## Doctoral Degree in Communication

The PhD in communication offered by the Journalism and Mass Communication Program is dedicated to interdisciplinary inquiry into the social, political, economic, and cultural dimensions of media, nationally and internationally, historically and in contemporary societies.

Because of the centrality of communication and media in social and individual life, media theory and research draw from a wide range of fields and disciplines, including political science, sociology, cultural studies, philosophy, history, linguistics, economics, anthropology, business, psychology, literature, law and public policy. The interdisciplinary nature of media studies is reflected in the research interests of the graduate faculty and in the curriculum, in which students take a significant portion of their course work outside JMC and receive training in both qualitative and quantitative research methods. In general, the curriculum within JMC focuses on the following areas: the range of theories, disciplines, and methodological approaches that have contributed centrally to the field of media studies; the institutional and cultural sources of meaning; the history and development of media industries and systems; and the relationship of media to other social institutions.

Doctoral students in the media studies program must take 42 hours of course work, pass the written and oral comprehensive examinations at the conclusion of course work, and prepare and defend a dissertation. The course work includes a two-semester Proseminar (6 hours), which is required of all first-year doctoral students in the program; 15–18 hours of electives within JMC; 12–15 hours of electives taken outside JMC; and 6 hours of methods (the qualitative and quantitative methods courses offered within JMC).

Applicants to the PhD program in media studies are expected to hold the master's degree or equivalent graduate work. In exceptional cases, applicants without a master's degree may be considered for admittance.

**Deadlines for Doctoral Programs:** The domestic application deadline is January 1. International applications must be submitted by December 1. Applications received by JMC after January 1 will not be considered.

## Financial Support for Graduate Study

**Master's Degree:** A few graduate assistantships are available. Applicants who wish to be considered should submit a resume and letter that includes detailed professional or academic qualifications by February 1 to the director of graduate studies at the School of Journalism and Mass Communication. Applicants are chosen based on experience and the specific skills needed for available assistantships each semester.

**Doctoral Degree:** Admitted PhD students are awarded graduate assistantships including a tuition waiver and stipend.

### *Certificate Program*

## The International Media Certificate

The International Media Certificate is designed for high-achieving majors in international affairs (IAFS) and journalism and mass communication (JOUR) at CU-Boulder. This certificate will open doors to international and world-area specializations for students in the Journalism and Mass Communication Program and will introduce international affairs students to careers in communication media. For more information, visit [www.colorado.edu/Journalism/globalmedia/imc/index.htm](http://www.colorado.edu/Journalism/globalmedia/imc/index.htm).

## Interdisciplinary Graduate Certificate Program in Environmental Policy

In collaboration with the university's Interdisciplinary Graduate Certificate Program in Environmental Policy, JMC offers students the opportunity to earn both the master's degree in journalism, with an emphasis in environmental journalism, and the Certificate in Environmental Policy. The time to complete the degree and the certificate is estimated to be about two years.

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# Faculty: Journalism & Mass Communication Program

Faculty members have major-market experience in TV, radio, newspaper, magazine, and advertising. Among the faculty are leading researchers on communication policy; technology and social change; media, religion and culture; marketing and visual communication; international media development; audience behavior; and mass media law.

Name	Title	Education
ACKLAND, Len	associate professor	BA, University of Colorado; MA, Johns Hopkins School of Advanced International Studies
ARNOLD, Joanne Easley	professor emerita	
BERGGREEN, Shu-Ling C.	associate professor	BA, Fu-Zen University; MS, Southern Illinois University; PhD, University of Tennessee
BRAIDER, Christopher	director; professor	BA, PhD, Trinity College, Dublin
BRINKMAN, P. Delbert	dean emeritus and professor emeritus	
CALABRESE, Andrew	associate dean; professor	BA, Denison University; MA, PhD, Ohio State University
CHEVAL, Melinda Kiger	senior instructor	BS, West Virginia University School of Journalism
CROW, Deserai	assistant professor	BS, University of Colorado Boulder; MPA, University of Colorado Denver; PhD, Duke University
DAUGHERTY, Paul	instructor	BA, MA, University of Colorado Boulder
DUNCAN, Thomas R.	professor emeritus	
ECHCHAIBI, Nabil	assistant professor	BA, Mohammed V University, Morocco; MA, PhD, Indiana University, Bloomington
FISH, Sandra	instructor	BS, MA, Iowa State University
HOOVER, Stewart	professor	BA, McPherson College; MA, PhD, University of Pennsylvania

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JONES , Stephen B.	assistant dean; senior instructor	BA, MA, West Virginia University; PhD, University of Utah
KAPLAN, Frank L.	professor emeritus	
KIM, Hun Shik	assistant professor	BA, Chung-Ang University; MA, PhD, University of Missouri
KUCZUN, Sam	professor emeritus	
LOGAN, Kelty	assistant professor	BA, University of California, Los Angeles; MBA, Tulane University; PhD, University of Texas at Austin
McDEVITT, Michael J.	associate professor	AB, University of California, Berkeley; MA, San Jose State University; PhD, Stanford University
McLEAN, Polly E.	associate professor	BA, Richmond College, City University of New York; MS, Columbia University; PhD, University of Texas
MODY, Bella	James de Castro Chair in Global Media Studies; professor	BA, St. Xavier's College, Ranchi University, India; MA Communication, University of Pennsylvania; PhD, Gujarat University, India
MORIARTY, Sandra E.	professor emerita	
MORITZ, Marguerite J.	UNESCO chair; professor	BS, MS, PhD, Northwestern University
PECK, Janice A.	associate professor	BA, University of Utah; MA, University of Washington; PhD, Simon Fraser University
RAYBON, Patricia	professor emerita	
RHODE, Robert B.	professor emeritus	
RICKERT, Robert Allen	instructor	BA, University of Oregon
ROBBS, Brett	associate professor	BA, Rhodes College; MA, PhD, Vanderbilt University
ROWLAND, Willard D.	dean emeritus and professor emeritus	
RYAN, Kathleen	associate professor	BA, University of California, Santa Barbara; MA, University of Southern California; PhD, University of Oregon
SKEWES, Elizabeth A.	associate professor	BA, University of California, Los Angeles; MA, Ohio State University; PhD, Syracuse University
SLAYDEN, David	associate professor	BA, Southern Illinois University; MA, University of Chicago; PhD, Indiana University
STEVENS, Rick	assistant professor	BS, Abilene Christian University; PhD, University of Texas
TRACEY,	professor	BA, University of Exeter; PhD, University of Leicester

Michael		
TRAGER, Robert	professor emeritus	
VOAKES, Paul S.	professor	BA, University of California, Davis; MJ, University of California, Berkeley; PhD, University of Wisconsin–Madison
WHITT, Jan	professor	BA, MA, Baylor University; PhD, University of Denver
YULSMAN, Thomas	associate professor	BA, Harpur College, State University of New York at Binghamton; MS, Columbia University Graduate School of Journalism

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## School of Law



*Philip J. Weiser, dean*

401 UCB • phone: 303-492-8047 • fax: 303-492-1757

school website: [www.colorado.edu/law](http://www.colorado.edu/law)

THE UNIVERSITY OF COLORADO LAW SCHOOL, established in 1892, has a long and proud history as a top public law school. The first students of color entered in 1898. The school became a charter member of the Association of American Law Schools organized in 1901. The first woman graduated in 1908. And, the school has been on the American Bar Association's list of accredited law schools since its first publication in 1923.

Today, Colorado Law, housed in the beautiful new "green" Wolf Law Building with one of the largest law libraries in the country, is also one of the most technologically advanced law schools in the country. Most importantly, it provides one of the best comprehensive legal educations in the nation, featuring:

- 530 students, selected from the nation's statistically best applicants with diverse backgrounds and representing 100 undergraduate institutions
- A favorable faculty-student ratio (1:12.5) that produces class sizes that encourage discussion
- 60 highly published resident faculty dedicated to interacting with students inside and outside the classroom
- First-year students who are placed in small sections for more class participation opportunities and to build relationships with classmates and professors
- Full-time, three-year Juris Doctor degree, one-year Master of Law degree, eight dual degrees, four certificates, four centers, and three journals
- An Experiential Learning Program that integrates lawyering activities, including nine legal clinics, externships, public service pledge, and trial and court competitions
- Comprehensive program to prepare students for any career; a quarter of graduates obtain judicial clerkships
- Impressively high first-time bar passage rate, especially compared to the state average

## Law School Vision

A supportive and diverse community of scholars and students in a place that inspires vigorous pursuit of ideas, critical analysis, and civic engagement in order to advance the rule of law in an open,

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sustainable society.

## *Our Mission*

- **Teaching:** To employ robust theoretical inquiry, doctrinal and policy analysis, and professional skills.
- **Scholarship:** To explore and discuss ideas, to develop and test new ideas and approaches, to challenge the status quo, and to convey the school's research and ideas to lawyers, academics, policymakers, and the world.
- **Public Service:** To instill in students an awareness of a lawyer's civic responsibilities and opportunities to serve and lead.

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## Academics

Colorado Law's three-year, full-time Juris Doctor (JD) degree provides a strong, well-rounded legal education with a rich mixture of theory, policy, doctrinal analysis, and professional skills. Students have broad flexibility to meet their individual interests and needs.

### Areas of Academic Strength

**Environmental, Energy, and Natural Resources Law.** Ranked consistently among the very best in the country, environmental and natural resources law has been a key focus of the Colorado Law curriculum for more than half a century, and is one of the strongest and deepest programs of its kind.

**Technology, Entrepreneurial, and Intellectual Property Law.** Boulder is the heart of one of the nation's premier telecommunications and technology hubs, and boasts a vibrant entrepreneurial community, ranking it No. 1 by Federal Reserve Bank of Boston researchers as the highest performing small city for venture capital investment.

**American Indian Law.** With more than 30,000 American Indians living within a 30-mile radius of the CU-Boulder campus, Colorado Law is in the "Hub of Indian Country," which is why Boulder is home to the Native American Rights Fund.

**Juvenile and Family Law Program.** With U.S. state trial courts reporting nearly 5 million cases involving domestic relations, there is an increased demand for trained lawyers and advocates who have acquired an interdisciplinary specialization in resolving family issues.

### Academic Support

From the student's first day, Colorado Law invests in her or his academic success. Through the Rothgerber Academic Assistance Program, upper-division law students tutor first-year students in any of their courses, except Legal Writing and Advocacy. The program is open to all first year students, and more than 50 percent of the class participates in this free opportunity.

### Study Abroad and Summer Session

While Colorado Law offers exciting but limited summer courses, it offers a variety of legal study abroad opportunities in Europe, Russia, Israel, and Canada. Study abroad allows students to learn about other nations' system of laws, participate in international and comparative legal studies, and approach legal systems and subjects from a non-U.S. perspective. This is a great opportunity to study with law students from other countries in the areas of international business, comparative law, European Union law, and international law.

### Legal Research and Writing

Colorado Law's Legal Research and Writing Program ensures that its graduates are proficient in legal

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research, analysis, and writing, and capable of adapting these skills to varying contexts. All first-year Legal Writing and Appellate Court Advocacy courses are taught by resident legal writing faculty, and legal research and research strategy is guided by professional librarian instructors. Upper-division courses are designated as writing classes and students spend a seminar preparing a substantial paper requiring significant legal research and writing.

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# Experiential Learning

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Experiential education encompasses lawyering activities in which students receive experience outside the classroom—clinics, externships, appellate and trial competitions, and voluntary public service work. Colorado Law’s Experiential Learning Program gives greater coherence to our entire curriculum and builds linkages with faculty involved in experiential education and those involved in traditional classroom teaching.

## Legal Clinics

Colorado Law’s Clinical Education Program started in 1948 and now serves almost 900 clients each year. Clinics are courses that provide practical learning experiences for our students, much-needed assistance to those less fortunate in our community, and invaluable service to the public good. By handling actual cases, students make the transition from legal theory to legal practice, enabling them to take classroom knowledge and turn it into real-world understanding. Under the supervision of expert clinical faculty, student practitioners take primary responsibility for understanding the goals of their clients, and working to represent those clients’ interests persuasively and competently. Clinics are available to all interested students.

- American Indian Law Clinic
- Appellate Advocacy Clinic
- Civil Practice Clinic
- Criminal Defense Clinic
- Entrepreneurial Law Clinic
- Family Law Clinic
- Juvenile Law Clinic
- Natural Resources Litigation Clinic
- Technology Law and Policy Clinic

## Public Service Pledge Program

Colorado Law is a public institution with a public spirit. The faculty and the students have a passion and deep appreciation of a lawyer’s civic responsibilities to serve the underprivileged and the community. Students who complete a voluntary pledge of at least 50 hours of law-related public service work, not for credit or other compensation, receive recognition on their transcripts. Such service provides students with valuable skills and values, such as legal research and writing, client

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interviewing, and legal argument development. Students can perform pro bono work for any government agency engaged in legal work (administrative agencies, public defenders, district attorney offices, and judiciary), nonprofit that provides legal services, public interest law firm, or private firm with pro bono projects.

## Trial Advocacy and Moot Court

Appellate advocacy, mock trials, and moot court competitions help to develop skills in appellate brief writing and oral argument, and gain valuable trial practice experience. Colorado Law teams have consistently been extremely competitive and participate in and host more competitions each year. Coaching and support come from an experienced group of faculty, fellow students, alumni who recently competed, and judges and lawyers in the community. Students may earn academic credit for their participation.

- Constance Baker Motley National Moot Court Competition
- Emory Civil Rights and Liberties Competition
- Hispanic National Bar Association Moot Court
- Jessup International Law Moot Court Competition
- Jim R. Carrigan Trial Advocacy Competition
- Mardi Gras National Moot Court Competition
- National Moot Court Competition
- National Moot Court Competition in Child Welfare and Adoption Law
- National Student Trial Advocacy Competition
- National Telecommunications Moot Court Competition
- The National Trial Competition
- Native American Law Students Association Moot Court Competition
- Pace National Environmental Law Moot Court Competition
- Philip C. Jessup International Law Moot Court Competition:
- The Rothgerber Moot Court Competition
- Saul Lefkowitz National Moot Court Competition

## Externships

Students may gain academic credit for performing substantive legal work with government agencies, public interest institutions, private non-profits, and other private-sector employers such as a law firms. Students develop professional lawyering skills, gain insight into various aspects of the legal system and profession, and cultivate a sense of professional responsibility. While uncompensated, students receive credit hours (1 credit hour per 50 hours of work) toward their degrees.

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# Career Development

## On This Page:

- [Services and Programs](#)
- [Job Opportunities](#)
- [Employment during Law School](#)

Colorado Law prepares students for a wide variety of careers. The Office of Career Development offers students and alumni individualized career counseling and professional development advice to help them identify and achieve their career goals. The office has career counselors with JDs who have more than 30 years of law practice experience. It maintains state-of-the-art career development and job search resources and helps students prepare for and pursue job opportunities during and after law school.

## Services and Programs

- **Career Counseling:** Each first-year student meets with a career counselor who helps with résumés and job search action plans.
- **Employer Outreach:** Counselors conduct extensive employer outreach in- and out-of-state.
- **Career Fairs/Symposia:** The office organizes employer networking opportunities on and off campus.
- **On-Campus Interviews:** Each year, nearly 70 employers come on campus to interview students for summer clerkships, internships, and associate attorney positions with law firms and government agencies.
- **Résumé Collections:** Resumes from interested students are sent to in- and out-of-state employers.
- **Brown Bag Speaker Series:** Practicing attorneys from the local and national legal community are regularly invited to speak to students during weekly lunch-hour informational sessions about what it's like to work in a variety of legal areas.
- **Job Postings:** Through a secure web-based system, students and alumni can review current job listings and an online resources library.
- **Mock Interviews:** Counselors set up appointments with students for practice interviews with the counselors or with volunteer attorneys. Students receive tips and feedback to help them improve.
- **Referrals:** Counselors help students connect with alumni and other legal professionals as resources for information about a field or practice area of law in Colorado or any other part of the country or world.
- **Mentoring and Community Involvement:** The office regularly helps students get involved in the legal community by referring them to mentor programs (including the Student Alumni Mentoring Program), bar associations, Inns of Court, and other law-related organizations.

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## Job Opportunities

Colorado Law helps students pursue numerous job opportunities and helps connect them to valuable part-time and permanent legal positions, including:

- **Externships** are for students working unpaid in the legal community for academic credit, under the supervision of a field and faculty supervisor.
- **Internships** are paid or voluntary student positions with law firms, corporations, government agencies, judges, and public interest organizations.
- **Honors programs** are prestigious programs for students and graduates to work within federal government agencies.
- **Judicial clerkships** are prestigious paid positions for new graduates working for judges in federal, state, and appellate trial courts.
- **Summer law clerks** are paid part-time or full-time for first- or second-year students in law firms and other organizations.
- **Fellowships** provide funding for law students and graduates to work with public service organizations or academic programs.

## Employment during Law School

The study of law is demanding and requires the highest level of concentration. Most students devote 50–70 hours a week to class time and study. Therefore, it is Colorado Law's policy that students may not accept employment during the critical first two semesters. After that, students may be employed for no more than 20 hours per week when enrolled in more than 12 credit hours, in accordance with ABA Rule 304(f).

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## Research Centers

Colorado Law's centers have earned national prominence for their research, publications, and leading conferences that debate legal and policy issues, foster practical solutions and innovative ideas, facilitate networking, and produce scholarship. Students are an integral part of the centers. Students may work as volunteers, externs, or research assistants on research projects, reports, newsletters, and events. In addition, students will have unique access to national and local policymakers, researchers, scientists, entrepreneurs, and legal practitioners in many areas of the law.

### Byron R. White Center for the Study of American Constitutional Law

Named in honor of the retired Supreme Court Justice and CU alumnus, the center was founded in 1990 to enhance the study and teaching of Constitutional law and stimulate public debate and understanding of our Constitutional system. Each year, the center gathers politicians, academics, and practitioners for the Ira C. Rothgerber, Jr. Conference. Recent topics have included home rule, reapportioning Colorado, state initiatives, academic freedom, and conscience and the free exercise of religion.

### Center for Energy and Environmental Security

As a nonpartisan forum, this center develops innovative ideas dealing with energy and environmental security issues through interdisciplinary research and policy. It moves beyond research to create practical real-world strategies and solutions that address local, state, national, and international issues. Major projects include EnergyPledges (a global watchdog for international sustainable energy commitments), President's Climate Action Plan, Colorado Energy Profile, Energy Justice Fuel for Life addressing indoor pollution from burning biomass for cooking and heating and new technologies, and Capital Solutions for a Sustainable Future, which is an interactive legal information website to facilitate clean-energy technology exchange between the United States and India.

### Natural Resources Law Center

Founded in 1982, the center promotes intellectual discourse over critical natural resources law and policy problems to foster practical and effective solutions. Research projects bring an academic focus to real-life issues and typically lead to publications that inform and influence policy-makers to promote better decisions. Major projects include The Western Water Policy Program to assure adequate water supplies, The Red Lodge Clearinghouse website for information to solve natural resources law and policy problems, The Public Comment Project that has students draft comments and participate in public meetings and hearings, and Best Management Practices for Oil and Gas Surface Use.

### Silicon Flatirons Center for Law, Technology, and

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# Entrepreneurship

The center is nationally recognized as a telecommunications law powerhouse. It hosts leading technology policy conferences with legal, technical, regulatory, and business experts to elevate the debate around technology policy issues, facilitate networking, and develop “human capital” in the Colorado technology community. Students assist on major research projects including the Software Regulation Clearing House and help organize 15–20 events a year on topics such as digital broadband migration, entrepreneurial law and startups, new technology, business plan competition, private equity, software patents, and regulatory law and economics.

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# Wolf Law Building

The five-story Wolf Law Building was completed in 2006 and was only possible through the financing of alumni, friends, law firms, and 61 percent by students.

- Top “green” certification, from construction to operation, including 88 percent renewable energy and electricity, 40 percent water use reduction, and 59 percent regionally manufactured materials
- Technologically advanced wireless networking, video conferencing, videotaping capabilities for distance learning, and digital kiosks
- All classrooms have electrical outlets for each student and complete audio-visual equipment (LCD projectors, DVD, VHS, cable) with built-in touch-screen control systems
- Student commons with café and patio, study and interview rooms, individual lockers and mailboxes, law bookstore, and courtyard with barbeque
- Suites and offices for centers, clinics, student organizations, journals, and all faculty offices
- 250-seat main courtroom with judge’s chambers, 30-seat teaching courtroom with jury box and witness stand, and a mock trial practice room for competition and clinic training

The three-story William A. Wise Law Library is housed in the Wolf Law Building.

- Most comprehensive law library in the 12-state Rocky Mountain region, one of the largest in the country, serving as a selective federal government depository
- 40 instructional student lab computers, five group study rooms, 445 seats, distributed computing stations
- 25,000 visitors served per year
- 720,000 volumes and microform equivalents

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# JD Admissions & Financial Aid

## On This Page:

- [Admission Standards](#)
- [Application Process](#)
- [International Students](#)
- [Transfer Students](#)
- [Visiting Students](#)
- [Financial Aid](#)
- [Scholarships, Fellowships, and Awards](#)
- [Family Educational Rights and Privacy Act](#)

## Admission Standards

Above all, Colorado Law values leadership, character, diversity, and commitment to service in its students. The small size of the Law School—about 170 in each entering class—and the large number of applicants require a very selective admissions process. Admissions decisions are based on many factors, including undergraduate grade point average (GPA) and the Law School Admissions Test (LSAT) score, and take into account other indicators of ability, motivation, and achievement as well. In the faculty's judgment, a diverse student body improves the educational experience of all students.

## Application Process

The **Early Decision** application process is for prospective law students who know that Colorado Law is the school they wish to attend. Candidates who apply under this option are expected to enroll at Colorado Law if offered admission. Early Decision applications are accepted starting October 1, and all materials must be received by November 15 for the application to be reviewed for early decision. Early Decision applicants will receive a decision in early January. Those students who are not admitted through this process will automatically be considered again as part of the regular admission process.

**Regular admission** applications with all required materials should be submitted starting October 1 and no later than March 15. Find complete application instructions at [www.lsac.org](http://www.lsac.org) and on the Colorado Law website. The Admissions Committee considers regular decision applications beginning in December. Applicants are notified by letter of decisions from mid-January until the class is filled in May. Admission from the waitlist, which is not ranked, can occur as late as July and the number of offers varies from year to year.

## International Students

International applicants have additional requirements as explained on the school's website, including transcripts showing completion of the equivalent of an American bachelor's degree, foreign degree verification, and transcript translation, if applicable. The TOEFL is required of all students whose native language is not English, as a thorough and excellent command of written and spoken English is crucial to success in law school. After admissions, international students must submit a financial affidavit stating that they have the financial resources to support themselves while attending school in

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the United States, since the Colorado Law cannot offer loan assistance to international students.

## Transfer Students

Students who have completed at least one full year of study (approximately 30 semester credits) at a law school accredited by the American Bar Association may apply for fall transfer admission to Colorado Law. Applications for fall enrollment are accepted after May 1 and must be received by July 1. The number of transfer students admitted varies each year, and only those who have done very well in their law studies elsewhere have a substantial chance of admission.

## Visiting Students

Colorado Law admits some students who are receiving their law degree from another law school to study here for the fall or spring semester. Admission as a visiting student is available to applicants who have completed one or two years of high-quality work at another law school and have demonstrated a compelling need to attend Colorado Law. Financial aid for visiting students is usually handled by a consortium agreement between Colorado Law and the degree-granting institution.

## Financial Aid

All admission decisions are made without regard to students' financial need. Every attempt is made to provide full financial assistance through federal and private educational loans, grants, work-study, and scholarships. Students applying for financial aid, private law scholarships, or grants based on financial need must complete the Free Application for Federal Student Aid (FAFSA, [www.fafsa.ed.gov](http://www.fafsa.ed.gov)) and submit it to the processor as soon as possible after January 1. The priority FAFSA filing deadline is April 1. Eligible students are awarded Federal Direct Stafford/Ford Loans up to a maximum of \$20,500 per year. Graduate PLUS loans are available to students when financial need exceeds Stafford loan limits. Graduate PLUS loans are federally guaranteed, but unlike Stafford loans, they have good credit requirements for borrowers. Private alternative law loan programs have interest rates and fees that vary according to the lender, the credit rating of the student, and whether there is a co-signer. Both loan fees and interest rates may be higher than those of the Stafford Direct loans and there is no cap in interest rates.

## Scholarships, Fellowships, and Awards

A number of scholarships, fellowships, and awards are given annually on a competitive basis for academic and financial considerations. All admitted first-year students are considered for scholarships, as recipients are selected by the Admissions and Financial Aid Committee after an offer of admission has been made. It is possible for scholarships to be awarded through August. Colorado Law also offers scholarship money to second-year and third-year students each spring. These scholarships are awarded based on academic performance and other criteria, such as economic need and demonstration of assistance in advancing the diversity of the student body.

## Family Educational Rights and Privacy Act

The Family Educational Rights and Privacy Act (FERPA) affords certain rights with respect to a student's education records. Copies of the policy are available in the Wise Law Library and the Rules of the Law School on the website.



# Student Life

## On This Page:

- [Commitment to Diversity](#)
- [Honor System](#)
- [Journals](#)
- [Student Organizations](#)

Students who choose the University of Colorado Law School generally seek the very best all-around legal education combined with a great location, a supportive community, top specialties, interdisciplinary study, dedicated faculty, a public service tradition, and so much more. Colorado Law is distinguished by the extraordinary quality of its students. As a competitively selective school, its students rank in the top tier, represent a rich blend of geographic and ethnic backgrounds, and bring experiences of leadership, career achievement, and community service. Although competitiveness among students with such elite qualifications is typical, our students have a proud history of putting collegiality first.

## Commitment to Diversity

Colorado Law is proud to have been one of the earliest law schools in the nation to graduate lawyers of color. The first students of color entered the University of Colorado Law School in 1898 and the first woman graduated in 1908. Colorado Law's commitment to diversity is evident throughout the Law School. We seek students with not only the academic credentials to excel in a rigorous legal education program, but also a desire to join a diverse community of future lawyers committed to the service of others. Student organizations offer support and networking opportunities. For first-year students, the Office of Career Development developed a diversity mentor program and supports the Colorado Pledge to Diversity Summer Clerkship Program for summer associate positions.

## Journals

Colorado Law is home to three nationally respected student-led law journals. These journals provide legal research, writing, editorial, and publishing experience to competitively chosen second- and third-year law students, with a select number of third-year students serving as prestigious Editorial Board members. Subscribers include government agencies, judicial courts, law school and government libraries, judges, attorneys, faculty, and alumni.

- *University of Colorado Law Review* (founded in 1928)
- *Colorado Journal of International Environmental Law and Policy*
- *Journal on Telecommunications & High Technology Law*

## Student Organizations

Colorado Law's student organizations reflect the diverse interests and concerns of its active student body. Students increase their knowledge in specific areas, gain leadership experience, and work

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closely with fellow students, faculty, alumni, and legal professionals with similar passions. The Student Bar Association serves as the school's student government, represents the interests of law students generally, allocates funding to other organizations, and administers the school's honor code with the Honor Council.

- Aerospace Law and Policy Association
- American Bar Association, Law Student Division
- American Civil Liberties Union
- American Constitution Society
- Asian Pacific American Law Students Association
- Black Law Students Association
- Business Law Association
- Christian Legal Society
- Colorado Election Law Project
- Construction and Real Estate Law Association
- Diversity Awareness Now
- Doman Society of International Law
- Environmental Law Society
- Federalist Society for Law and Public Policy Studies
- J. Reuben Clark Law Society
- Jewish Law Students Association
- Juvenile and Family Law Club
- Latino Law Students Association
- Law Students for Reproductive Justice
- Legal Alternative Dispute Resolution Club
- National Lawyers Guild
- Native American Law Students Association
- OUTlaw
- Phi Delta Pi
- Public Interest Students Association
- Republican Law Society
- Sports and Entertainment Law Student Association
- Student Animal Legal Defense Fund
- Student Bar Association
- Student Trial Lawyers Association
- Technology and Intellectual Property Society
- Women's Law Caucus

## Honor System

Members of the legal profession are held to the highest standards of ethical and professional conduct, and Law School faculty and students are expected to maintain the same level of professional competence and integrity in their work. The Colorado Law School Honor Code, subscribed to by all students, is a system of rules administered by student officers and demands the highest ethical conduct. Law students have considerable individual freedom and responsibilities, such as being able to take unproctored exams.



# Law

The course code for this school is LAWS.

## Graduate Degree Program(s)

### Master of Laws (LLM)

Colorado Law offers one-year, full-time LLM degrees in three specialty areas:

- Entrepreneurial Law
- Information Technology and Intellectual Property Law
- Natural Resources Law

### Juris Doctor of Laws (JD)

#### First Year

First-year courses lay the foundation and all JD candidates take these courses to learn to “think like a lawyer.” Common law courses taught in the Socratic Method allow students to develop legal reasoning and critical thinking skills. All first-year students are assigned to a small cohort to help build strong relationships and study groups with classmates.

#### Fall Semester

- **Civil Procedure:** Rules governing pleading, joinder of parties, discovery, jurisdiction of courts, right to jury trial, appeals, and res judicata and collateral estoppel, with emphasis on the Federal and State Rules of Civil Procedure
- **Contracts:** Contract liability, offer and acceptance, consideration, frauds statute, contract remedies, the parol evidence rule, contract performance, conditions, changed circumstances
- **Legal Writing:** Legal analysis and document preparation, objective legal analysis techniques, legal rule synthesis, authority use to explain rules, and rule application to case facts
- **Legislation and Regulation:** Statutory interpretation, architecture of the administrative state, and interpretation and review of regulation.
- **Torts:** Nonconsensual allocation of losses for civil wrongs, focusing on negligence and strict liability

#### Spring Semester

- **Appellate Court Advocacy:** Appellate brief and document preparation, oral arguments before a three-judge mock court, techniques of persuading a court to accept a client’s view of the law and facts, professional judgments within ethical boundaries, and lawyer credibility
- **Constitutional Law:** Constitutional structure, including judicial review, federalism, separation of powers, and constitutional rights of due process and equal protection
- **Criminal Law:** Statutory and common law of crimes and defenses, the procedures by which the law makes judgments as to criminality of conduct, constitutional limits
- **Property:** Personal property, estates and interests in land, landlord–tenant, basic land conveyancing, and private land use controls

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- Academic Support

## *Second and Third Years*

The elective program in the second and third years builds upon the foundation laid in the first-year curriculum. Students must take Evidence and Legal Ethics and Professionalism courses and a seminar course. Colorado Law encourages a balance between experiential learning and classroom studies, graded courses and non-graded courses, and study within and outside the law school.

### **Elective Courses**

#### ***Business***

- Accounting Issues for Lawyers
- Advanced Contracts: Commercial Transactions
- Agency, Partnership, and the LLC
- Antitrust
- Bankruptcy
- Business Planning
- Business Transactions
- Corporate Finance
- Corporations
- Creditors' Remedies and Debtors' Protection
- Deals
- Humanizing Contracts
- Government Regulation of Business
- Law Practice Management
- Mergers, Acquisitions, and Reorganizations
- Payment Systems
- Secured Transactions
- Securities Regulation
- Sports Law
- Venture Capital and Private Equity

#### ***Criminal***

- Capital Punishment in America
- Comparative Criminal Procedure
- Criminal Procedure: Investigative Phase
- Criminal Procedure: Adjudicative Process
- White Collar Crime

#### ***Family, Gender, and Health***

- Domestic Relations
- Domestic Violence
- Family Law
- Gender, Law, and Public Policy
- Health Law I: Finance, Administration and Organization of Health Care
- Health Law II: Medical Malpractice Litigation
- Juvenile Justice

- 
- Legal Rights of Children
  - Parent, Child, and State
  - Sexuality and the Law

### ***Government and Public Interest***

- Administrative Law
- Advanced Torts
- Civil Liberties Legislation
- Civil Rights Legislation
- Conflict of Laws
- Education Law
- Election Law
- Employment Discrimination
- Employment Law
- Federal Courts
- First Amendment
- Labor Law
- Lawyers for Social Change
- Legislation
- Local Government
- Poverty Law
- Race and American Law
- Remedies
- Supreme Court Decision Making

### ***Intellectual Property, Technology, and Telecommunications***

- Computer Crimes
- Copyright
- Introduction to Intellectual Property Law
- IP and Technology Contracting
- Patent Law
- Patent Litigation
- Privacy and Security in the Digital Age
- Quantitative Methods
- Standards and Standardization Wars
- Telecommunications Law and Policy
- Trademark and Unfair Competition

### ***International***

- Comparative Employment Law
- Comparative Law
- Immigration and Citizenship Law
- International Business Transactions
- International Criminal Law: Theory and Practice
- International Dispute Settlement

- 
- International Environmental Law
  - International Human Rights
  - International Law
  - International Legal Order: History and Foundations
  - Introduction to Islamic Law
  - Introduction to Jewish/Israeli Law
  - Refugee and Asylum Law

#### ***Jurisprudence and Perspective***

- Economic Analysis of Law
- Jurisprudence
- Law and the Biology of Human Nature

#### ***Litigation***

- Advanced Appellate Advocacy
- Complex Civil Litigation
- Jury Selection and History
- Litigation Drafting

#### ***Natural Resources and the Environment***

- American Indian Law I
- American Indian Law II
- Climate Change Law and Policy
- Energy Insecurity and Sustainable Law
- Energy Law and Regulation
- Environmental Enforcement
- Environmental Law
- Environmental Litigation
- Foundations of Natural Resources Law and Policy
- Jurisdiction in Indian Country
- Land Conservation Law
- Mining and Energy Law
- Oil and Gas
- Public Land Law
- Toxic and Hazardous Waste
- Water Law
- Wildlife and the Law

#### ***Practice—Clinical***

- American Indian Law Clinic
- Appellate Advocacy Clinic
- Civil Practice Clinic
- Criminal Defense Clinic
- Entrepreneurial Law Clinic
- Extern Program

- 
- Family Law Clinic
  - Juvenile Law Clinic
  - Natural Resources Litigation Clinic
  - Technology Law and Policy Clinic

***Practice—Simulation***

- Advanced Trial Advocacy
- Alternative Dispute Resolution
- Appellate Advocacy Competition
- Arbitration
- International Moot Court Competition
- Legal Negotiation
- Mediation
- Motions Advocacy
- Rothgerber Moot Court Competition
- Trial Advocacy
- Trial Competition

***Property***

- Construction Law
- Land Conservation Law
- Land Use Planning
- Real Estate Planning
- Real Estate Transactions
- Real Property Security
- Wills and Trusts

***Research and Writing***

- Advanced Legal Research
- Advanced Legal Writing
- Creative Writing for Lawyers
- Independent Legal Research: Journal of International Environmental Law and Policy
- Independent Legal Research: Journal on Telecommunications & High Technology Law
- Independent Legal Research: Law Review
- Judicial Opinion Writing

***Taxation***

- Corporate Taxation
- Estate Planning
- Federal Estate and Gift Tax
- Federal Tax Politics
- Income Taxation
- International Taxation
- Taxation of Conduit Entities

***Seminars***

- 
- Advanced American Indian Law
  - Advanced Constitutional Law Equality and Privacy
  - Advanced Constitutional Law, Theory, and Practice of Free Speech in the United States
  - Advanced Criminal Procedure
  - Advanced Natural Resources Law
  - Advanced Topics in Federalism
  - Advanced Topics in Health Law and Policy
  - Advanced Torts
  - Affordable Housing
  - Antidiscrimination and First Amendment
  - Bioethics and Law
  - Cities, Suburbs, and the Law
  - Civil Liberties Litigation
  - Class and Law
  - Comparative Constitutional Law
  - Comparative Public Health Law and Ethics
  - Computers and the Law
  - Constitutional Foundations: Core Ideas
  - Constitutional Theory
  - Consumer Empowerment
  - Counseling Families in Business
  - Gender Law
  - Higher Education and the Law
  - Information Privacy
  - International Crimes and Punishment
  - Jurisprudence
  - Law and Economics of Utility Regulation
  - Law and Literature
  - Media, Popular Culture, and Law
  - Modern Legal Theory
  - Oil and International Relations
  - Power, Ethics, and Professionalism
  - Public Health Law and Ethics
  - Securities Litigation and Enforcement
  - Separation of Powers
  - Tax Policy
  - Theory of Punishment

*Note: Not all courses are offered each semester. This is a composite list of the last three years of course offerings.*

## *Dual Degree Programs*

### Dual Degree Programs in Law

Colorado Law students take advantage of an array of rich opportunities for interdisciplinary study through other CU schools and colleges, in addition to the University of Alberta. The schools work in

cooperation to select courses for the programs that allow students to earn the dual degrees in less time than it takes to earn each degree separately. Students apply separately to and are admitted by the two schools under their respective admissions requirements. Only credits earned after law school enrollment count toward the JD degree, and the first year of the JD curriculum must be taken exclusively at Colorado Law.

- **Juris Doctor/Master of Business Administration (JD/MBA)** with CU-Boulder's Leeds School of Business
- **Juris Doctor/Master in Environmental Studies (JD/ENVS)** with CU-Boulder's Environmental Studies Program
- **Juris Doctor/Doctorate in Environmental Studies (JD/PhD)** with CU-Boulder's Environmental Studies Program
- **Juris Doctor/Doctor of Medicine (JD/MD)** with UC Denver's School of Medicine on the Anschutz Medical Campus in Aurora
- **Juris Doctor/Master of Public Administration (JD/MPA)** with UC Denver's School of Public Affairs
- **Juris Doctor/Master of Science, Telecommunications (JD/MST)** with CU-Boulder's Interdisciplinary Telecommunications Program
- **Juris Doctor/Master of Urban and Regional Planning (JD/MURP)** with CU-Boulder's College of Architecture and Planning
- **Juris Doctor/Bachelor of Laws (JD/LLB)** with the University of Alberta Faculty of Law, Canada

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# Faculty: Law

Name	Title	Education
AARONSON, Norman F.	clinical professor emeritus	
BERNTHAL, J. Brad	associate clinical professor	BA, University of Kansas; JD, University of Colorado
BOYD, William	associate professor	BA, University of North Carolina; MA, PhD, University of California, Berkeley; JD, Stanford University
BRILLON, Alicia	reference librarian; instructor	BA, MLIS, University of Washington; JD, Seattle University
BRISCOE, Georgia	library associate; head of technical services;	BS, Washington State University; MA, University of San Diego; AMLS, University of Michigan
BRUFF, Harold	Charles I. Thomson Professor of Law	BA, Williams College; JD, Harvard University
BRUNET MARKS, Alexia	associate professor	BA, Colgate University; MS, PhD, Purdue University; JD, Northwestern University
CALHOUN, Emily	professor	BA, MA, Texas Tech University; JD, University of Texas
CAMPOS, Paul F.	professor	AB, MA, JD, University of Michigan
CANNER, Al	legal writing professor	BA, Brandeis University; JD, University of Colorado
CANTRELL, Deborah	director of clinical education; associate professor	BA, Smith College; MA, University of California, Los Angeles; JD, University of Southern California
CARPENTER, Kristen A.	associate dean for faculty development; associate professor	BA, Dartmouth College; JD, Harvard University
CHAPIN, Violeta	associate clinical professor	BA, Columbia University; JD, New York University
CHENG, Ming	associate professor	AB, Harvard University; JD, New York University School of Law; PhD, University of California, Berkeley
COLLINS, Richard B.	professor	BA, Yale University; LLB, Harvard University
DESAUTELS-STEIN, Justin	associate professor	BA, JD, University of North Carolina; LLM, Harvard University; MALD, Tufts University The Fletcher School
ENGLAND, Ann	associate clinical professor	BA, JD, University of Michigan

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FLEISCHER, Miranda P.	associate professor	BA, Duke University; JD, University of Chicago; LLM, New York University
FLEISCHER, Victor	associate professor	BA, JD, Columbia University
FURMAN, H. Patrick	clinical professor emeritus	
GAZUR, Wayne M.	professor	BS, University of Wyoming; JD, University of Colorado; LLM, University of Denver
GERDING, Erik	associate professor	AB, Duke University; JD, Harvard Law School
GRUBER, Aya	associate professor	BA, University of California, Berkeley; JD, Harvard University
GURUSWAMI, Lakshman	Nicholas Doman Professor of International Environmental Law; director of the Center for Energy and Environmental Security	LLB, Sri Lanka; PhD (Law), University of Durham, United Kingdom
HART, Melissa	director of the Byron R. White Center for the Study of American Constitutional Law; associate professor	BA, Harvard-Radcliffe; JD, Harvard University
HUANG, Peter	professor and demuth chair	AB, Princeton University; SM and PhD, Harvard University; JD, University of Pennsylvania
JIANG, Yumin	technical services librarian; instructor	BE, Peking University; MA, University of Wisconsin-Madison; MS, University of Illinois, Urbana-Champaign
KIERNAN-JOHNSON, Derek H.	legal writing professor	AB, Princeton University; JD, University of Michigan
KRAKOFF, Sarah A.	professor	BA, Yale University; JD, University of California, Berkeley
LINZ, Robert	library associate director; head of Public Services; instructor	BA, Wake Forest University; JD, University of Florida; MLIS, Florida State University
LOEWENSTEIN, Mark J.	Monfort Professor of Commercial Law	AB, JD, University of Illinois
MACK, Natalie	legal writing professor	BA, University of South Carolina; JD, University of Colorado
MATTHEW, Dayna	professor	AB, Harvard-Radcliffe; JD, University of Virginia
MOSS, Scott	associate professor	BA/MA, Stanford University; JD, Harvard University
MUELLER, Christopher B.	Henry S. Lindsley Professor of Procedure and Advocacy	AB, Haverford College; JD, University of California, Berkeley
NAGEL, Robert F.	Ira C. Rothgerber Jr. Chair in Constitutional Law	BA, Swarthmore College; JD, Yale University
NEVELOWMARTS, Susan	Law library director, associate professor	BA, University of California, Santa Cruz; JD, University of California, Berkeley; ML.S, San Jose State University

NORTON, Helen	associate professor; associate dean for academic affairs	BA, Stanford University; JD, University of California, Berkeley
OHM, Paul	associate professor	BS, BA, Yale University; JD, University of California, Los Angeles
PANNELL, Alan	reference librarian; instructor	BA, University of Oklahoma; MA, University of Arizona; JD, Western New England
PEPPET, Scott R.	associate professor	BA, Cornell University; JD, Harvard University
RAMSEY, Carolyn	professor	BA, University of California, Irvine; AM, JD, Stanford University
ROBINSON, Colene	associate clinical professor	BA, Miami University of Ohio; JD, Loyola University, Chicago
SCHLAG, Pierre	Byron R. White Professor of Constitutional Law	BA, Yale University; JD, University of California, Los Angeles
SCHMITZ, Amy J.	associate professor	BA, Drake University; JD, University of Minnesota
SCHWARTZ, Andrew	associate professor	ScB, Brown University; JD, Columbia University
SELDEN, Karen	catalog librarian; instructor	BS, Pennsylvania State University; MLS, Simmons College
SOULES, Michael	associate clinical professor	BA, University of Michigan; MA, University of California, Berkeley; JD, Yale Law School
SPAIN, Anna	associate professor	BA, Denison University; JD, Harvard University
SQUILLACE, Mark	director of the Natural Resources Law Center; professor	BS, Michigan State University; JD, University of Utah
STAFFORD, Gabrielle Marks	legal writing professor	BA, University of Pennsylvania; JD, Boston University
STAFFORD, Todd M.	director of Legal Writing Program, legal writing professor	BA, Southern Methodist University; JD, Duke University
STEUBEN, Norton	Nicholas Rosenbaum Professor of Law emeritus	
SURDEN, Harry	associate professor	. BA, Cornell University; JD, Stanford University
THOMPSON, Jane	library assistant director for faculty services, instructor	. BA, University of Missouri, Columbia; MA, MLL, JD, University of Denver
TOMPKINS, Jill E.	clinical professor	BA, King's College; JD, University of Maine
WEISER, Phillip J.	dean; director of the Silicon Flatirons Center; professor	BA, Swarthmore College; JD, New York University
WESSON, Marianne C.	Wolf-Nichol Fellow; President's Teaching Scholar; professor	AB, Vassar College; JD, University of Texas
WHITE, Ahmed	associate dean for research; professor	BA, Southern University; JD, Yale University
WILKINSON, Charles	Moses Lasky Professor of Law; distinguished university professor	BA, Denison University; LLB, Stanford University



# College of Music



**Daniel P. Sher, dean**

301 UCB • phone: 303-492-6352 • fax: 303-492-5619

college website: [music.colorado.edu](http://music.colorado.edu)

THE COLLEGE OF MUSIC provides specialized training designed to prepare students for a variety of careers in music. The college offers three undergraduate degrees, two certificate programs, and four graduate degrees; numerous performance opportunities are also available.

Established by the Regents of the University of Colorado in 1920, the College of Music is a fully accredited member of the National Association of Schools of Music.

## Mission

The mission of the College of Music at CU-Boulder is to promote excellence in music through distinguished instruction in performance, composition, musicology, theory and teacher preparation, and to provide opportunities for performance, creative activities, research and scholarship, and teaching.

The college is dedicated to:

- providing music majors the opportunity to develop their knowledge, understanding, and ability in the various aspects of music;
- preparing students for careers as performers, composers, scholars, teachers, administrators, and other professionals in the field of music;
- broadening and deepening the knowledge and understanding of music through research, teaching, creative activities, and publication; and
- enriching the lives of students and faculty as well as the community, state, nation, and the world with a variety of performances and publications.

The College of Music is an academic community committed to maintaining a climate of mutual respect and collegiality showing appreciation for a diversity of musical cultures and individual backgrounds.

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The widely varied functions of music in the world today present many challenging and interesting opportunities for teachers, performers, creative artists, technicians, and commercial personnel. While these different pursuits require specialized emphases, the faculty of the College of Music recognize the musical and educational experiences that are common to all. Therefore, each curriculum of the College of Music is designed to present music as an integrated whole. Solo performance and technique, ensemble performance, historical and theoretical studies, concert and recital opportunities, and elective courses both inside and outside the college are intended to give students a balanced approach to musical understanding and musicianship.

The college maintains a ratio of approximately one faculty member for every 10 students. This enables students to benefit from dynamic, personal interaction with their professors. The college also offers students regular academic advising to ensure that they complete their degrees without unnecessary delay.

In addition to training in the various professions of music, the college provides general music studies and activities for the non-major; broad cultural programs (concerts, recitals, lectures) for the university and Boulder communities; favorable conditions for research in music; and service activities to the state and nation.

The degrees bachelor of arts in music, bachelor of music, and bachelor of music education are granted by the university, upon recommendation of the faculty of the College of Music, to those who have successfully completed prescribed requirements.

Students must complete graduation forms and schedule a final checkout appointment by December 15 for May/August graduation and by October 1 for December graduation.

## Undergraduate Education in Music

The undergraduate degrees in music emphasize knowledge and awareness of:

- solo performance and technique, including the various musical styles used in compositions for students' musical instruments or voice;
- each composition performed, notation and editorial signs used in the compositions performed, and repertoire for the students' performance medium;
- ensemble performance, including familiarity with major composers in the student's performance medium and the techniques necessary to blend a number of individual musicians into an ensemble;
- concert and recital opportunities, including literature composed for different performance forces;
- theoretical studies, including tonal harmony, counterpoint, voice-leading, and notation; formal principles and analytical techniques for tonal music; and instruments in score, including the concert pitch of transposing instruments and nomenclature used in scores; and
- historical studies, including representative works in the canon of musical literature from chant to the present, the general outlines of the history of music from the Middle Ages to the present, music in the United States, and musical cultures other than those of Europe.

In addition, students completing any of the degrees in music are expected to acquire the ability to:

- perform solo and ensemble repertoire demonstrating musical artistry, technical proficiency, and stylistic understanding;
- demonstrate an understanding of theoretical studies, including sight-reading and ear training; and
- demonstrate an understanding of historical studies including the analysis of stylistic periods and music of non-Western cultures.

# Graduate Degree in Music

All graduate degrees in music are granted by the Graduate School of the University of Colorado upon the recommendation of the faculty of the College of Music and approval by the administrative officers of the Graduate School. The information supplied here is supplemental to and must be read in conjunction with the information contained in the Graduate School section. Other information regarding rules applying to graduate degree students in music may be found online at [music.colorado.edu/students/graduate/degrees](http://music.colorado.edu/students/graduate/degrees).

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## Major Fields & Degrees

**Undergraduate degrees** include the bachelor of music (BM), the bachelor of arts in music (BA), and the bachelor of music education (BME). Students may also elect to earn a certificate in jazz studies or music technology in conjunction with their degree. In addition to a substantial core of studies in music, the BA in music program allows a wide choice of study in areas outside of music. BM areas of concentration include: composition, musicology, performance, and jazz studies. The major emphasis areas in the BME program are: choral, choral-general, instrumental, and instrumental-general.

Incoming freshmen and transfer students in the College of Music are normally declared as music majors before or at the beginning of their first semester. There is no minor in music.

Qualified students may receive both the bachelor of music and bachelor of music education degrees by taking the required extra work (approximately 30 additional semester credit hours). Intent to be admitted to candidacy for both degrees should be indicated as soon as possible, preferably by the end of the sophomore year. Students may also pursue double degrees in music and an outside field such as engineering, business, etc. Questions may be directed to the associate dean for undergraduate studies, College of Music, **303-735-2283**, or [ugradmus@colorado.edu](mailto:ugradmus@colorado.edu).

**Graduate degrees** include the master of music (MM), the master of music education (MME), doctor of musical arts (DMA), and doctor of philosophy (PhD). Major fields in the master of music and doctor of musical arts degrees are conducting, composition, music theory (MM only), jazz studies, pedagogy, and performance. The master of music education degree is designed to provide advanced instruction for teachers in the elementary and secondary schools. The PhD is a research degree for the fields of musicology and music education.

Graduate degrees are offered through the Graduate School and additional information can be found in the Graduate School section as well as in the curricula listed for the college. Correspondence regarding details not included in this publication should be directed to the associate dean for graduate studies, **303-492-2207** or [gradmusic@colorado.edu](mailto:gradmusic@colorado.edu).

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# Facilities

The College of Music has several beautiful performance halls, including the 2,000-seat **Macky Auditorium**, the 500-seat **Grusin Music Hall**, the 270-seat **Music Theatre**, and the 120-seat **Chamber Hall**. The college is located primarily in the Warner Imig Music Building, a large complex of practice rooms, faculty studios, offices, ensemble rehearsal areas, seminar facilities, and classrooms. An addition to the east side of the building features a 4,300 square foot rehearsal space with a 35-foot ceiling and acoustical draping. Additional rehearsal and classroom facilities are located in Macky.

The college's outstanding **Howard B. Waltz Music Library** is considered to be among the nation's most comprehensive. The library contains over 150,000 volumes, scores, recordings, and periodicals. Computerized facilities are provided for listening to recordings and work stations are available for computer-based reference searching. The Music Library also includes the **American Music Research Center**, a unique facility dedicated to the discovery of new information about American music. The center sponsors concerts and scholarly activities and serves as an archive for several extensive collections of American music.

The college also features extensive facilities for music technology and electronic music study. The **Computer-Assisted Music Laboratories** (I and II) are multi-purpose labs designed primarily for classroom instruction. They feature numerous workstations, each with a Musical Instrument Digital Interface, sampling keyboard, and a computer. The **CRUNCH lab** is a fully-featured electronic music project studio. This lab is optimized for computer music research (including live interactive performance systems), as well as sound recording and editing projects and audio/video production. The Class Piano laboratory is equipped with 12 digital pianos.

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## Performances

Each year the College of Music presents over 400 concerts by students, faculty, and guests. In addition to individual musical pursuits, students at all levels have the opportunity to perform in a variety of outstanding ensembles including orchestras, choirs, bands, world music ensembles, chamber and early music groups, jazz ensembles and combos, opera productions, and musicals. Many of these groups have been invited to perform at prestigious national and international events. Recitals by students and faculty are supplemented by visits from world-class guest artists, all of which provide the Boulder community with the chance to hear some of the finest music being performed today. The vast majority of these excellent performances are free and open to the public. Other programs presented by CU Presents include: the Artist Series, CU Opera, Takács Encore Series, and the Holiday Festival. For a schedule of all College of Music performances, call **303-492-8008** or visit [cupresents.org](http://cupresents.org).

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# Student Organizations

The student body of the College of Music has its own government, represented by the College of Music Student Government and the Graduate Music Student Council. Honorary music fraternities are Sigma Alpha Iota and Kappa Kappa Psi. Pi Kappa Lambda, the national scholastic honorary music fraternity, is also an active organization on campus. Music education majors are eligible for membership in student chapters of the National Association for Music Education (MENC), the American Choral Directors Association, and the American String Teachers Association.

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# Entrepreneurship Center

The Entrepreneurship Center for Music helps students think creatively about using their talents and interests in the music industry. The traditional job choices for music students—teaching and performing—are only two of the hundreds of employment options in the \$40 billion global music industry. The center helps students develop an entrepreneurial spirit through specialized courses, guest speakers, workshops, and individual appointments to discuss career options. The internship program provides valuable experience outside of the classroom in arts organizations around the country. More information about the center is available at [music.colorado.edu/departments/ecm](http://music.colorado.edu/departments/ecm).

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# Academic Excellence

## Dean's Honor Roll

A full-time undergraduate student in the College of Music who has completed at least 24 credit hours of course work by the end of the spring semester on the Boulder campus (excluding continuing education), and who earned a semester grade point average of at least 3.700, will be included in the college dean's honor roll for that semester. Notation of the "Dean's Honor Roll" is also listed in the Honors Convocation Program.

## Honors at Graduation

Students achieving a cumulative GPA of 3.700–3.790 (honors), 3.800–3.890 (high honors), and 3.900–4.000 (highest honors) are recognized at commencement.

## Scholarships and Awards

A number of scholarships and awards are designed specifically for students in the College of Music (see below). Undergraduate music majors are eligible for scholarships or renewal of their scholarships as long as they make satisfactory musical progress in their major as determined by the faculty in jury exams and auditions, and maintain a minimum cumulative GPA of 3.000.

Graduate students must enroll as full-time students, maintaining a 3.000 GPA, and make adequate progress toward their degrees. The college offers approximately 70 graduate assistantships as well as graduate fellowships, and a variety of endowed scholarships for graduate students (included below.)

- Nancy and Ted Anderson Music Awards
- Beckie Reeder Arnold Piano Scholarship
- Joyce Mata Ashley Scholarship Fund in Music Education
- Asian Performing Arts of Colorado Sponsorship
- The Bagley Prize
- Frank W. Baird Trumpet Scholarship
- John W. (Jack) Bartram Memorial Scholarship
- Bettina Baruch Foundation Scholarship for Winds
- Virginia Blake Becker Flute Scholarship
- Darrell and Lauren Boyle Music Theatre Scholarship
- Dewitt and Billie Brennan Music Fund
- Charles Byers Choral Music Education Scholarship
- Rebecca Beardmore Chavez Scholarship Fund
- Herbert T. Clark Memorial Scholarship

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- William Clendenin Music History Scholarship
  - Berton Coffin Scholarships in Voice
  - Arline P. Cohen Scholarship
  - Edward S. Collins French Horn Scholarship
  - Walter and Jenny Kate Collins Memorial Graduate Fellowship in Choral Studies
  - Sue Conrad and C. Dickson Titus Memorial Fund
  - Viola Vestal Coulter Foundation Voice Scholarship in Honor of Harold A. Norblom
  - Wilma and Perry Louis Cunningham Scholarship in Voice
  - Frank and Gina Day Music Scholarship
  - Denver Lyric Opera Guild Scholarship
  - Barbara M. Doscher Scholarship
  - Barbara M. Doscher Memorial Voice Scholarship
  - Robert A. and Louise P. Dudley Scholarship for Horn
  - Edith E. Edwards Scholarship in Music
  - Cecil Effinger Fellowship in Composition
  - Dorothea Eldridge Music Fund
  - Ewing Memorial Music Scholarship
  - Robert R. Fink Undergraduate Scholarship in Music Theory
  - Wallace F. Fiske Performance Awards
  - James M. Grossi Composition Scholarship
  - Charles Haertling Piano Scholarship
  - Musicology Award in Honor of Deborah Hayes
  - Jessie and Albert Henry Memorial Scholarship
  - Eugene Hilligoss Music Education Scholarship
  - Everett J. Hilty Carillon Fellowship
  - Everett J. Hilty, Sr. Fund
  - Bernice Holic Piano Scholarship
  - Warner and Norma Imig Choral Conducting Scholarship
  - Dennis Jackson Opera Scholarship
  - Freelyn Jeffers Award in Choral Conducting
  - Dale R. Johnson Opera Scholarship
  - Donald L. and Maria A. Johnson Music Awards
  - Denés Koromzay String Chamber Music Award
  - Edward Levy Composition Prize
  - Paige MacMillian Music Scholarship
  - George Lynn Memorial Scholarship
  - Alice Mason Memorial Scholarship
  - Scott Robert McBurney Memorial Scholarship in Piano
  - McDowell Opera Endowment
  - Robert K. McIntosh Fund for Music Instruction for Disadvantaged Children
  - Claudia Boettcher Merthan Vocal Scholarship
  - Merrill Lynch Scholarship
  - Trudi Mielziner Graduate Opera Scholarship
  - Mile High Band Music Education Scholarship
  - Noris Graduate Award

O'Neal Taniguchi Music Entrepreneurship Fund

- Gabor Ormai String Scholarship
- Phyliss and Paul Parmelee Memorial Piano Scholarship
- Denby and Georgia L. Peebles Memorial Fund
- Denby and Georgia L. Peebles Memorial Scholarship
- Percy-Roth Memorial Scholarship
- John N. Parsons Musicology Fund
- Theory Pedagogy Scholarship
- Theodore Presser Academic/Performance Award
- Gregory Philip Ranno Excellence in Music Scholarship
- Charlotte Orr Reid Memorial Voice Scholarship
- Anthony and Dorothy Riddle Lyric Theatre Performance Prize
- Walter Orr Roberts Music Scholarship
- Spike Robinson Memorial Scholarship Fund
- William Earl Rose, Sr. Scholarship Fund
- Robin Sawhill Award for Excellence in Piano Performance
- Charles Sawtelle Memorial Music Scholarship in Jazz Studies
- Virginia Schwatel Fund for Music Education
- Schultz/Finlay Marching Band Endowed Scholarship
- Martha and Alan Stormo Music Scholarship for Cello
- Eric Sutton Skinner Memorial Scholarship in Percussion
- Pete Smythe AMRC Scholarship Fund
- Galen and Ada Belle Files Spencer Fellowship in Voice
- Starling Foundation Graduate Violin Award
- Peter and Julianne Steinhauer AMRC Scholarship in honor of Wayne Scott
- Crick Streamer Memorial Scholarship
- Beth Suitts CU Opera Endowment
- Takács Scholarship Endowment in Memory of Fay Shwayder
- Takács Society String Scholarship
- Jean L. and Jack C. Thompson Jazz Endowment Fund
- Richard Toensing Composition Scholarships
- Louise Touhy Music Scholarship
- Gloria and Martin Trotsky Music Scholarships
- Howard B. Waltz Scholarship
- Judith Richardson Waterman Choral Music Education Scholarships
- Katherine Anne Suber Whiton Memorial Scholarship in String Bass
- Lynn Whitten Fellowship in Graduate Choral Conducting
- Brownlow V. Wilson Music Education Scholarship
- Wright Endowment for Colorado Light Opera
- Anne Zagoreos Piano Fellowship
- Paula Marie and H. Rolan Zick Endowment



# Academic Standards

## Academic Ethics

Students are expected to conduct themselves in accordance with the highest standards of honesty and integrity. Cheating, plagiarism, illegitimate possession and disposition of examinations, alteration, forgery, or falsification of official records, and similar acts or the attempt to engage in such acts are grounds for suspension or expulsion from the university.

In particular, students are advised that plagiarism consists of any act involving the offering of the work of someone else as their own. It is recommended that students consult with their instructors as to the proper preparation of reports, papers, etc., in order to avoid this and similar offenses. Students are expected to be acquainted with and abide by provisions of the University of Colorado Boulder Honor Code.

## Scholastic Requirements

To remain in good academic standing, a student must maintain at least a 2.000 cumulative grade point average (GPA) and make satisfactory progress toward the degree as defined by the College of Music and area faculty.

Academic probation is an official warning that a student's grades are unsatisfactory. Any undergraduate student who has a cumulative or semester grade point average below 2.000 is automatically placed on probation for the following three semesters. (Cumulative grade point average is calculated on grades earned at this university.) If a probationary student's grade point averages (semester and cumulative) at the end of any probationary semester and the cumulative probationary period are not 2.000 or above, automatic suspension results. Any undergraduate student who has a cumulative or semester grade point average below 1.000 also is automatically suspended without a probationary period.

While on suspension, students may not register for regular day classes during the fall or spring semester on any CU campus and are not considered eligible for graduation. To regain good academic standing, suspended students must earn a semester GPA of 2.000 or higher and raise their cumulative GPA to 2.000 or above during the following term by successfully completing at least 12 credits (with no withdrawals, no incomplete grades, and no courses taken *pass/fail*) through continuing education or summer session classes. The Division of Continuing Education and Professional Studies (303-492-5148) should be contacted for more information.

Courses taken at other campuses or institutions will not be used for purposes of reinstatement, but credits earned may be transferred according to normal procedures and policies after reinstatement and readmission. Suspended students who raise their cumulative GPA to 2.000 or above may then petition for readmission and receive a personal hearing before the associate dean. Suspended students who do not raise their cumulative GPA to 2.000 or above are dismissed from the college and university. Students who have been dismissed must reapply for admission to the university after being reinstated by the college.

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Undergraduate music majors are eligible for scholarships or renewal of their scholarships as long as they make satisfactory progress in their major (as determined by the faculty), demonstrate satisfactory proficiency in jury exams and auditions, enroll in ensemble, and maintain a minimum cumulative GPA of 3.000. Students who have a cumulative GPA below 3.000 will be placed on scholarship probation for a maximum of two semesters (consecutive or cumulative), provided the GPA improves each semester. Students on scholarship probation who do not earn a cumulative GPA of 3.000 or higher by the end of the probationary period will have their scholarships revoked.

## Appeals

Students have the right to appeal decisions of academic dishonesty and to petition for exceptions to the academic policies stated in this catalog. Appeals should be directed to the Office of the Dean. College of Music policies are in addition to the campus policies.

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## Admission Requirements

In addition to the entrance requirements of the university outlined in Undergraduate Admission in the General Information section, freshman and transfer students must meet College of Music entrance requirements. Successful College of Music applicants have extensive prior experience in music (including private study), the ability to read and sight-read music notation, an understanding of music fundamentals or basic music theory, and elementary piano skills. Students with appropriate skill in piano sight reading and keyboard harmony may be able to test out of all or part of the keyboard musicianship requirement included in their degree plan.

### *Auditions*

An audition is required for all prospective undergraduate music majors. Undergraduate auditions are held in Boulder on selected Saturdays in January and February. Alternate audition dates may also be scheduled if necessary. If travel distance is prohibitive, prospective students may substitute a high-quality recording. Applicants should identify themselves by name and list selections and titles at the beginning of the recording. In order for students to be fully considered for financial assistance, live auditions should be completed and recordings should be received by February 15. Students should prepare a 10–20 minute audition program in accordance with the audition requirements that are listed on the College of Music website: [music.colorado.edu/apply/undergraduate/audition-information](http://music.colorado.edu/apply/undergraduate/audition-information).

Contact the Undergraduate Office at **303-735-2283** or [ugradmus@colorado.edu](mailto:ugradmus@colorado.edu) for more information.

Admissions decisions for music education applicants are based on academic qualifications, audition results, and an interview conducted by two or more music education faculty members. Interviews address written and verbal communication skills, motivation and goals related to music teaching, prior music teaching experiences, and affective characteristics associated with effective music teachers. For information about music education interviews, contact Martina Miranda, music education chair, at **303-735-5498** or [martina.miranda@colorado.edu](mailto:martina.miranda@colorado.edu).

### *Provisional Admission*

Applicants who meet all admission requirements except the minimum academic preparation standards (MAPS) may petition the associate dean for undergraduate studies for admission as a

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### **Undergraduate**

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provisional student.

## *Transfer Students*

Transfer students from within the university and from other universities must meet the general requirements of the university and the specific requirements of the College of Music, including the audition. See Undergraduate Admission in the General Information section for specific requirements.

## *Nondegree Students*

With the written permission of the instructor and on a space available basis, nondegree students may take any class offered by the College of Music except private applied instruction.

## Attendance Requirements

Successful work in the College of Music is dependent on regular attendance in all classes. At the beginning of each semester, instructors will inform students of policies governing grading and attendance in each class. Students are expected to attend classes and comply with the attendance requirements specified by their instructors. For ensembles and other performance classes, attendance at dress rehearsals, major concerts, and other approved/sanctioned performances, as listed in the course syllabus, also is required.

## *Convocations and Recitals*

All degree students are required to pass Music Convocation (CONV 1990) for a minimum of six semesters. Transfer students normally do four semesters. Graduation is not permitted until this requirement is met. If necessary, students may register for two convocations in one semester (CONV 1990 and 2990.) Discrepancies concerning convocation credit should be resolved within one year of the semester in question.

Each semester, students are given a list of convocations and recitals from which a minimum of seven must be attended to receive a passing grade. Events in which the student participates do not count toward this requirement. Monitors are present at each event to take attendance. Students are encouraged to keep track of the convocation events they attend.

## *Ensembles*

All undergraduate students enrolled in applied music must participate in a university ensemble appropriate to and required by their

degree program. (Students enrolled in Conducting courses must concurrently be enrolled in a conducted ensemble.) Voice performance majors are not required to be in ensembles during the semester of their senior recital, and bachelor of music education students are exempt from ensemble participation during the student teaching semester. Any student who studies applied music beyond degree requirements must participate concurrently in a university ensemble. Double majors need be in only one ensemble at a time.

## Sophomore Proficiency

Students must pass a variety of jury tests and proficiency exams during their degree work. Each applied area has different requirements, so students need to consult the chair of their area and/or studio professor. However, all students must pass a sophomore proficiency exam. Students who cannot pass this exam receive an incomplete grade and cannot progress to the junior level of applied study until the proficiency is achieved. Studio professors provide students with proficiency and repertoire requirements.

## Course Load

The normal academic load for an undergraduate student in the College of Music is 15–17 semester hours. Schedules of fewer than 12 or more than 19 hours must have approval of the associate dean for undergraduate studies of the College of Music.

See limitations on registration under the Graduate School section for graduate student course load stipulations.

## Dropping a Course

Students should adhere to the deadlines for dropping a course in the registration handbook distributed each semester. After a certain date each semester, a special action form signed by the instructor and associate dean for undergraduate studies is required to drop a course.

## *Pass/Fail* Option

The *pass/fail* option for 12 credits is open only to undergraduate students. Music education students may only use the *pass/fail* option for student teaching. *Pass/fail* hours are to be selected from nonmusic courses and are in addition to those that may be taken in honors. Courses so elected are taken according to the *pass/fail* policies of the college or school concerned.

*Pass/fail* hours that transfer students can apply toward degree requirements from departments within the university are limited to 1 in every 8 semester hours earned in the College of Music.

## Residence Requirement

Of the hours required for an undergraduate degree, the last 56 credits must be completed in residence in the College of Music. This may be reduced by the faculty for excellent work done in this university and for high scholarship exhibited at previous institutions attended. In no case shall the minimum be fewer than 40 hours distributed over three semesters. At least 9 hours in applied music (private instruction) must be earned in this college for the degrees bachelor of music and bachelor of music education, and 6 hours for the bachelor of arts in music.

## Student Work

A copy of all scholarly student papers that generate credit (dissertations, theses, projects, lecture recitals, and other document-producing activities), whether undergraduate or graduate, is placed in the Music Library. More than one copy may be required in individual degree programs. To ensure that degree requirements have been met and the document is appropriate for placement in the Music Library, all faculty-approved documents must be presented to the appropriate associate dean's office at least two weeks before the graduation date.

Any recital required for graduation is recorded. Arrangements are to be made through the College of Music Concerts Office, and a recording fee is charged. The original recording is placed in the Music Library.

## Stay Connected Program/Withdrawal

The online Schedule of Courses indicates the deadlines for withdrawal from the university and the financial penalties incurred with each. Students wishing to withdraw or apply to the Stay Connected Program should follow appropriate university guidelines (contact the office of the registrar or the associate dean of music). Those who stop attending class without officially withdrawing will receive *F*s in each of their courses.



# Graduate Degree Programs Admissions & Enrollment Policies

## On This Page:

- [Admission Requirements](#)
- [Financial Aid](#)
- [Preliminary Examinations](#)
- [English Language Requirements](#)
- [College Teaching Area](#)
- [Graduate Auditions](#)

## Admission Requirements

Admission requirements for specific degree programs that supplement the Graduate School requirements are discussed in the degree program descriptions that follow. Students are urged to take the general (verbal, quantitative, analytical) portions of the Graduate Record Examination (GRE). GRE scores are required as part of the application to the PhD programs, and are recommended for the DMA, MM in music theory, and Master of Music Education degrees.

## Preliminary Examinations

Just before the beginning of their first semester of work toward a master's or doctoral degree, students are given preliminary exams covering the major field, several areas of music theory, and music history. Specific requirements vary with the student's degree and program. Students pursuing the master's and doctoral degrees in voice also must pass proficiency requirements in piano and diction (English, French, German, and Italian).

Any deficiencies demonstrated by the preliminary examination scores must be removed early in the degree program. Application for candidacy and required examinations cannot be approved until deficiencies are removed. Thesis and dissertation projects may not be completed while preliminary examination deficiencies remain.

Results from the major-field examination serve as one basis for recommending specific course work in the program. The major-field examination in musicology includes essay questions, score analysis, and identification of terms. Conducting majors should be knowledgeable in areas of repertoire, score analysis, and conducting techniques. Performance majors are examined in the areas of technique, repertoire, stylistically informed performance, and pedagogy. Students enrolled in the master's degree in Jazz Performance and Pedagogy must demonstrate knowledge of jazz theory and history, and jazz keyboard proficiency.

## College Teaching Area

For graduate students in music who intend to teach at the college level and who have had no prior college teaching experience, a teaching module of at least 6 hours of courses is recommended. This

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module can consist of professional education courses, music education courses, teaching-skills courses, or teaching practica. The teaching-area module is not normally used toward the minimum 30-hour course requirement for master's or DMA programs. Workshops, videotaping of students' teaching, observation, and consultation services are available through CU's excellent Graduate Teacher Program. Students who participate in this program are eligible to receive a graduate teacher certificate. For more information, visit [www.colorado.edu/gtp](http://www.colorado.edu/gtp).

## Financial Aid

In addition to the opportunities for financial aid described in the Graduate School section, the College of Music grants teaching assistantships and part-time instructorships to numerous graduate students each year. The assistantships and instructorships, which are usually one-quarter time, include both a stipend and the waiver of 5 or 6 credit hours of tuition each semester. There are also scholarships offered by the individual departments, grants-in-aid given for various college-related responsibilities, and fellowships awarded through the Graduate School. All prospective students who have completed their applications by December 1 will automatically be considered for available scholarships, fellowships, and assistantships.

## English Language Requirements

A student who is noticeably deficient in the use of the English language may not obtain an advanced degree from the University of Colorado. Satisfaction of this requirement depends not so much upon ability to pass formal tests, although these may be required, as upon the consistent use of good English in all oral and written work.

## Graduate Auditions

Auditions are required for all performance and performance/pedagogy programs. A personal audition is strongly preferred, but students may be accepted into most programs by submitting a recorded audition. Note that some studios require a preliminary, recorded audition before a student may be invited to schedule an audition on campus. For specific information and audition dates, refer to the website ([music.colorado.edu/apply/graduate/auditions-major-field-requirements](http://music.colorado.edu/apply/graduate/auditions-major-field-requirements)) or contact the office of the associate dean for graduate studies at **303-492-2207** or [gradmusc@colorado.edu](mailto:gradmusc@colorado.edu).

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## Programs of Study & Degrees

The College of Music provides specialized training designed to prepare students for a variety of careers in music. The college offers three undergraduate degrees, two certificate programs, four graduate degrees and three professional certificates.

Undergraduate degree programs include the:

- [Bachelor of music \(BM\)](#)
- [Bachelor of arts \(BA\)](#)
- [Bachelor of music education \(BME\)](#)
- [Dual degrees in music](#)
- [Dual degree in music performance and music education](#)

In addition, the college of music offers undergraduate certificate programs in:

- [Certificate in jazz studies](#)
- [Certificate in music technology](#)

Graduate degrees include:

- [Master of music \(MM\)](#)
- [Master of music education \(MME\)](#)
- [Dual master's degree in music](#)
- [Doctor of musical arts \(DMA\)](#)
- [Doctor of philosophy \(PhD\)](#)

In addition, the college of music offers the following professional certificates:

- [Professional certificate in string quartet performance](#)
- [Professional certificate in opera and solo vocal performance](#)
- [Professional certificate in woodwind performance](#)

The course codes for these programs are MUEL, MUSC, PMUS, and TMUS.

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# Music Education

## *Bachelor's Degree Program(s)*

### Bachelor of Music Education (BME)

The purpose of the four-year professional program leading to the bachelor of music education (BME) degree is to prepare students to teach music in elementary and secondary schools. Students completing this degree program qualify for a Colorado K–12 music teaching license. Students also may apply for teaching licenses in other states that have reciprocity agreements with Colorado.

Because of the varying challenges and opportunities associated with teaching music in K–12 school contexts, the undergraduate music education curriculum strikes a balance between specialization and generalization. BME students must demonstrate a sufficiently broad knowledge of the entire music program/curriculum, but also possess the specialized skills necessary to be a successful general music, choir, orchestra, or band instructor.

### *Courses and Curricula*

Four basic curricular options are provided for students pursuing the bachelor of music education degree: **choral**, **choral-general**, **instrumental**, and **instrumental-general** emphases. The choral-general and instrumental-general emphases include a larger concentration of course work and field experiences related to elementary general music teaching, while the choral and instrumental emphases involve more specialized course work and field experiences related to the teaching of choir, orchestra, or band classes at the secondary level. Within each degree emphasis, students have a limited number of elective credits that may be used to further customize degree work according to their interests and needs.

As first-year students, BME students complete core studies in music and liberal arts. The first music education courses and early field experiences are completed during the sophomore year. During the junior year, students enroll in capstone methods courses and specialized electives that allow for more detailed and sustained study of curricular models, instructional materials, and teaching methods. Internships and full-time student teaching provide culminating experiences during the senior year, as students work in partnership with experienced public school teachers and assume the role and responsibilities of a professional music educator. Internship and student teaching placements are chosen in consultation with faculty advisors and the music education chair.

### *Degree Requirements*

A minimum of 126 semester hours with a cumulative GPA of 2.750 must be earned for the BME degree, with no grade below C- in a course. In addition to 40 semester hours of teacher education course work and 150 clock hours of early field experience, music education majors complete 24 semester hours in liberal arts disciplines (English composition, literature and arts, mathematics, social sciences, natural sciences) and 62 hours in music (music theory and aural skills, musicology and ethnomusicology, applied study, ensemble, keyboard and voice, and conducting). Core requirements in liberal arts and music are designated by the College of Music curriculum committee.

### *Admission to the Teacher Education Program*

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Teacher education is a campuswide function at the University of Colorado. Admission to the music education program in the College of Music does not constitute admission to the teacher education program. Students must apply to the School of Education through the music education chair no later than the second semester of the junior year or by the time 65 credits have been completed toward the BME degree (including approved transfer credits). Students may not register for certain education courses and student teaching until they are admitted to the teacher education program.

Requirements for recommended admission to the teacher education program are:

- Minimum GPA of 3.000 in music and music education, and a minimum cumulative GPA of 2.750.
- Minimum grade of C- in MUSC 2103.
- Twenty-five hours of documented, supervised field experience.
- Satisfactory functional piano ability as demonstrated by passing the proficiency examination or completing prescribed course work.
- Satisfactory performance ability as demonstrated by meeting the sophomore proficiency requirements in an applied area of study.
- Recommendation by the music education faculty. An interview with each student is held by the members of the music education faculty during the first semester of the sophomore year to review the student's progress and qualifications for admission to the teacher education program.

For further information, please refer to the *Handbook for Undergraduate Studies in Music Education*, which can be obtained at the music education website at [music.colorado.edu/departments/music-education](http://music.colorado.edu/departments/music-education).

## *Student Teaching*

Students wishing to receive a student teaching assignment must complete an application and submit it to the School of Education through the chair of the music education faculty early in the semester preceding the student teaching semester. Prerequisites for student teaching are:

- Admission to the teacher education program.
- A minimum GPA of 3.000 in music and music education, and a minimum cumulative GPA of 2.750.
- Completion of all required music education and education courses in the music education curriculum.
- Satisfactory performance ability as demonstrated by passing the junior recital.
- Passing score on the PLACE Music Assessment.
- Recommendation by the music education faculty.

## *Choral Music Emphasis*

Students must take keyboard or voice as the primary applied area, or petition the music education faculty for an exception. A minimum of five of the seven semesters of required ensemble registration must be in a conducted choral ensemble (University Singers, University Choir, Collegiate Chorale, or Women's Chorus). For keyboard majors, two semesters of independent accompanying may be applied to the ensemble requirement. Students must be enrolled in a conducted choral ensemble when concurrently enrolled for Conducting.

*Required Courses and Semester Credit Hours*

### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied instruction (lessons and literature classes)—6
- PMUS 1105/PMUS 1184 Piano/Voice Class—2
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 3013 School and Society—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2103 Introduction to Music Education—3
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3133 Teaching General Music 1—2
- MUSC 3193 Vocal Pedagogy for Young Voices—2
- PMUS 2XXX Applied instruction (lessons and literature classes)—6
- PMUS 2205/PMUS 1184 Piano/Voice Class—2
- Ensemble—2
- Non-music core requirements—6
- Non-music electives—3

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 4023 Differentiating Instruction in Diverse Secondary Classrooms—3
- MUSC 1544 Italian Diction—1
- MUSC 1554 English Diction —1
- MUSC 3013 String Class—1
- MUSC 3023 Woodwind Class or MUSC 3033 Brass Class—1
- MUSC 3176, 3186 Conducting 1 and 2—4
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4143 Developing Children's Choirs—2
- MUSC 4203 Music Methods Practicum—1
- MUSC 4313 Teaching Choral Music—3
- PMUS 3XXX Applied instruction (lessons and literature classes)—5
- Conducted choral ensemble—2
- Upper-division theory elective (3000 or 4000 level theory class, except MUSC 4101)—2

### **Senior Year**

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EDUC 4112 Educational Psychology: Adolescent Development or

- EDUC 4411 Educational Psychology: Elementary—3
- EDUC 4732 Student Teaching —8
- MUSC 3444 French Diction —1
- MUSC 4103 Introduction to Student Teaching —1
- MUSC 4153 Percussion Class —1
- MUSC 4163 Choral Literature for School Ensembles—2
- MUSC 4193 Student Teaching Seminar —1
- Non-Western music, 2000/4000 level —3
- PMUS 4XXX Applied instruction (lessons and literature classes)—3
- Ensemble —1

### *Choral—General Music Emphasis*

Students must take keyboard or voice as the primary applied area, or petition the music education faculty for an exception. A minimum of six of the seven semesters of required ensemble registration must be in a conducted choral ensemble (University Singers, University Choir, Collegiate Chorale, or Women's Chorus), and one semester must be in a world music ensemble. For keyboard majors, one semester of independent accompanying may be applied to the ensemble requirement. Students must be enrolled in a conducted choral ensemble when concurrently enrolled for Conducting.

#### ***Required Courses and Semester Credit Hours***

##### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied instruction (lessons and literature classes)—6
- PMUS 1105/PMUS 1184 Piano/Voice Class—2
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

##### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 3013 School and Society —3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2103 Introduction to Music Education —3
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3133 Teaching General Music 1 —2
- MUSC 3193 Vocal Pedagogy and Literature for Young Voices —2
- PMUS 2XXX Applied instruction (lessons and literature classes)—6
- PMUS 2205/PMUS 1184 Piano/Voice Class—2
- Ensemble—2

- Non-music core requirements—6
- Non-music electives—3

### Junior Year

- CONV 1990 Convocation (two semesters)—0
- EDUC 4023 Differentiating Instruction in Diverse Secondary Classrooms —3
- MUSC 3013 String Class —1
- MUSC 3023 Woodwind Class or MUSC 3033 Brass Class—1
- MUSC 3123 Teaching Choral Music—3
- MUSC 3176, 3186 Conducting 1 and 2—4
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4113 Teaching General Music 2 —3
- MUSC 4143 Developing Children's Choir or MUSC 4163 Choral Literature (fall)—2
- MUSC 4203 Music Methods Practicum —1
- PMUS 3XXX Applied instruction (lessons and literature classes)—5
- Conducted choral ensemble—2
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—2

### Senior Year

- EDUC 4112 Educational Psychology: Adolescent Development or EDUC 4411 Educational Psychology: Elementary—3
- EDUC 4732 Student Teaching—8
- MUSC 4103 Introduction to Student Teaching—1
- MUSC 4153 Percussion Class—1
- MUSC 4193 Student Teaching Seminar—1
- MUSC 4583 Inclusive Music Classroom—2
- PMUS 4XXX Applied instruction (lessons and literature classes)—3
- Non-Western music, 2000/4000 level—3
- Ensemble—1

### *Instrumental Music Emphasis (Band)*

Students must take wind/brass/percussion as the primary applied area, or petition the music education faculty for an exception. A minimum of five of the seven semesters of required ensemble registration must be in a conducted instrumental ensemble (Symphony Orchestra, Chamber Orchestra, Wind Symphony, Symphonic Band, or Concert Band), and one semester must be in marching band. Freshmen are strongly encouraged to be in marching band (EMUS 1287) their first semester. Students must be enrolled in a conducted instrumental ensemble when concurrently enrolled for Conducting.

### *Required Courses and Semester Credit Hours*

#### Freshman Year

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2

- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1XXX Applied instruction (lessons and literature classes)—6
- PMUS 1105, 1205 Keyboard Musicianship—2
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 3013 School and Society—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2103 Introduction to Music Education—3
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3133 Teaching General Music 1—2
- MUSC 3153 Teaching Woodwind Instruments—2
- MUSC 3163 Teaching String Instruments—2
- PMUS 1184 Voice Class—1
- PMUS 2XXX Applied instruction (lessons and literature classes)—6
- Ensemble—2
- Non-music core requirements—6
- Non-music electives—3

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 4023 Differentiating Instruction in Diverse Secondary Classrooms —3
- MUSC 3176, 3186 Conducting 1 and 2—4
- MUSC 3193 Vocal Pedagogy for Young Voices —2
- MUSC 3223 Teaching Brass Instruments —2
- MUSC 3253 Jazz Techniques for the Music Educator —2
- MUSC 3363 Marching Band Techniques —2
- MUSC 3802, 3812 History of Music1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4153 Percussion Class —1
- MUSC 4203 Music Methods Practicum —1
- MUSC 4443 Teaching Instrumental Music—3
- PMUS 3XXX Applied instruction (lessons and literature classes)—5
- Ensemble—2

### **Senior Year**

- EDUC 4112 Educational Psychology: Adolescent Development or
- EDUC 4411 Educational Psychology: Elementary —3
- EDUC 4732 Student Teaching —8

- MUSC 4103 Introduction to Student Teaching —1
- MUSC 4193 Student Teaching Seminar—1
- PMUS 4XXX Applied instruction (lessons and literature classes)—3
- Ensemble —1
- Non-Western music, 2000/4000 level —3
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—  
2

### *Instrumental Emphasis (Strings)*

Students must take strings as the primary applied area, or petition the music education faculty for an exception. A minimum of five of the seven semesters of required ensemble registration must be in a conducted instrumental ensemble (Symphony Orchestra, Chamber Orchestra, or Campus Orchestra). Students must be enrolled in a conducted instrumental ensemble when concurrently enrolled for Conducting.

#### ***Required Courses and Semester Credit Hours***

##### **Freshman Year**

- CONV 1990 Convocation (two semesters)—0
- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship—2
- PMUS 1XXX Applied instruction (lessons and literature classes)—6
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

##### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 3013 School and Society—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2103 Introduction to Music Education—3
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3133 Teaching General Music 1 —2
- MUSC 3153 Teaching Woodwind Instruments—2
- MUSC 3163 Teaching String Instruments—2
- MUSC 3273 String Pedagogy and Literature—2
- PMUS 1184 Voice Class (spring)—1
- PMUS 2XXX Applied instruction (lessons and literature classes)—6
- Ensemble—2
- Non-music core requirements—3
- Non-music electives—3

##### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 4023 Differentiating Instruction in Diverse Secondary Classrooms —3
- MUSC 3176, 3186 Conducting 1 and 2—4
- MUSC 3193 Vocal Pedagogy for Young Voices—2
- MUSC 3223 Teaching Brass Instruments —2
- MUSC 3253 Jazz Techniques for the Music Educator—2
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4153 Percussion Class—1
- MUSC 4203 Music Methods Practicum—1
- MUSC 4443 Teaching Instrumental Music—3
- PMUS 3XXX Applied instruction (lessons and literature classes)—5
- Ensemble—2
- Non-music core requirements—3

### Senior Year

- EDUC 4112 Educational Psychology: Adolescent Development or
- EDUC 4411 Educational Psychology: Elementary—3
- EDUC 4732 Student Teaching—8
- MUSC 4103 Introduction to Student Teaching—1
- MUSC 4193 Student Teaching Seminar—1
- PMUS 4XXX Applied instruction (lessons and literature classes)—3
- Ensemble—1
- Non-Western music, 2000/4000 level—3
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—  
2

### Instrumental—General Music Emphasis

Students must take keyboard, strings, or wind/brass/percussion as the primary applied area, or petition the music education faculty for an exception. For keyboard majors, a minimum of four of the seven semesters of required ensemble registration must be in a conducted instrumental ensemble (Symphony Orchestra, Chamber Orchestra, Wind Symphony, Symphonic Band, Concert Band, or Campus Band), one semester must be in a conducted choral ensemble, and one semester must be in a world music ensemble. One semester of independent accompanying may be applied to the ensemble requirement. For string majors, a minimum of five of the seven semesters of required ensemble registration must be in a conducted instrumental ensemble, one semester must be in a conducted choral ensemble, and one semester must be in a world music ensemble. For woodwind, brass, and percussion majors, a minimum of four of the seven semesters of required ensemble participation must be in a conducted instrumental ensemble, one semester must be in marching band, one semester must be in a conducted choral ensemble, and one semester must be in a world music ensemble. Freshmen are strongly encouraged to be in marching band (EMUS 1287) their first semester. Students must be enrolled in a conducted instrumental ensemble when concurrently enrolled for Conducting.

### *Required Courses and Semester Credit Hours*

#### Freshman Year

- CONV 1990 Convocation (two semesters)—0

- MUSC 1101, 1111 Theory 1 and 2—4
- MUSC 1121, 1131 Aural Skills 1 and 2—2
- MUSC 1802 Introduction to Musical Styles and Ideas—3
- PMUS 1105, 1205 Keyboard Musicianship—2
- PMUS 1XXX Applied instruction (lessons and literature classes)—6
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

### **Sophomore Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 3013 School and Society—3
- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2103 Introduction to Music Education—3
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—0
- MUSC 3133 Teaching General Music 1—2
- MUSC 3153 Teaching Woodwind Instruments or MUSC 3223 Teaching Brass Instruments—2
- MUSC 3163 Teaching String Instruments—2
- PMUS 1184 Voice Class—1
- PMUS 2XXX Applied instruction (lessons and literature classes)—6
- Ensemble—2
- Non-music core requirements—6
- Non-music electives—3

### **Junior Year**

- CONV 1990 Convocation (two semesters)—0
- EDUC 4023 Differentiating Instruction in Diverse Secondary Classrooms—3
- MUSC 3176, 3186 Conducting 1 and 2—4
- MUSC 3193 Vocal Pedagogy for Young Voices—2
- MUSC 3253 Jazz Techniques for Music Educator or MUSC 4583 Inclusive Music Classroom—[2]
- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 3997 Junior Recital—1
- MUSC 4113 Teaching General Music 2—3
- MUSC 4153 Percussion Class—1
- MUSC 4203 Music Methods Practicum—1
- MUSC 4443 Teaching Instrumental Music —3
- PMUS 1184 Voice Class—1
- PMUS 3XXX Applied instruction (lessons and literature classes)—5
- Ensemble—2

### **Senior Year**

- EDUC 4112 Educational Psychology: Adolescent Development or EDUC 4411 Educational Psychology: Elementary—3
- EDUC 4732 Student Teaching —8
- MUSC 3253 Jazz Techniques for Music Educator) or MUSC 4583 Inclusive Music Classroom—[2]
- MUSC 4103 Introduction to Student Teaching—1
- MUSC 4193 Student Teaching Seminar—1
- PMUS 4XXX Applied instruction (lessons and literature classes)—3
- Ensemble—1
- Non-Western music, 2000/4000 level—3
- Upper-division theory elective (3000 or 4000 level theory classes, except MUSC 4101)—2

## *Graduate Degree Program(s)*

### Master of Music Education (MME)

The master of music education (MME) program addresses the professional development needs of music teachers in the field. Master of music education students are challenged to develop a greater understanding and mastery of music teaching-learning processes, to improve personal musicianship, and to become committed leaders within the music education profession.

**Prerequisites.** Applicants are expected to provide evidence of undergraduate preparation equivalent to that required for the bachelor of music education degree at this university. Applicants also must possess a music teaching certificate/license or agree to work toward a Colorado music teaching license. GRE scores are not required for admission, but can be helpful in determining merit-based financial aid. Individuals who wish to pursue music performance or conducting as their minor field must demonstrate at least senior-level proficiency on their particular medium, through an audition.

**Program of Study.** Students earning the MME degree must complete a minimum of 30 hours of course work, including 12 hours in music education, 12 hours in music, and 6 hours of electives in a specialization area or other areas of interest. Of the 12 hours in music, a two-hour course in bibliography and research is required as well as six hours of study in a minor area, which includes musicology, music theory, or performance (including conducting and jazz studies).

The music component of the degree should assist students in developing their musical knowledge and skills. One member of the student's graduate advisory committee should be from the minor area, and it is assumed that at least some part of the student's study is with that faculty member. All music studies must be at the 5000-level or above. Under special circumstances, up to 6 credit hours at the 4000-level may be applied to the open electives portion of the degree.

As a master of music education degree candidate, each student must produce a culminating paper that focuses on a topic of vital interest or importance. This paper may be developed as part of the requirements for a music education course or may take the form of a master's thesis. Culminating papers or theses are defended during final oral examinations.

Students typically complete the degree in two academic years, or one academic year plus two summers. Degree work must be completed within four years of the semester in which the student is accepted into a degree program and begins studies. Because most master's-level music education courses are offered in late afternoons, students who live within commuting distance can earn a significant portion of credit toward the degree while continuing to work full time.

### Doctor of Philosophy: Music Education (DME)

The doctor of philosophy degree in music, with music education as a field of specialization, is offered

through the Graduate School for students who demonstrate both superior commitment to the music education profession as well as scholarly potential. This degree program requires that individuals think abstractly, generalize knowledge, apply research results to areas of specialization, and communicate effectively in both oral and written forms. Course work emphasizes the study of historical, philosophical, psychological, and sociological foundations of music education; the theoretical and pedagogical principles of music teaching and learning; curriculum development; testing and assessment; and research techniques. Graduates typically pursue careers in music education at the college level or supervisory positions in elementary and secondary schools.

**Course Work.** A minimum of 45 semester hours of courses numbered 5000-level or above (15 of which may be transferred from the master's degree) and a minimum of 30 hours of doctoral dissertation credit are required for the PhD degree.

**Dissertation Requirements.** A dissertation based on original investigation, demonstrating mature scholarship, must be completed by each candidate. Following the successful completion of the comprehensive examination, the student designates a dissertation committee, develops a dissertation prospectus, and presents it to the committee for approval. After the dissertation has been accepted, a final oral examination on the dissertation and related topics is conducted by the student's dissertation committee.

### *Dual Degree Programs*

## Dual Degree in Music Performance and Music Education

Qualified music majors who have been approved by the relevant major departments may elect to complete a dual major in music performance (woodwinds, brass and percussion, strings, voice, or jazz emphasis) and music education (instrumental or choral tracks). Requirements for these dual degrees programs range from 144 to 148 credit hours, and a minimum of 10 semesters of study (including one semester of full-time student teaching) is typically necessary to complete all requirements.

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# Musical Arts

## Doctor of Musical Arts (DMA)

The doctor of musical arts (DMA) is a professional degree for creative and performing students who possess the talent as well as the breadth of knowledge, background, outlook, and scholarly capacity requisite to a doctoral program. Fields of study are composition, instrumental conducting and literature, literature and performance of choral music, performance, and performance/pedagogy. Performance and/or performance/pedagogy concentration areas are brass instruments, guitar, harpsichord, organ, percussion, piano, string instruments, voice, and woodwind instruments. Outlines of specific programs may be obtained online at [music.colorado.edu/students/graduate/degrees](http://music.colorado.edu/students/graduate/degrees) and from the office of the associate dean for graduate studies.

**Prerequisites.** Entrance requirements include a master's degree in music or demonstrated background comparable to that of the master of music degree at this university. All graduate applicants must complete an audition, interview, or some other demonstration of their ability in the major field. If at all possible, a visit to the campus is strongly encouraged. As part of the application, composition majors should submit representative scores and recordings (CD format), and a list of completed compositions. Performance majors should submit a repertoire list and arrange for a personal audition and interview, if at all possible. (Some areas require applicants to send a pre-audition screening recording of their performance.) Conducting majors must submit a DVD of their performance. All DMA applicants must also submit a scholarly writing sample that demonstrates ability in critical thinking, appropriate research techniques, and skill in the cogent use of English. Full details concerning audition and application requirements may be found online at [music.colorado.edu/apply/graduate](http://music.colorado.edu/apply/graduate).

**Program Requirements.** The following program description supplements the requirements applying to all graduate students found in the Graduate School section and in the introductory section on Graduate Degree Programs in this College of Music section. Information on quality of work, credit by transfer, application for admission to candidacy, comprehensive examination, and final examination found under the PhD description is applicable to the DMA degree. DMA degree work must be completed within six years of first registration.

- **Advisory Committee.** Each DMA program is directed by a five-member advisory committee headed by the major advisor, who is usually the student's main studio teacher. At least one member must hold the PhD degree.
- **Residence Requirements.** The minimum residence requirement is six semesters of work beyond the attainment of an acceptable bachelor's degree. Two semesters of residence credit may be allowed for a master's degree from another institution of approved standing, but at least four semesters of residence credit, two of which must be consecutive in one academic year, must be earned for course work and/or dissertation work taken at this university.
- Not more than one-half semester of residence credit may be earned in a summer session. Students must be registered full-time to earn residence credit. For employed students, only those with one-fourth time or less in work that does not contribute directly to their degree program may earn full residence credit.

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- **Continuous Registration.** After the residence requirements for the doctor of musical arts program have been satisfied, a student must enroll for fall and spring semesters of each year until attaining the degree. If a student has enrolled in all required dissertation courses but has still to complete the work, he or she should enroll in TMUS 8019 Precandidate for Doctor of Musical Arts Degree, or TMUS 8029 Candidate for Doctor of Musical Arts Degree, until the degree is completed.
- **Degree Plan.** A degree plan approved by the advisory committee will be presented to the associate dean for graduate studies no later than the second semester of residence. The student's major professor is responsible for helping the student formulate this plan. The plan should include designated members of the student's doctoral committee, projected remedial and supporting course work, proposed dissertation projects, and tentative dates for the comprehensive and final examinations.
- **Language Requirement.** Each DMA student must satisfy a foreign language requirement, and the one foreign language used to satisfy the requirement must be approved by the student's advisory committee. Additional language work is required for voice students. Advanced competence in music technology may be approved as an alternative to the foreign language requirement. Appropriate courses and projects are prescribed by the college's music technology faculty. International students whose native language is not English are exempt from the requirement.
- **Course Requirements.** Students must take a minimum of 30 hours of course work, of which at least 18 hours are dissertation projects. Students take two doctoral topic classes (at the 6000 level), one each in musicology and music theory; prerequisites are stipulated by the theory and musicology faculties. Some areas require specific course work prior to or in conjunction with work on dissertation projects. In other instances students may be advised to take course work in preparation for the comprehensive examination. Applied music instruction may be elected for the duration of the residency requirement.
- **Dissertation.** The DMA dissertation consists of a specified number of performances, projects, and documents. The student's permanent advisory committee must approve all dissertation projects.

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# Courses

Search by College, Department & Category

**College/School**

College of Architecture & Planning

**Department**

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Search by Course Number

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## ENVD-3122 (3) Research Issues and Methods in Design and Planning

Explores topics of current interest in planning. Looks at the development and social consequences of the neighborhood movement, forms of municipal and regional governments, regional settlement patterns, and new communities. Introduces selected methods from the social sciences used by planners and urban designers. Prereqs., ENVD 1102, 1104, 2003. Coreqs., ENVD 2120, 3124. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104, and ENVD 2003. Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#)
[Environmental Design](#)
[Methods and Techniques](#)

## ENVD-3124 (3) Issues in Planning History

Broadly introduces physical environmental planning in the U.S., examining both historical roots and recent trends in American planning concepts and implementation. Emphasizes an analytical and critical approach to historical and contemporary planning issues, mechanisms, and cases. Prereqs., ENVD 1102, 1104, 2003. Coreqs., ENVD 2120, 3122. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104, and ENVD 2003. Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#)
[Environmental Design](#)
[History and Theory](#)

## ENVD-3152 (3) Introduction to Computer Graphics Applications

Explores principles and uses of computer graphics in design. Topics include creation and modification of complex two- and three-dimensional objects; orthographic and perspective views; use of color; input using mouse and digitizer; output using screen, plotter, matrix printer, and slides; automated aids for form generation and manipulation; and analysis of current and future trends of computer usage for design. May be repeated up to 12 total credit hours. Prereq., ENVD 1052, 1102. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#)
[Environmental Design](#)
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## ENVD-3212 (3) Color Theory

Illustrates color media techniques for the preparation, composition, and presentation of landscape and built environment drawings. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ARCH-3214 (3) History and Theories of Architecture 2

Surveys architecture, landscape architecture, and urban design from A.D. 1400 to the present, emphasizing developments in the Western world. Open to nonmajors on a space available basis. Prerequisites: Restricted to College of Architecture and Planning or College of Engineering and Applied Sciences majors only.

College of Architecture & Planning Architecture

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## ENVD-3220 (6) Planning Studio 2

See ENVD 2120. Prereq., ENVD 2120. Restricted to PLAN majors. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3252 (3) Computer Graphic Programming

Provides an introductory computer programming course designed to teach the capabilities of a computer in providing graphic representations of environments, including buildings. Open to nonmajors.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3300 (3-6) Special Topics: Intermediate Design Lab

Design lab exploring new and emerging themes in environmental design. May be repeated up to 18 total credit hours. Prereqs., ARCH 3114, ENVD 3100, 3115. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3310 (6) Architecture Studio 2

The second of the four upper-division studios focuses on concepts of medium-scale building design, siting, and climate. Through a number of design exercises, students learn how these factors help shape buildings. Prereq., ENVD 3110. Formerly ENVD 3210. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3320 (2) Planning Practicum

Supervised practicum in some aspect of urban or regional planning. Prereq., ENVD 3220.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3352 (3) Architectural Computer Media

Introduces the integration of computing and the architectural design process and related representational tasks. Studies common computer-aided design programs, emphasizing two- and three-dimensional and animation techniques. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3909 (1-6) Independent Study

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

College of Architecture & Planning Environmental Design Miscellaneous

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## ENVD-3919 (1-6) Teaching Assistant

By special arrangement with instructor. Prereq., junior standing and 3.00 GPA. Available for pass/fail credit only.

College of Architecture & Planning Environmental Design Miscellaneous

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## ENVD-4005 (3) Design and Planning Law

Teaches students how to research the various codes and to draft and pass laws. Covers environmental, water quality, property, zoning, and building codes and laws. Prereq., ENVD 2130.

College of Architecture & Planning Environmental Design Technology and Practice

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## ARCH-4010 (3) Architectural Appreciation and Design

Introduces basic processes and principles of architectural design. Provides a basis for understanding and evaluating architecture. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Architectural Engineering (AREN) majors only.

College of Architecture & Planning Architecture

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## ENVD-4012 (3) Imagination and Creativity

Offers a seminar on imagination and creativity in environmental design. Students research and prepare a class presentation and paper on a topic of interest. Open to nonmajors at all levels.

College of Architecture & Planning | Environmental Design | Methods and Techniques

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## ENVD-4023 (3) Environmental Impact Assessment

Provides a field-oriented seminar in current environmental impact controversies. Gives attention to history, theory, and application of impact analysis at state levels for designers, land-use planners, and others involved in resource decision making. Prereq., instructor consent. Open to nonmajors on a space available basis, by instructor consent. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Physical Factors

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## ENVD-4031 (3) Thinking Like a Mountain: A New Land Ethic

Critically reviews and analyzes land use policies, the ethics and economics of air and water pollution, regional sustainability, and resource management. Includes critical evaluation of empirical methodologies, and criteria of cultural and social equity. Prereq., junior or senior standing in the college.

College of Architecture & Planning | Environmental Design | Social Factors

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## ENVD-4035 (3) Solar and Sustainable Design

Introduces aspects of solar technology relevant to the environmental design professions. Includes readings and lectures on the nature of energy limitations, energy needs, and the potential role of solar energy in meeting these needs. Prereq., ENVD 2130.

College of Architecture & Planning | Environmental Design | Technology and Practice

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## ENVD-4052 (3) Digital Presentation and Portfolio

Introductory course creating interactive web sites. Covers use of Hypertext Markup Language (HTML) and Flash to create linked pages containing text, images animations, menus, and buttons. Covers principles of site navigation, page layout, and graphic design for designers and planners. Credit not granted for this course and ENVD 2352. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Methods and Techniques

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## ENVD-4092 (3) Improving Imaging Ability

Offers an advanced course dealing with theories of imaging and methods of improving imaging in the design process. Open to nonmajors.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4100 (3-6) Advanced Design Lab 1

Design lab exploring new and emerging themes in design. May be repeated up to 18 total credit hours. Prereq., ENVD 3300.

[College of Architecture & Planning](#) [Environmental Design](#) [Studios](#)

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## ENVD-4112 (3) Architectural Graphics 1

Illustrates techniques of graphics communication and presentation for architectural design. Includes advanced delineation and use of color. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4114 (3) History of American Architecture and Urbanism

Surveys architecture, landscape architecture, urban design, and planning in the U.S. from ca. 1600 to the present. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [History and Theory](#)

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## ENVD-4122 (3) Advanced Technical Photography

Focuses on working with a variety of alternative photographic processes intended to give students an array of photographic techniques to incorporate into studio course presentations and portfolio work. Processes include hand-applied color to black and white images, using two or more negatives to produce black and white combination prints, shooting color slides to produce graphic arts, high-contrast black and white prints, and documentary photography of Colorado architecture and urban landscapes using color slide film. Students must provide their own 35mm SLR camera. Prereq., ENVD 3022 or ARTS 2191 or instructor consent.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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# Courses

Search by College, Department & Category

**College/School**

College of Architecture & Planning

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Search by Course Number

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## ENVD-4152 (3) Computer Graphic Applications

Introduces the mechanics of entering 2-D images and 3-D objects into the computer. Once entered, graphics are interactively rotated in space, walked through, and displayed in perspective from any position. Also covers the mechanics of other computer programs allowing additional manipulation of images and objects. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

## ENVD-4192 (3) Improving Imaging Ability 2

Offers an advanced course dealing with theories of imaging and methods of improving imaging in the design process. Open to nonmajors.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

## ENVD-4212 (3) Architectural Graphics 2

Covers development of an architectural set of construction documents combined with job administration, field observation, and guest speakers from related construction and architectural disciplines. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4233 (3) Environmental Aesthetics

Explores the interdisciplinary field of environmental aesthetics, examining the history of landscape tastes, theoretical approaches to the study of aesthetic responses, and contemporary attempts to incorporate matters of aesthetics in American planning. Emphasizes developing analytical and critical approaches to aesthetics in the public realm.

College of Architecture & Planning Environmental Design Physical Factors

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## ENVD-4300 (3-6) Advanced Design Lab 2

Design lab exploring new and emerging themes in design. May be repeated up to 12 total credit hours. Prereq., ENVD 4100. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4311 (3) Housing Policies and Practices

A seminar providing students with a descriptive knowledge and analytical understanding of the use and development of residential settings in different political economies, globally divided into advanced capitalist nations, collectivist economies, and the third world. Prereq., ENVD 2130.

College of Architecture & Planning Environmental Design Social Factors

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## ENVD-4314 (3) Architectural Theory

Surveys, through lectures and readings, the major historical developments and contemporary directions in architectural theory. Prereqs., ARCH 3114 and ARCH 3214. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-4320 (6) Planning Studio 3

See ENVD 2120. Prereq., ENVD 3300.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4322 (1-6) Special Topics: Graphics

Provides an advanced seminar on special issues in design communications. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-4340 (4-6) Landscape Design Studio

Studio in landscape design. Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Studios

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## ENVD-4352 (1-6) Special Topics: Computer Methods

Topics include animation and environmental simulation, computational methods of technical evaluation and optimization, and computational mapping and analysis. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Methods and Techniques

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## ENVD-4360 (4-6) Historic Preservation Studio

A design studio exploring emerging issues and practices in historic preservation. Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Studios

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## ENVD-4361 (1-6) Special Topics: Social Factors in Design

Addresses variable topics in the relationship of human experience and behavior to the built environment, e.g., social research methods in environmental design. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Social Factors

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## ENVD-4363 (1-6) Special Topics: Physical Factors in Environmental Design

Includes such topics as appropriate technology, public policy and natural hazards, organization of the designing and building process, and physical elements of urban development. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Physical Factors

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## ENVD-4364 (1-6) Special Topics: History and Historiography of Environmental Design

Provides an advanced seminar on history and historiography of environmental design, e.g., American dwellings. May be repeated for credit by petition. Prereq., ENVD 2130.

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## ENVD-4365 (1-6) Special Topics: Technology and Practice

Provides an advanced seminar on new technologies and issues of professional practice in the environmental design professions. Prereq., ENVD 3100. Prerequisites: Restricted to College of Architecture and Planning majors only.

## ENVD-4420 (3) Senior Capstone Seminar

Advanced seminar focuses on theoretical concerns and practical issues inherent in environmental design and planning. Views concerns and issues in terms of setting, processes, and planning and design outcomes. Provides a critical synthesis of the inherently interdisciplinary nature of planning and design education. Open to planning and design studies seniors only, or by instructor consent. Prerequisites: Restricted to College of Architecture and Planning majors only.

## ENVD-4440 (6) Landscape Design Studio 2

A preprofessional studio in landscape architecture. Prereq., ENVD 4340.

## ENVD-4510 (6) Architecture Studio 3

The third of the four upper-division studios focuses on concepts of program, architectural meaning and human behavior in buildings. Through a number of design exercises, students learn how these factors help shape buildings. Prereq., ENVD 3310. Formerly ENVD 4310. Prerequisites: Restricted to College of Architecture and Planning majors only.

## ENVD-4550 (4-6) Urban Design Studio

A studio exploring emerging issues and practices Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

## ENVD-4710 (6) Architecture Studio 4

The last of the four upper-division studios focuses on concepts of building technology, context and environmental sustainability. Prereq.,

ENVD 4510. Formerly ENVD 4410. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Studios](#)

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## ENVD-4764 (1-6) Special Topics: Theory and Criticism in Environmental Design

Provides an advanced seminar on theory and criticism in environmental design, e.g., architecture now and introduction to design theory and criticism. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [History and Theory](#)

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## ENVD-4794 (3) History of Urban Design and Planning

Examines history of European and American planning and urban design in the late 19th and 20th centuries. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [History and Theory](#)

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## ENVD-4909 (1-6) Independent Study

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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## ENVD-4919 (1-6) Teaching Assistant

By special arrangement with instructor. Pass/fail credit only. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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# Courses

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## ENVD-4929 (1-6) Research Assistant

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

## ENVD-4939 (1-6) Internship

By special arrangement with instructor and outside sponsor. Pass/fail credit only. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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## Faculty: Music

Name	Title	Education
AAHOLM, Phillip	professor emeritus	
AUSTIN, James R.	associate dean for undergraduate studies, professor (music education)	BME, University of North Dakota; MAEd, PhD, University of Iowa
BAHN, Lina	assistant professor (violin)	BM, Juilliard School; MM, University of Michigan; DMA, Indiana University
BARBOSA, Eduardo	instructor (jazz bass)	
BEALL, Gretchen Hieronymous	professor emerita	
BERG, Margaret	associate professor (music education)	BS, Case Western Reserve University; BM, Cleveland Institute of Music; MME, University of Cincinnati; PhD, Northwestern University
BERNSTEIN, Giora	professor emeritus	
BIGGS, Dana	assistant director marching band (instructor)	BM, University of Kentucky, Lexington; MM, Eastern Kentucky University, Richmond; DMA, University of Kentucky, Lexington
BRODY, James	associate professor (oboe)	BM, Ohio State University; MM, Indiana University
BRUNS, Steven M.	associate dean for graduate studies, associate professor (theory/composition)	BME, Northern State College, Aberdeen, SD; MM, PhD, University of Wisconsin, Madison
BURCHAM, Joel	assistant professor (voice)	BM, Southern Illinois University; MM, University of Arkansas-Fayetteville; DMA, University of Wisconsin-Madison
CABALLERO, Carlo	associate professor (musicology)	BA, Pomona College; PhD, University of Pennsylvania
CARTHY, Nicholas	associate professor (opera)	Studies at the Guildhall School of Music and the Mozarteum Salzburg
CHANG, Phillip	instructor (music theory)	BA, Florida State University; MA, PhD, Eastman School of Music

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CONLON, Joan Catoni	professor emerita	
COOPER, Peter	instructor (oboe)	BM, Northwestern University
COOPERSTOCK, Andrew	professor (piano)	BM, University of Cincinnati; MM, Juilliard School; DMA, Peabody Conservatory of Music
CORBUS, David	instructor (jazz guitar)	BM, New York University
CREMASCHI, Alejandro	associate professor (piano pedagogy)	BA, University of Maryland, Baltimore County; MM, DMA, University of Minnesota, Twin Cities
DAVIS, John	associate dean for administration; associate professor (jazz studies)	BA, Metropolitan State College; MM, University of Denver; DA, University of Northern Colorado
DRUMHELLER, John	instructor (theory/composition)	BME, Montana State University; MM, DMA, University of Colorado Boulder
DUNN, J. Michael	associate professor (tuba)	BS, Tennessee Technological University; MM, DMA, Arizona State University
EAKIN, Charles	professor emeritus	
ECKERT, Erika	associate professor (viola)	BM, Eastman School of Music
ELLSWORTH, Oliver	professor emeritus	
ENDO, Akira	professor emeritus	
ERHARD, Paul	associate professor (viola)	BM, Eastman School of Music; MM, DMA, Juilliard School
FARR, Elizabeth	professor (organ, harpsichord)	BM, Stetson University; MM, Juilliard School; DMA, University of Michigan
FINK, Robert	dean emeritus and professor emeritus	
GALM, John	professor emeritus	
GLYDE, Judith	professor (cello)	BM, Hartt College of Music; MM, Manhattan School of Music
GONZALEZ, Luis	professor emeritus	
GOODE, Bradley M.	associate professor (jazz trumpet)	BM, University of Kentucky; MM, DePaul University
GRAHAM, Larry	professor emeritus	
GUNTHER, John	assistant professor (jazz studies, saxophone)	BM, MA, Berklee College of Music; MA, University of Miami
HARBISON,	professional exempt	BM, Cleveland Institute of Music

Kevin	(recording technology)	
HARRIMAN, Janet	instructor (harp)	BM, College of Wooster; MM, Cleveland Institute of Music
HATA, Kuniaki	professor emeritus	
HAYES, Deborah	professor emeritus	
HEIL, Leila	assistant professor (music education)	BM, Colorado State University; MM, Arizona State University; PhD, University of Colorado Boulder
HERMANN, Allen	instructor (jazz trombone)	
HSU, Hsing Ay	instructor (artistic director, Pendulum: New Music at CU)	BM, Juilliard School of Music; MM, Yale School of Music
ISHIKAWA, Yoshiyuki	professor (bassoon)	BME, MM, Northwestern University; DMA, University of Michigan
ITASAKA, Mami	instructor (assistant director, Japanese ensemble)	BA, English literature, Komazawa University, Tokyo
JACKSON, Dennis	professor emeritus	
JENKINS, Jeff	instructor (jazz piano)	
JENNINGS, Christina	assistant professor (flute)	BM, MM, Juilliard School; DMA, Rice University
KEARNS, William	professor emeritus	
KEISTER, Jay	associate professor (ethnomusicology)	BA, California State University, Fullerton; MA, PhD, University of California, Los Angeles
KELLOGG, Daniel	associate professor (composition)	BM, Curtis Institute of Music; MM, MMA, Yale School of Music
KOREVAAR, David	professor (piano)	BM, MM, DMA, Juilliard School
LASMAWAN, Imade	instructor (director, gamelan ensemble)	SMKar, Skar, Indonesian Traditional Performing Arts College
LEHNERT, Doris Pridonoff	professor (piano)	Attended University of Southern California, Juilliard School, and University of Connecticut
LEHNERT, Oswald	professor emeritus	
LEONG, Daphne	associate professor (theory)	BM, University of Saskatchewan; MA, MM, PhD, Eastman School of Music
LEWIS, Gary	director of orchestras; professor	BME, University of Oklahoma; MM, Texas Tech University

LUHRING, Alan	professor emeritus	
MALOY, Rebecca	associate professor (musicology)	BM, University of Illinois, Champaign-Urbana; MM, PhD, Cincinnati College Conservatory of Music
MASON, Patrick	professor (voice)	BM, Peabody Conservatory of Music, MM, University of Nebraska at Lincoln
McCARTHY, Kevin	professor emeritus	
McDONALD, Margaret	assistant professor (collaborative piano)	BM, MM, University of Minnesota, Twin Cities
McMURRAY, Allan	director of bands; Robert and Judith Charles Professor (trumpet)	BA, California State University, Long Beach; MM, University of Wisconsin. Additional study, University of Michigan
MIRANDA, Martina	associate professor (music education)	BA, Trinity International University; MA, San Francisco State University; PhD, Musical Arts in Music Education, Arizona State University
MOTEKI, Mutsumi	associate professor (vocal coach, accompanist)	BA, Kunitachi College of Music; MM, Westminster Choir College; DM, University of Michigan
MYER, Tom	associate professor (saxophone)	BS, University of Wisconsin—LaCrosse; MM, North Texas State University
NGUYEN, Alexandra	assistant professor	BS, McGill University; DMA, MM, Eastman School of Music
NYTCH, Jeff	assistant professor (entrepreneurship center for music)	BA, Franklin and Marshall College; MA, DMA, Rice University
PANN, Carter	assistant professor (composition/theory)	BM, Eastern School of Music; MM, DMA, University of Michigan
PETERSON, Patti	associate professor (voice)	BM, Salem College; MM, DMA, University of Colorado Boulder
PINKOW, David	professor emeritus	
RIIS, Thomas	director, American Music Research Center; professor (musicology)	BA, Oberlin College; MA, PhD, University of Michigan
ROEDER, Matthew	assistant professor, associate director of bands	BM in Music Education, Miami University; MM, Music Education/Conducting, Peabody Conservatory of Johns Hopkins University; DMA (wind conducting), University of Colorado Boulder
ROMAINE, Paul	instructor (jazz, drum set)	BS, University of Colorado Denver
ROMERO, Brenda	associate professor (musicology, ethnomusicology)	BM, MM, University of New Mexico; PhD, University of California, Los Angeles

SABLE, Barbara Kinsey	professor emerita	
SAWCHUK, Terry	associate professor (trumpet)	BM, MM, University of Michigan
SCOTT, F. Wayne	professor emeritus	
SHER, Daniel	dean; professor (piano)	BM, Oberlin College Conservatory of Music; MS, Juilliard School; EdD, Columbia University
SILVER, Daniel	associate professor (clarinet)	BM, Northwestern University; MM, University of Michigan
SIMSON, Julie	professor (voice)	BM, Western Michigan University; MM, University of Illinois
SMITH, Jeremy	associate professor (musicology)	BA, Washington College; MFA, University of California, Irvine; PhD, University of California, Santa Barbara
SPERA, Nicolás	instructor (classical guitar)	Artist Diploma, University of Denver; Additional studies at Conservatory of Aosta and Accademia Musicale Tema
SPILLMAN, Robert	professor emeritus	
STANLEY, William	associate professor (trombone)	BME, University of Kansas; MM, DMA, University of Illinois
THEODORE, Michael	associate professor (theory/composition)	BA, Amherst College; MM, Yale School of Music; PhD, University of California, San Diego
THORNTON, Michael	assistant professor (horn)	BM, Temple University; additional studies at Manhattan School of Music and Juilliard School
TOENSING, Richard	professor emeritus	
WALTER, Douglas	professor (percussion)	BM, University of North Texas; MM, University of Michigan; DMA, Temple University
WATERS, Keith	associate professor (theory/composition)	BM, University of North Carolina, Greensboro; MM, New England Conservatory of Music; PhD, Eastman School of Music
WOLZIEN, Charles	professor emeritus	
ZEMLIAUSKAS, Chris	instructor (vocal coach, accompanist)	BM, Ithaca College; MM, University of Minnesota



## Other Academic Programs



TAKE YOUR INTERESTS BEYOND THE CLASSROOM through study abroad, honors, leadership, service learning, research, and more.

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# Continuing Education and Professional Studies

## On This Page:

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The mission of the Division of Continuing Education and Professional Studies is to provide quality, innovative, lifelong learning opportunities to a diverse student population by extending the educational resources of the University of Colorado Boulder. A variety of credit courses, noncredit programs, certificate programs, and seminars is offered through Continuing Education, which also administers CU-Boulder's Summer Session. Only university-approved faculty teach in Continuing Education programs.

The office is located at 1505 University Avenue in Boulder, **303-492-5148** (or **1-800-331-2801**). The fax number is **303-492-5335**, and the website is [conted.colorado.edu](http://conted.colorado.edu).

## Boulder Evening Credit Program

Offered in conjunction with CU-Boulder's academic departments, the Boulder Evening Program provides credit courses in the evening on the Boulder campus. These affordable, smaller-sized classes are provided through various departments including anthropology, communication, economics, English, film studies, art and art history, geography, mathematics, philosophy, psychology, sociology, Spanish, theatre, and more.

## Independent Learning Program

The Independent Learning Program offers online and print correspondence courses representing and approved by more than 20 departments on campus. Term-based courses follow a traditional semester schedule and allow for rich interaction with the instructor and other classmates. Self-paced courses offer students the flexibility of progressing through the course at their own pace, and to finish in less than a full semester or take up to a full year.

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## Applied Music Program

The Applied Music Program offers students the opportunity to earn CU credit for beginning or continuing music lessons on guitar, piano, voice, organ, winds, brass, drums, percussion, or strings. Instruction is available in individual or group sessions depending on instrument.

## Individualized Instruction

Individualized Instruction provides an opportunity for students to receive credit for university courses by meeting with faculty members outside the regular classroom setting. This option may be used when the student cannot reasonably be expected to enroll in the main campus course.

## Center for Advanced Engineering and Technology Education (CAETE)

CAETE, a partnership between the College of Engineering and Applied Science and the Division of Continuing Education and Professional Studies, serves as the distance learning and professional studies arm of the college. CAETE provides graduate engineering and technical education and professional development for practicing engineers and managers of technology. Course sequences may lead to a master's degree in aerospace engineering, computer science, electrical and computer engineering, engineering management, or telecommunications. Elective courses are also offered in civil/environmental and mechanical engineering. Graduate certificates and short courses are available in some fields. CAETE also provides ongoing access to over 100 pre-recorded courses via its virtual library. These courses are available for academic course work, rental, or purchase by companies for in-house training.

## ACCESS and High School Concurrent Programs

In conjunction with CU-Boulder academic departments, ACCESS (Available Credit Courses for Eligible Special Students) enables nondegree students to enroll in Boulder main campus undergraduate and graduate credit courses after most degree-seeking students have registered. Colorado high school juniors and seniors interested in the challenge of university course work may enroll in ACCESS as part of the High School Concurrent Program. In addition to earning college credit, students may also earn credit toward high school graduation requirements.

## Extraordinary and Contract Credit Programs

Through Continuing Education, academic departments can offer special courses that target audiences both on and off campus and provide academic credit for those offerings. Once a course proposal is submitted, Continuing Education coordinates the approval process and provides administrative support to the course initiator. Programs initiated from outside the university community are also considered for approval as well as noncredit and certificate programs.

## CU Complete

The goal of CU Complete is to assist former students in the completion of degrees they began at CU in the past. Advisors work with each student individually and offer a degree analysis, recommendations, resources, and assistance in completing remaining requirements.

## Science Discovery

Science Discovery is a hands-on science, mathematics, and technology outreach program that serves over 1,500 teachers and 25,000 K–12 students each year. Its mission is to stimulate scientific

interest, understanding, and literacy through the use of university resources and academic expertise. Core programs include over 500 annual classroom presentations throughout Colorado; approximately 200 summer and after-school classes for ages 4–14; a series of statewide professional development workshops for teachers; and various outdoor environmental education classes.

## International English Center

The International English Center (IEC) offers language learning, cultural adjustment, and academic preparation programs for international students planning to matriculate at universities and for members of the campus and local community with limited English proficiency. The IEC also contracts with corporate groups to provide language training and professional development courses.

## Outreach: Reaching Off Campus and into Communities

Extending educational opportunities to the citizens of Colorado is a vital part of the university as well as the mission of the Division of Continuing Education and Professional Studies. CU-Boulder faculty and students provide a wide variety of outreach programs to communities across Colorado. These programs extend the scholarship of the faculty and the educational resources of the university and serve various educational, social, economic, and cultural needs. The division annually supports these efforts by designating funds for the CU-Boulder Outreach Committee along with contributions from the offices of the chancellor and the provost. The committee awards funding to faculty projects designed specifically for external audiences that highlight faculty research, creative work, and teaching. Projects feature an extensive range of disciplines, including everything from history, dance, and musical arts to physics, math, and engineering. Visit [outreach.colorado.edu](http://outreach.colorado.edu).

## Summer Session and Maymester at CU-Boulder

Summer Session offers over 500 campus courses and enrolls about 8,000 students in a relaxed, comfortable learning environment. Online and on-campus courses are available. Courses are available to students who wish to enhance or accelerate their academic progress. Courses are also open to students visiting from other colleges, teachers, high school students, or others interested in pursuing their professional development or enrichment.

Maymester is a special three-week Summer Session term immediately following the end of spring semester. It provides intense, accelerated courses for those who need academic credits in an abbreviated time period.

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# Leadership, Certificate in the Study and Practice of

The certificate program in leadership development seeks to expand a students' capacity to be effective in leadership roles and opportunities during their time at CU and in their future professions. The program enhances a student's self-awareness, systemic thinking, creativity, and problem-solving skills. This development unfolds over a student's undergraduate career and is maximized by a variety of courses and experiences that challenge, support, and provide students with increased understanding of what they are learning and how it fits into the larger world. The Certificate in the Study and Practice of Leadership integrates the variety of experiences into a context that is likely to be useful when undertaking new leadership roles and responsibilities. Faculty and staff skilled at weaving those experiences and courses in connected and meaningful ways facilitate this developmental process.

A leadership certificate can enhance the undergraduate experience and better prepare students both as citizens and leaders in whatever profession they might seek to enter. The program recognizes the need for individuals to take leadership roles in all professions and sectors of society. It is the belief of the program that leadership can be learned in formal classes, community-based leadership opportunities, mentoring and internship settings, as well as through a range of collaborative leadership activities.

For more information about the Certificate in the Study and Practice of Leadership, see [leadershipRAP.colorado.edu/certificate-study-and-practice-leadership](http://leadershipRAP.colorado.edu/certificate-study-and-practice-leadership).

## Program Requirements

This certificate program has an 18-credit-hour requirement comprised of lower- and upper-division courses. Undergraduate students working toward this certificate are usually affiliated with one of the following academic programs:

- Leadership Residential Academic Program at Williams Village
- Presidents Leadership Class (PLC)
- INVST Community Studies (INVST)
- ROTC programs

Each of these programs has defined particular academic courses within their programs to be certificate requirements. Students may also apply elective courses from other disciplines on campus toward the total credits required for the certificate. Students in the leadership programs at PLC, INVST, and the Leadership RAP programs are required to do an internship that is overseen by one of the program directors. Students in all four programs participate in either a 4-credit-hour capstone course during their senior year or a capstone project mentored by their academic program director. To qualify for the certificate, students must maintain a 3.000 GPA in the required course work.

## *Leadership Residential Academic Program at Williams Village*

For certificate requirements, see [The Leadership RAP Program at Williams Village](#).

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## *Presidents Leadership Class*

PLC certificate requirements are listed under the [Presidents Leadership Class](#).

## *INVST Community Studies*

- Selection criteria govern admissions.
- Four required theory courses plus community based service-learning experiences (18–24 credits).
- Minimum of 15 hours of upper-division courses.
- INVS 4932 Senior Capstone Course and/or Project.
- Minimum total credit hours: 18 with a 3.000 GPA

## *Reserve Officer Training Corps Programs*

- Admission to CU-Boulder and ROTC required. (Some courses are open to all CU-Boulder students.)
- Required summer field training program(s).
- 4–8 required courses in ROTC (12–22 hours).
- Minimum of 15 hours of upper-division courses.
- Additional courses from Recommended Leadership Courses to complete the 18-hour requirement.
- Senior Capstone Course and/or Project (4 hours).
- Minimum total credit hours: 18 with a 3.000 GPA.

## *The Capstone Course and Project*

The capstone project is designed to synthesize the leadership work students have completed during their undergraduate studies. Together with the program's faculty, students design a format that demonstrates their cumulative learning and development and reflects their leadership abilities. Like oral examinations at the graduate level, these projects are an opportunity for students to present a body of work that demonstrates what they have learned as they address some of the critical questions associated with leadership development and their role as a leader in the 21st century.

In the capstone course, Critical Issues in Leadership, LDSP 4010 or PRLC 4010, students explore leadership issues across disciplines. Leadership education is multi-disciplinary and students need to know how to assess research and writing from different perspectives. Students read, discuss, and write critical evaluations of contemporary leadership theory from ethical, military, community building, and business perspectives.

## *Internships*

Internships are an agreed-upon experience in a work setting that is driven by intentional learning goals and accompanied by sustained reflection. The internship provides students with an opportunity to apply the skills and knowledge gained through their leadership studies. During the semester students use the concepts and theories learned in the classroom to analyze and understand the host organization. In addition, students are asked to reflect on the complexities of leadership and the personal challenges that they face in practicing and refining their own leadership skills.



# The Leadership Residential Academic Program at Williams Village

The Leadership Residential Academic Program at Williams Village houses two academic programs for students with an interest in leadership studies: the **Ethnic Living and Learning Community Leadership Studies Program (ELLC)** and the **Chancellor’s Leadership Studies Program (CLSP)**.

**Admission and Enrollment.** Students select one of the leadership programs in the Leadership RAP during the housing application process prior to beginning their freshman year. When students choose their residence hall they are given the option to enroll in one of these programs. Most participants reside at Williams Village. More information about these programs can be found at [LeadershipRAP.colorado.edu](http://LeadershipRAP.colorado.edu).

## The Ethnic Living and Learning Community Leadership Studies Program

The Ethnic Living and Learning Community Leadership Studies Program (ELLC) offers students a multicultural living and learning experience and the opportunity to study leadership from a multicultural and global perspective. Students are required to take a 3-credit-hour leadership course and the ELLC Practicum each semester of their freshman year. In these courses, students explore their roles and responsibilities in society including the moral and ethical dimensions of leadership. Students also learn about contemporary issues related to leadership and take part in activities that develop teamwork, ethical decision making, and problem solving. Credits earned from these courses may be applied toward graduation as well as a Certificate in the Study and Practice of Leadership.

### *ELLC Curriculum and Semester Credit Hours*

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society (spring)—3
- LDSP 2910 Field Practicum (1 credit each semester of freshman year)—1
- LDSP 3100 Multicultural Leadership: Theories, Principles and Practices—3
- LDSP 4010 Critical Issues in Leadership—4

### **Fees and Scholarship Opportunities**

There is a \$850 program participation fee. Some scholarships to cover the fee are available for students with financial need. A LEAD Alliance scholarship of \$1,500 per year is also available to qualifying ELLC students.

## The Chancellor’s Leadership Studies Program

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The Chancellor's Leadership Studies Program (CLSP) examines the academic foundations of leadership and engages students in practical applications of leadership through simulations and class projects. Utilizing an experiential learning model, students learn the basics of decision making, problem solving, dialogue skills, ethical reflection, and an understanding of how institutions and communities solve problems. Students take a required 3-credit-hour leadership course fall semester and must take at least one CLSP course in the spring. Credits earned from these courses may be applied toward graduation as well as a Certificate in the Study and Practice of Leadership.

### ***CLSP Curriculum Semester Credit Hours***

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 1571 Topics in Leadership—1
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society (spring)—3
- LDSP 2910 Field Practicum—1
- LDSP 3100 Multicultural Leadership: Theories, Principles and Practices —3
- LDSP 4010 Critical Issues in Leadership—4

### **Fees and Scholarship Opportunities**

There is a \$850 program participation fee.

## ***Certificate Program***

### **Certificate in the Study and Practice of Leadership**

ELLC and CLSP students who complete 10 credits of approved lower-division courses and 8 credit hours of approved upper-division courses with a 3.000 GPA as well as a pre-approved supervised internship are eligible to earn a Certificate in the Study and Practice of Leadership. The certificate is comparable to a minor in leadership studies and is noted on a student's transcript at graduation.

### ***Required Courses and Semester Credit Hours***

#### **Freshman Year**

- LDSP 1000 The Foundations of 21st Century Leadership—3
- LDSP 2400 Understanding Privilege and Oppression in Contemporary Society —3
- Students must take 2 credits from the following courses. These classes are repeatable for credit:
  - LDSP 1561 Compassionate Leadership and Mindfulness—1
  - LDSP 1571 Topics in Leadership—1
  - LDSP 2910 Field Practicum—1

#### **Sophomore Year**

- One approved lower-division elective—3

#### **Junior Year**

- LDSP 3100 Multicultural Leadership: Theories, Principles, and Practices— 3
- One approved upper-division elective—1-3
- Internship—can be completed during academic year or during the summer.

#### **Senior Year**



# Norlin Scholars Program

Norlin Scholars is an interdisciplinary intellectual community in which students receive an education personally tailored to fit their interests and goals in any of CU-Boulder's undergraduate colleges or schools. Geared toward students seeking a liberal education or preparing for graduate or professional schools, the program offers academic challenge, breadth of experience, and close work with faculty.

Benefits of being a Norlin Scholar include:

- \$4,000 scholarship per academic year
- additional funding for enrichment activities like research or study abroad
- small, invigorating core and elective courses
- research or creative projects with faculty
- access to top scholarship advising and guidance
- opportunities for professional training and development
- a stimulating, interdisciplinary peer group

## Financial Information

Each Norlin Scholar receives a merit-based award of \$4,000 per year with the possibility of additional funds for enrichment projects. Students who enter the program as freshmen receive a four-year award, contingent upon academic progress; students who enter as rising juniors receive a two-year award, contingent upon academic progress. Students who need additional financial assistance should complete the FAFSA (Free Application for Federal Student Aid).

## Applying to the Program

A flexible selection system ensures that students with many different interests and talents are accepted as Norlin Scholars. Students may apply either as high school seniors (to enter the program as incoming first-year students) or as second-semester sophomores in college (to enter the program as juniors). Colorado residents as well as out-of-state and international students are eligible. Applicants should demonstrate excellent academic and/or creative ability and must have already applied to the university for admission in order to apply for the scholarship. More information and application details can be found at [enrichment.colorado.edu/norlinscholars](http://enrichment.colorado.edu/norlinscholars) or call 303-735-6802.

The course code for this program is NRLN.

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## Preprofessional Programs

Preprofessional advising resources have been developed at CU-Boulder to help undergraduate students and previously graduated students prepare for later study at professional schools. Except for prejournalism, CU-Boulder does not offer preprofessional undergraduate majors or degrees. Completion of preprofessional prerequisites does not guarantee later admission to a professional school. However, preprofessional advisors are well-equipped to provide information about professional schools within Colorado and beyond, and can help students to prepare well for later professional study.

## Prehealth Programs

Students can prepare to enter the undergraduate professional health science program at the Anschutz Medical Campus of University of Colorado Denver in the area of nursing by taking courses on the Boulder campus.

Students whose goals include entering the medical, dentistry, physical therapy, physician assistant, pharmacy, or public health programs and schools at the University of Colorado Denver, or the veterinary medicine or occupational therapy programs at Colorado State University in Fort Collins, can complete any undergraduate major at CU-Boulder. In most cases, these students are required to complete a baccalaureate degree before entering professional school. In fact, a baccalaureate degree is recommended for most health professions.

At the time of application to a professional school, students are judged on several factors, including performance in undergraduate courses. For this reason, no required course may be taken on a *pass/fail* basis. Some fields require specific preprofessional examinations before application. For most fields, interviews are an essential part of the application process.

In all cases, admission committees are concerned with students' compassion, coping, and decision-making abilities, intellectual capabilities, realistic self-appraisal, sensitivity in interpersonal relations, and staying power (physical and motivational). In addition to formal course work, students should have experience in people-related activities (especially those related to their field of choice), so they can be more certain of their motivation for health careers. Also, health-related activities expose premed and other health science hopefuls to various patients and illnesses. The health professions require, or strongly recommend, such experience.

Some of the professional programs at the Anschutz Medical Campus give preference to Colorado residents and residents of WICHE (Western Interstate Commission on Higher Education) states; interested students should check with individual programs for specific policies. Students from other states usually can obtain at CU-Boulder the preprofessional courses required by their state schools, but should check with those schools in advance. Students are encouraged to apply to their state school, as well as to other public and private professional schools, to increase their chances of gaining acceptance to the professional program of their choice.

During the preprofessional years, personal intellectual development leads many students to change professional goals. Since there are usually more applicants for these programs than there are spaces

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available, many students need to pursue alternative goals. Under these circumstances, students should plan college programs to give themselves the greatest flexibility in considering other vocations.

Advising for preprofessional study in the health sciences is conducted through the Preprofessional Advising Office in the University Club. Check the prehealth advising website at [www.colorado.edu/aac/prehealth.html](http://www.colorado.edu/aac/prehealth.html) for information on prerequisite courses, events, volunteer opportunities, student prehealth organizations, applications, and many other useful resources. Students should attend a prehealth advising session at orientation and then schedule an appointment with a prehealth advisor ([aac.colorado.edu](http://aac.colorado.edu)) early in their undergraduate careers to help plan course work and extracurricular experience in preparation for applying to programs of their choice. CU-Boulder also offers an extensive array of workshops and informational meetings, practice interviews, a fall speaker series, and a spring Health Professions Information Day.

## Prejournalism

A specific prejournalism and mass communication option is offered at CU-Boulder in the College of Arts and Sciences. Students complete two prerequisite courses while working toward arts and sciences core curriculum requirements. See the School of Journalism and Mass Communication at [journalism.colorado.edu](http://journalism.colorado.edu) for more information.

## Prelaw

Students who plan to apply to law school upon completing their baccalaureate degree do not have to complete any specific requirements for admission to law school. Instead, they should major in the discipline that best suits their intellectual interests and talents. Prelaw students should seek a rigorous and broad-based education that will ensure them a fundamental understanding of American society and its institutions. Students should become familiar with mathematical analysis and scientific reasoning, and develop excellent oral and written communication skills.

Prelaw advising is available in the Preprofessional Advising Center. In addition, there are faculty members who have special interest and expertise in the theoretical and practical aspects of the law and judicial systems. These faculty advisors are available for consultation with students on the CU-Boulder campus. Contact the Preprofessional Advising Center in Old Main 1B-90 for more information.

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# Presidents Leadership Class

The Presidents Leadership Class (PLC) is a specially designed academic curriculum that focuses on leadership development, personal development, and community service initiatives. Skills are developed in an interdisciplinary, experiential environment through exposure to government, education, the humanities, business, and science. Students from all of the schools and colleges participate in the Presidents Leadership Class curriculum as a part of their regular course work.

The Presidents Leadership Class is a program of CU-Boulder and the Presidents Leadership Institute, and is overseen by a Board of Trustees representing Colorado business, educational, nonprofit, and government communities.

## Admission and Enrollment

Admission to the Presidents Leadership Class is considered one of the highest honors awarded to incoming University of Colorado Boulder students. Presidents Leadership Class students are admitted prior to the beginning of their first year. Selection criteria include academic excellence, demonstrated commitment outside of self, demonstrated leadership potential, and uniqueness of contribution. Each year, 50 first-year students are enrolled, comprising both Colorado residents and nonresidents. A separate admission application must be obtained from the PLC office and returned prior to February 15. Applications may be obtained by visiting the website at [www.presidentsleadershipclass.org](http://www.presidentsleadershipclass.org) or by calling the PLC office at **303-492-4PLC**.

Only students who are accepted into the Presidents Leadership Class are eligible to enroll in PLC courses. Students receive arts and sciences core credit in ideals and values for PRLC 1810 Leadership and Ethics; and core credit in contemporary societies for PRLC 1820 Community Issues in Leadership.

## Academic Program

Although there are many unique aspects of each leadership situation, leaders generally follow three basic steps when faced with a leadership situation: 1) try to get a read on the existing situation, 2) set a strategy to achieve a desired outcome, and 3) execute the strategy.

This fundamental human process—read, set, execute—has strong roots in basic psychological processes (i.e., stimulus, thought, response), but the steps can happen with varying degrees of quality. Because PLC's mission is to develop extraordinary leaders, research was done on the differences in quality between the read-set-execute process that ordinary leaders use and the read-set-execute process that extraordinary leaders use. The research determined that the routes to ordinary leadership are different than those to extraordinary leadership.

Extraordinary leaders need to read situations with insight, generate incisive strategy, and then execute with stunning results. The PLC Strategic Academic Plan is built upon developing six core leadership skills: information literacy, critical thinking, applied quantitative ability, writing, oratory, and group process. The six skills executed in an integrative manner provide the key fundamentals for

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students to read, set, and execute in an extraordinary manner.

For more information on the PLC Academic Plan and the research behind it, go to [www.presidentsleadershipclass.org](http://www.presidentsleadershipclass.org).

## *Required Courses*

- PRLC 1810 Ethical Leadership
- PRLC 1820 Community Leadership
- PRLC 2820 Multilevel Leadership
- PRLC 3810 Global Leadership
- LDSP 4010 Leadership Capstone (only required for Leadership Certificate)

## Scholarship Programs and Opportunities

PLC students receive a merit-based scholarship of \$1,000 to over \$12,000 (dependent upon participation). Students must enroll in PRLC course work to maintain their scholarship.

Scholars are also eligible to be selected for a variety of other merit-based scholarships only available to PLC students, including the FirstBank Colorado Scholarship Fund (base scholarship of \$6,000 plus additional funding depending on endowment earnings), the Alvin G. Flanigan Scholarship Fund (annual \$1,000 minimum awards), the Walker Family Scholarship Fund (annual \$500 minimum awards), the Michael Lee Hoelscher Memorial Scholarship (annual \$2,000 award), and additional scholarships available only to the Presidents Leadership Class scholars.

The course code for this program is PRLC.

## *Certificate Program*

### University of Colorado Boulder Leadership Certificate

The University of Colorado Boulder offers a certificate in the Study and Practice of Leadership. The certificate is comparable to a minor in leadership studies and is permanently marked on the student's transcript to certify that he or she has completed a focus in leadership studies at the undergraduate level.

Certificate requirements are as follows:

- Complete a minimum of 12 credit hours of PRLC courses during year one and two of the program: PRLC 1810, PRLC 1820, PRLC 2820, PRLC 3810.
- Complete a minimum of 4 credit hours of upper-division PRLC course work: LDSP 4010.
- Complete 3 additional credit hours of approved upper-division course work outside of PLC. Approved courses are listed at [www.colorado.edu/chancellorsrap/lcelectives.html](http://www.colorado.edu/chancellorsrap/lcelectives.html) and a student may also petition to have an unlisted course accepted.
- Participation in practica and/or internships. These may be built into courses or conducted outside of courses.
- Receive an overall 3.000 average GPA for all required Leadership Certificate courses.



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## Reserve Officer Training Corps

Enrollment in Reserve Officer Training Corps (ROTC) programs is open to both men and women, and ROTC lower-level leadership courses are open to all students whether or not they contract with ROTC.

All services provide undergraduate and selected graduate students with the opportunity to combine academic study with a military officer's educational program. The three services conduct courses in their respective areas leading to a regular or reserve commission upon graduation. The Navy also offers a program leading to a regular commission in the Marine Corps.

The course codes for these programs are AIRR, MILR, and NAVL.

## Air Force Aerospace Studies

U.S. Air Force ROTC offers several programs leading to a commission in the U.S. Air Force upon receipt of at least a baccalaureate degree.

### *Standard Four-Year Program*

This standard program is designed for incoming freshmen, or any student with four years remaining until degree completion. It consists of three parts: the general military course (GMC) for lower-division (normally freshman and sophomore) students; the professional officer course (POC) for upper-division students (normally juniors and seniors); and the leadership laboratory (LLAB) attended by all cadets. Completion of a four-week summer field training program is required prior to commissioning.

### *Modified Four-Year Program*

Certain undergraduate and graduate students may be eligible for this program. It is offered to full-time, regularly enrolled degree students and requires at least five semesters of full-time college work (undergraduate or graduate level, or a combination). May only be available to students pursuing academic majors in demand. Those selected for this program must complete the field training program during the summer months as a prerequisite for entry into the professional officer course the following fall semester.

### *Leadership Lab*

All AFROTC cadets must attend leadership lab (two hours per week). The laboratory involves a study of Air Force customs and courtesies, drill and ceremonies, career opportunities, and the life and work of an Air Force junior officer.

### *Other Air Force ROTC Programs*

Other programs are frequently available based on current Air Force needs. Any AFROTC staff member in Boulder (303-492-8351) can discuss the best alternatives. Interested students should make initial contact as early as possible to create the best selection opportunity, as selection is on a competitive basis. There is no obligation until a formal contract is entered.

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## *Air Force College Scholarship Program*

Normally a scholarship board is held at the end of each semester for students who have at least one semester of full-time college credit. Prior participation in AFROTC may not be required to compete for these scholarships. Students can compete for scholarships in most academic majors. Students selected for this program receive scholarships that pay up to \$18,000 in tuition, a book allowance, nonrefundable educational fees, and subsistence each month, tax-free. These scholarships are available in all academic disciplines and are two to three years in length.

## *USAF Medical Programs*

Qualified nursing students can compete for nursing scholarships. These scholarships can lead to a career as an Air Force officer, serving as a nurse. Students may also compete for a prehealth designator. If selected, they would receive a scholarship for medical school.

## *Air Force ROTC Course Credit*

AFROTC credit for graduation varies with each college. Students should contact the appropriate college for credit determination.

## *Registration*

CU-Boulder students who wish to register for AFROTC classes sign up for them through the normal course registration process.

## **Military Science (U.S. Army)**

The Department of Military Science is a leadership program leading to an officer's commission in the Active Army, Army Reserve, or National Guard in conjunction with an undergraduate or graduate degree. Military science courses supplement a regular degree program and offer practical leadership and management experience. Scholarships are available for those that qualify. Additionally, financial benefits may be available for enlisted soldiers.

## *Four-Year Program*

For college freshmen, the four-year program consists of two phases: the basic course (freshman and sophomore years) and the advanced course (junior and senior years).

**Basic courses (MSI & MSII)** cover Army history and organization as well as military leadership and management. Labs provide the opportunity to develop leadership experience while learning basic military skills. Participating in the basic courses incur no military obligation, except for those receiving an Army scholarship.

**Advanced courses (MSIII & MSIV)** cover leadership, tactics and unit operations, training techniques, military law, and professional ethics. Additionally, a four-week summer leadership camp at Fort Lewis, Washington, is a requirement between the Junior and Senior year, and is a prerequisite for commissioning. Students enrolled in the advanced courses must have completed the basic courses (or the equivalent) and obtain permission from the professor of military science (PMS).

## *Two-Year Program*

For college students entering as a sophomore, the two-year program consists of the advanced courses, preceded by a four-week summer ROTC leadership training course (LTC) at Ft. Knox, Kentucky. Inquiries into LTC should be directed to the Department of Military Science prior to completing the sophomore year. LTC is a paid internship and the academic equivalent to the MS1/MSII basic courses.

Prior service and enlisted soldiers who have completed basic training may be eligible to enroll in the advanced course without attending LTC or completion of the ROTC basic courses. Enlisted soldiers

pursuing advanced placement must obtain permission from the PMS.

### *Scholarship Programs*

College freshmen, sophomores, and juniors may be eligible for four-, three-, and two-year scholarships, regardless of academic major. Interested students must enroll in Army ROTC and meet eligibility requirements, including an army physical fitness test.

High school scholarship applicants may be eligible for four- and three-year college scholarships. High school students can apply during their junior year and before January 10 of their senior year,

All scholarship recipients receive tuition and fees, a \$1,200 book allowance, and a stipend of \$300–500 per month during the academic year. Students interested in scholarships should contact the enrollment and scholarship officer at [armyrotc@colorado.edu](mailto:armyrotc@colorado.edu), **303-492-3549**, or **303-492-6495**.

### *Simultaneous Membership Program*

College sophomore and juniors who want additional leadership training, may participate with an Army Reserve or Army National Guard unit as an officer trainee. Students participating in this program earn approximately \$240 in monthly drill pay, plus a monthly ROTC stipend of \$300–500. Additionally, SMP participants receive Army National Guard or reserve tuition benefits of up to \$4,500 per year. Enlisted and prior service students retain their authorized GI benefits.

### *Army ROTC Course Credit*

ROTC is an elective credit in most departments. Individual academic advisors verify if ROTC classes count toward the student's degree.

### *Registration*

Amy ROTC classes begin with MILR prefix. Register for classes through the normal course registration process. For more information, contact the enrollment and scholarship officer at CU-Boulder at [armyrotc@colorado.edu](mailto:armyrotc@colorado.edu), **303-492-3459**, or **303-492-6495**. See also the AROTC website at [www.colorado.edu/arotc](http://www.colorado.edu/arotc).

## Naval Science

Naval science course work is offered in the fall and spring semesters only. All naval science students enroll in NAVR 1010, 2020, 4010, and 4020. Those desiring commissions in the U.S. Navy enroll in NAVR 3020, 3030, 3040, and 4030 for upper-division work. Those desiring commissions in the U.S. Marine Corps enroll in NAVR 3101 and 4101 for upper-division work.

### *Scholarship Programs*

NROTC offers two-, three-, and four-year scholarship programs, and two-year and four-year college (non-scholarship) programs. Navy scholarships may be earned while students are enrolled in the college program. Scholarship students receive tuition and fees, a \$375 book allowance per semester, and a \$250 per month subsistence allowance. This subsistence allowance gradually rises to \$400 by the student's senior year. College program students receive a \$350 per month subsistence allowance their junior year and \$400 per month subsistence allowance their senior year in the program.

Naval science (Navy option) students must complete one year of calculus, physics, and English, and one semester of American military history or national security policy, and a cultural course. Students should check with their naval science instructor to determine specific course offerings that fulfill the above requirements.

### *Degree Credits*

The number of NROTC semester hours of credit that may count toward degree requirements is determined by the individual colleges. Students should therefore consider their college's policy when formulating their degree plan.

### *Commissioned Service*

Opportunities for commissioned service are presently available in the unrestricted line (surface, subsurface, aviation, special warfare, and special operations) and staff corps (nursing) in the U.S. Navy. Opportunities in ground and aviation specialties are available in the U.S. Marine Corps. Students interested in other programs leading to commissions in either the U.S. Navy or U.S. Marine Corps are encouraged to contact the NROTC unit on campus. All commissioning programs require that the student be working toward, and receive, a college degree.

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# Technology, Arts, and Media Program

The ever-expanding landscape of the networked age requires new and adaptable skill-sets, within both academic and commercial paradigms. In order to address this need, the Technology, Arts, and Media Program, based within the ATLAS Institute, offers two undergraduate programs: a minor in Technology, Arts, and Media (MTAM) and a smaller Certificate in Digital Media (CDM). The minor is intended for students who wish to pursue research and careers related to digital media, whereas the certificate is intended for students who are interested in the fundamentals of digital media production.

The course code for this program is ATLS.

## Minor in Technology, Arts, and Media (MTAM)

The minor in Technology, Arts, and Media (MTAM) provides a broad multidisciplinary perspective that integrates technological skills with a critical, theoretical, and historical understanding of technology, media, and the arts. The MTAM curriculum includes creative production courses, as well as classes that impart foundational knowledge and critical perspectives on the role of technology in society. Students from a wide range of majors receive instruction in digital media production, design, art criticism, computer programming, information technology, data visualization, media and societal analysis, and project development.

### Minor Goals

- to prepare the next generation of artists, designers, and media producers for the networked age
- to give students the necessary technical, theoretical, and historical backgrounds so they can contribute to the development of new functionalities and aesthetics for computer media
- to facilitate the exploration of the intersection of technology and other specific disciplines
- to produce active and critically aware participants and producers of technology

### Minor Requirements

- A minimum of **21** credit hours:
  - ATLS 2000 The Meaning of Information Technology
  - ATLS 3010 Digital Media 1
  - ATLS 3020 Digital Media 2
  - ATLS 3030 Fundamentals of Digital Design
  - Critical thinking in technology elective\*
  - Invention and practice elective\*
  - ATLS 4010 Capstone
- Students must maintain a 2.000 GPA within all MTAM courses.
- Students must earn a minimum grade of C in all courses counted for the minor.

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- Students may not take more than one elective course from a single department (this does not apply to ATLS courses).
- Course work used to satisfy MTAM requirements cannot be taken *pass/fail*.
- ATLS core courses cannot be substituted (ATLS 2000, ATLS 3010, ATLS 3020, ATLS 3030, ATLS 4010).
- A minimum of 15 credit hours must be taken on the Boulder campus.
- Failing to meet the minimum grade for any individual ATLS core course twice will result in automatic removal from the MTAM program.

\*See [tam.colorado.edu](http://tam.colorado.edu) for a current listing of approved elective courses.

## Course Substitutions

- Course work not on the approved elective list (including course work from another University of Colorado campus, another institution, Study Abroad, or Semester at Sea) must be approved by the MTAM Faculty committee. Students must complete a Course Substitution Petition Request Form and attach supporting documentation (syllabus).
- Substitution requests will not be considered if the student has already satisfied the requirement with an approved elective course.

## Certificate Program

### Certificate in Digital Media (CDM)

The Certificate in Digital Media (CDM) provides a fundamental understanding of information technology and digital media production. The program will motivate students to think critically about technology and its impacts upon society.

### Certificate Goals

- to equip students with a basic digital media skill-set
- to transform students from passive users of technology into active producers of technology

### Certificate Requirements

- A minimum of 12 credit hours:
  - ATLS 2000 The Meaning of Information Technology
  - ATLS 3010 Digital Media 1
  - Critical thinking in technology elective\*
  - Invention and practice elective\*
- Student must maintain a 2.000 GPA within all CDM courses.
- Students must earn a minimum grade of *C* in all courses counted for the certificate.
- Course work used to satisfy CDM requirements cannot be taken *pass/fail*.
- Core ATLS courses cannot be substituted (ATLS 2000, ATLS 3010).

\*See [tam.colorado.edu](http://tam.colorado.edu) for a current listing of approved elective courses.



# Undergraduate Admission



THE OFFICE OF ADMISSIONS WELCOMES inquiries from prospective students regarding undergraduate admission. Through the admission process, the university seeks to identify applicants who will successfully complete a collegiate academic program. Admission is based on many criteria, including high school GPA or GED test scores, high school rank, the quality of course work, college entrance test scores, personal essays, and the extent to which the [minimum academic preparation standards \(MAPS\)](#) have been met.

Inquiries relating to undergraduate admission to the University of Colorado Boulder may be addressed to:

**Office of Admissions**, Regent Administrative Center 125, University of Colorado Boulder,  
552 UCB, Boulder, CO 80309-0552  
**303-492-6301** • TTY 303-492-5998 (for hard of hearing persons)

To find admission information online, go to [admissions.colorado.edu/undergraduate](http://admissions.colorado.edu/undergraduate).

For admission requirements to graduate degree programs, see the [Graduate School](#) section and individual college and school sections.

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## Visiting the Campus

Prospective students and their families are welcome to visit the Office of Admissions in Regent Administrative Center 125 between 9:00 a.m. and 5:00 p.m. (summer hours are 8:30 a.m. to 4:30 p.m.), Monday through Friday, except on holidays. Daily information sessions, walking tours of the campus, and special all-day visit programs are offered. Although interviews are not used in the decision-making process, you are invited to visit the campus.

The best time to see the campus is when classes are in session (September through mid-December and mid-January to early May, with the exception of spring break); see the [academic calendar](#) for specific dates. There are dates when information sessions, campus tours, and visit programs are not held due to holidays or university closures. It is important to check our website for the most current information.

## Reservations

Reservations are required for all information sessions, tours, and visit programs and can be made through your MyCUBoulder ([mycuboulder.colorado.edu](http://mycuboulder.colorado.edu)) account. For complete visit program descriptions, dates, reservation forms, and campus maps, go to [www.colorado.edu/visit](http://www.colorado.edu/visit), or call **303-492-6301**. Visit program dates for future academic years are added to the website as they become available (usually in August each year).

## Daily Information Sessions and Campus Tours

Information sessions with an admission counselor are held Monday through Friday at 9:30 a.m. and 1:30 p.m. Following the information sessions are walking tours of the campus led by student guides, beginning at 10:30 a.m. and 2:30 p.m. Combined information sessions and tours are also held at 10:30 a.m. most Saturdays.

## Campus Visit Programs

An excellent way to become acquainted with the campus is to participate in one of the campus visit programs specially designed for prospective students and parents.

These programs, offered on selected Fridays and Saturdays throughout the year, provide prospective students and their families the chance to participate in information sessions, take a campus tour, learn more about residence hall life, talk with student and parent panels, and meet with campus representatives, as well as attend classes or listen to a sample lecture. To make reservations for any or all of these visit programs, go to [www.colorado.edu/visit](http://www.colorado.edu/visit) or call the Office of Admissions at **303-492-6301**.

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# General Admission Information

## Choosing a Program of Study

When applying for admission, students need to choose a major in one of CU-Boulder's colleges or schools. Applicants who have not decided on a major can select an "open option" major. This allows students to explore different options during their first and/or second year of study. After this time, they will decide on a specific major for their remaining years. Students can also change their area of study, but this can result in additional course requirements that may add to the number of semesters necessary to complete a degree.

Although applicants can apply to only one CU-Boulder college or school, after enrollment they can apply for transfer to another Boulder college or school through the Intrauniversity Transfer (IUT) process. Criteria for transferring from one college or school to another are competitive, and each college or school establishes its own standards.

## Double Degrees, Double Majors, Minors, and Certificate Programs

There are several programs that allow students to include additional areas of academic concentration beyond their chosen major. Two different degrees, either from the same college or school, or degrees from different colleges or schools, may be earned, providing certain conditions are met. Students are admitted to one major and degree program initially but may pursue a second degree during their first semester of enrollment. Minor programs are offered in a number of undergraduate departments and programs in the College of Arts and Sciences, the Leeds School of Business, and the College of Engineering and Applied Science. Certificate programs in arts and sciences, business, engineering, and music fields are also available.

## Preprofessional Study

Preprofessional advisors are available to help students interested in medicine, dentistry, physical therapy, veterinary medicine, nursing, pharmacy, physician assistant, other allied health sciences, or law. Students interested in these fields may apply to any of the majors open to new undergraduates, including the open option major in the College of Arts and Sciences. Students interested in one of the undergraduate or graduate health sciences programs offered at the University of Colorado Anschutz Medical Campus may complete preprofessional work on the Boulder campus. Admission is competitive, but preference to all health sciences programs is given to Colorado residents.

For more information, visit [www.colorado.edu/aac](http://www.colorado.edu/aac) or see Preprofessional Programs in the Other Academic Programs section.

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Prospective music majors must submit both an Undergraduate Application for Admission to the Office of Admissions, and a College of Music Admission Application.

All music applicants are initially considered for admission to the College of Arts and Sciences open option major. Admission to a College of Music degree program (bachelor of arts in music, bachelor of music education, bachelor of music) is determined after the music audition and application evaluation process has been completed. Students who are admitted to the College of Arts and Sciences but not the College of Music will be able to keep their place in the College of Arts and Sciences.

Live auditions, which are preferred unless travel distance is prohibitive, are scheduled for selected Saturdays in January and February. Other live audition times may be arranged; high quality recordings also may be submitted in lieu of a live audition.

College of Music scholarships are awarded to music majors only. High school and college transfer students are automatically considered for merit-based music scholarships upon completion of the application process, including the audition. Transfer students who are receiving a scholarship from their current institution must submit a scholarship release form before they can be awarded a music scholarship. To be assured of full consideration for scholarship awards, the audition should be completed by February 15.

The College of Music Admission Application Form, as well as more detailed information about audition requirements, faculty, and degree programs, may be found at [music.colorado.edu](http://music.colorado.edu).

## Teacher Education Applicants

Through the School of Education, students interested in elementary or secondary school teaching may take programs approved for Colorado licensure in connection with Colorado Commission on Higher Education (CCHE) approved majors offered at CU-Boulder.

Elementary teacher education includes kindergarten through sixth grade licensure. Secondary teacher education includes seventh through 12th grades with licensure in English, mathematics, science, social studies, and the following foreign languages: French, German, Italian, Japanese, Latin, Russian, and Spanish. Teacher education programs are also available in music education for kindergarten through 12th grade.

Teacher education program applicants who have completed a four-year undergraduate degree program should apply directly to the School of Education. Those who have not received a bachelor's degree must apply to another CU-Boulder undergraduate degree program and submit their application and credentials to the Office of Admissions. Undergraduate students who plan to pursue teacher education should declare this intent to the school's Office of Student Services as soon as possible after enrolling at CU-Boulder.

Refer to the School of Education section for more information about teacher education. Interested students may also visit [www.colorado.edu/education](http://www.colorado.edu/education), e-mail [EdAdvise@colorado.edu](mailto:EdAdvise@colorado.edu), or write to the School of Education, Office of Student Services, University of Colorado Boulder, 249 UCB, Boulder, CO 80309-0249, for application and deadline information.

## College Readiness in English and Mathematics

The State of Colorado mandates that all undergraduate students entering public institutions of higher education in Colorado be screened for college readiness in reading, writing, and mathematics. To pass the screening requirements, students must present minimum test scores.

Students who have successfully completed four years each of college preparatory English and college preparatory math courses are deemed to have met the respective requirements regardless of

the test score.

Students who do not meet CU-Boulder's criteria for college readiness will be required to demonstrate readiness through an additional examination or to enroll in preparatory courses prior to completing the first 30 semester hours of course work on the Boulder campus. Students who have not demonstrated reading, writing, and/or mathematics readiness will receive additional details after they confirm their intent to enroll at CU-Boulder.

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# Freshman Applicants

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- [College Entrance Tests](#)
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- [Policies Concerning MAPS Deficiencies](#)
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- [Guaranteed Admission for Colorado Resident Freshmen](#)
- [Freshman Applicants Not Granted Admission](#)

Students are freshman applicants if they are currently enrolled in high school, or if they have earned a high school diploma or its equivalent and have not enrolled in a college or university since graduation.

## Admission Criteria

Many factors are considered in evaluating students' applications for admission to CU-Boulder. Although academic performance in high school (high school GPA and the quality of course work) is the most important indicator of success, other factors are also considered. These include students' college entrance test scores (either the SAT or ACT), the trend in their grades, the extent to which the minimum academic preparation standards (MAPS) are met, their personal essays, and the potential contributions they may make to the campus community. For information on MAPS, see [MAPS table](#) in this section.

Applicants whose records reflect nontraditional grading systems, unusual curricula, or high school equivalency through the GED test will receive individual consideration and are urged to apply.

## College Entrance Tests

Applicants should take a college entrance test late in their junior year or early in their senior year of high school. CU-Boulder requires either the SAT or the ACT for admission consideration. The ACT Writing Test is not required for CU-Boulder admission consideration. The highest scores are used in the admission decision. If the same test is taken more than once, the scores are combined on each subsection to give the highest overall score. SAT subject test scores are not required. For more information, see the How to Apply for Undergraduate Admission section.

## Minimum Academic Preparation Standards (MAPS)

Students who graduated from high school in spring 1988 or later are expected to have completed courses that meet certain minimum academic preparation standards (MAPS) before enrolling at CU-Boulder. Any MAPS deficiency will be considered during the admission review process. The MAPS for

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specific CU-Boulder colleges and schools are listed in this section.

Students may be admitted to CU-Boulder even though they have not met all the MAPS requirements. If that is the case, they are required to complete the appropriate MAPS courses once enrolled, and the credits may be applied toward graduation. *All MAPS deficiencies must be completed prior to graduation from CU-Boulder.* Students may also complete missing MAPS course work at other colleges or universities, through approved credit-by-examination programs, or by testing out through the appropriate foreign language department.

## Policies Concerning MAPS Deficiencies

The policies of the Boulder campus with respect to completing MAPS course work after enrollment are as follows.

1. Appropriate missing MAPS course work is included in the hours for graduation.
2. All course work toward fulfillment of the MAPS must be taken for a letter grade.
3. It is strongly recommended that students enroll in and complete at least one MAPS course each term, beginning in the first term of enrollment, until such time as all MAPS are completed. This policy applies to new freshmen, transfer students, and students transferring from other academic units on the Boulder campus and from other campuses of the university. Some colleges or schools may impose a sanction if the student does not complete one course per semester toward meeting MAPS deficiencies.
4. All students who first enroll in one academic unit at CU-Boulder and subsequently transfer to another unit are required to meet the MAPS specified for the new unit, irrespective of their completion of MAPS units in their previous college or school.
5. Students in double-degree programs must meet MAPS requirements of both degree-granting units.
6. Students must consult with a CU-Boulder academic advisor (or read their college or school's academic publications) to determine which specific courses may be used to meet a MAPS requirement.
7. Students who complete 50 percent or more of their secondary schooling in a non-U.S. system are exempt from MAPS.

Also review the [MAPS table](#).

## Advanced Placement

CU-Boulder participates in the Advanced Placement program of the College Board. Over one-third of Boulder's entering freshmen submit Advanced Placement (AP) test scores each year. Official scores must be sent to the admissions office directly from the College Board for both first-year students and transfer students. *For a guide to specific equivalencies, refer to the [AP table](#).* For more information, write or call:

**AP Exams**, P.O. Box 6671, Princeton, NJ 08541-6671

**609-771-7300** or toll free **888-225-5427**

[www.collegeboard.com](http://www.collegeboard.com)

## International Baccalaureate

The International Baccalaureate (IB) Diploma programs provide preuniversity study. IB examinations, whether leading to a full IB diploma or to an IB certificate often qualify students for advanced

standing at CU-Boulder. In general, credit is granted for approved IB examinations at the higher level with a score of 4 or better.

Students admitted to the University of Colorado Boulder after June 30, 2003, who have graduated from high school having successfully completed an International Baccalaureate Diploma program shall be granted 24 semester hours of college credit. Students should check with their college or school to determine if or how the earned college credit applies toward degree requirements. No CU-Boulder tuition shall be charged for these credits. These credits shall be granted, however, only if the student receives a score of 4 or better on an examination administered as part of the IB Diploma program. If the student scores less than 4 on any IB subject test, the credit hours granted shall be reduced accordingly.

An official copy of the diploma with test scores must be sent to the admissions office directly from the IB organization. For a guide to specific equivalencies *refer to the table below*. For more information on test administration, write or call:

**International Baccalaureate Organization**, 475 Riverside Drive, 16th floor, New York, NY 10115  
**212-696-4464**  
[www.ibo.org](http://www.ibo.org)

For the most current information on how CU-Boulder evaluates IB credit, visit [admissions.colorado.edu/undergraduate/apply/freshman/credit](http://admissions.colorado.edu/undergraduate/apply/freshman/credit). Also review the *IB table*.

## Guaranteed Admission for Colorado Resident Freshmen

The University of Colorado Boulder guarantees admission to first-time Colorado resident freshmen who meet specific criteria. For a copy of the guaranteed admission guidelines, visit [admissions.colorado.edu/undergraduate/apply/freshman/guarantee](http://admissions.colorado.edu/undergraduate/apply/freshman/guarantee), write to **Office of Admissions**, University of Colorado Boulder, 552 UCB, Boulder, CO 80309-0552, or call **303-492-6301**. Guaranteed admission information is also available in all Colorado high school guidance offices.

## Freshman Applicants Not Granted Admission

Students who are not granted admission as entering freshmen may consider transferring to CU-Boulder after successful study elsewhere. Students are encouraged to complete at least one full year of transferable college or university course work, including any courses outlined in the minimum academic preparation standards (MAPS) chart that were not met in high school.

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# Transfer Applicants

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Applicants are considered transfer students if they have attempted or enrolled in any college-level course work (at another college or university, or other campus of the University of Colorado), full time or part time, since graduating from high school. Applicants are not considered transfer students if the only college-level classes they have taken were while enrolled in high school. To be considered for admission, transfer students must report all previous college work and have a high school diploma or its equivalent.

## Competitive Admission Criteria

Transfer applicants are considered for admission on the basis of transfer as well as freshman criteria, including minimum academic preparation standards (MAPS). All transfer applicants who graduated from high school in spring 1988 or later are expected to have completed MAPS requirements before enrolling at CU-Boulder.

A number of factors are considered when the transfer application is evaluated. The types of courses taken are as important as the grade point average. Only courses completed at the time the application is reviewed are considered in computing the cumulative, or overall, GPA. Complete personal essays are required.

Competitive criteria may vary from term to term depending on the overall quality of the applicant group and the number of transfer spaces available for a given college or school. Successful completion of prerequisite or recommended courses is also considered in the admission decision (see specific college and school sections below). For more information on competitive transfer admission guidelines, visit [admissions.colorado.edu/undergraduate/apply/transfer](http://admissions.colorado.edu/undergraduate/apply/transfer).

### *College of Architecture and Planning*

A college GPA of 2.750 or higher is required. Admission preference is given to students who have taken college-level courses in the areas of architecture, planning, or environmental studies. Completion of courses in related fields of social science, natural science, fine arts, or humanities is also considered in the admission review.

### *College of Arts and Sciences*

A cumulative college GPA of 2.500 or better in appropriate general education courses is required. Students who complete 60 semester hours of transfer-level work with a cumulative GPA of 2.500 at a

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Colorado community college and who apply by the equal consideration deadline are assured admission to the College of Arts and Sciences. Students must complete all of the Minimum Academic Preparation Standards (MAPS) to be guaranteed admission.

\*This information applies to students who entered college after spring 1988. For those students who entered college prior to summer 1988, contact the Office of Admissions.

### *Leeds School of Business*

A cumulative college GPA of 3.000 or higher is required. Preference is given to students who have completed finite math (or college algebra), calculus, microeconomics, and macroeconomics with competitive letter grades.

### *School of Education*

Students who have completed a bachelor's degree may apply for admission directly to the School of Education. All other undergraduate students must be admitted to another college or school before applying to a CU-Boulder teacher education program.

Visit [www.colorado.edu/education/prospective/undergrad.html](http://www.colorado.edu/education/prospective/undergrad.html) for additional information.

### *College of Engineering and Applied Science*

A college GPA of 2.900 or higher for four-year institutions; 3.100 or higher for community college and junior colleges is required. Transfer applicants must have taken courses relevant to an engineering curriculum, including at least two semesters of college-level calculus, along with two semesters of calculus-based physics and/or college-level chemistry. Chemical engineering and chemical and biological engineering applicants should have completed two semesters of college chemistry. Grades in math, science, and engineering courses should be B or higher. *(Exception: Students [resident or non-resident] who apply for admission for a semester that occurs within 18 months of their high school graduation date may also be competitive without having taken the above course work, as long as the high school academic record meets the current Guaranteed Admission for Colorado Freshmen criteria. In addition, if any college-level work has been completed, the overall GPA should be 3.100 or higher.)*

The college guarantees admission to any of its baccalaureate degree programs to students transferring from Colorado public institutions of higher education who meet the [College of Engineering and Applied Science Guaranteed Admission Criteria for Colorado Transfers](#). Visit [admissions.colorado.edu/undergraduate/sites/default/files/Guaranteed\\_Admission\\_CO\\_Transfer\\_CEAS.pdf](http://admissions.colorado.edu/undergraduate/sites/default/files/Guaranteed_Admission_CO_Transfer_CEAS.pdf) for more information.

### *Journalism and Mass Communication Program*

Admission to the Journalism and Mass Communication program requires a transfer student to have a minimum of 30 semester hours of appropriate college-level course work completed or in progress and an overall GPA of 3.000 as well as a 3.000 average GPA in journalism course prerequisites (Contemporary Mass Media class and either Principles of Journalism or Principles of Advertising at CU-Boulder, or their equivalents at another institution). Transfer students will be contacted after submitting their admission application with more detailed information about the Journalism and Mass Communication Program.

### *College of Music*

A college GPA of 2.750 or higher and an audition of all applicants is required. More information may be found in the [Undergraduate Admission](#) and [College of Music](#) sections.

## College Entrance Tests

Transfer students are required to submit SAT or ACT scores, except those who have completed 24 or more semester hours of transferable college-level work at the time they apply.

Students' highest scores are used in the admission decision. If the same test is taken more than once, the scores on each subsection are combined to give the highest overall score. SAT subject test scores are not required. For more information, see the How to Apply for Undergraduate Admission section.

## Minimum Academic Preparation Standards (MAPS)

Effective with students who graduated from high school in spring 1988 or later, CU expects all transfer students to have completed courses that meet certain minimum academic preparation standards (MAPS). The MAPS requirements for specific CU-Boulder colleges and schools are listed [here](#).

MAPS requirements not met in high school may be met through equivalent college-level course work before or after transfer to CU-Boulder. A semester course completed at the college level substitutes for a year of work in high school.

## Opportunities for Colorado Transfer Students

A list of transferable state-guaranteed general education courses has been established for students pursuing arts and sciences majors. Contact your current Colorado school, the CU-Boulder Office of Admissions, or visit our website for more information.

Course equivalency guides are available online at [admissions.colorado.edu/undergraduate/admissions/transfer/courseequivalencyguides](http://admissions.colorado.edu/undergraduate/admissions/transfer/courseequivalencyguides), and also in Colorado community college advising offices. These guides provide information on CU-Boulder admission requirements, graduation requirements, and course equivalencies.

Students transferring to a program outside of the College of Arts and Sciences need to work with community college advisors and use the transfer guide to assure that appropriate courses are taken prior to transfer. Students wishing to enter the College of Architecture and Planning or the College of Engineering and Applied Science should be aware that because of the structure of the curriculum, they are encouraged to transfer as early as the beginning of the sophomore year. *Academic programs vary in terms of the maximum number of hours that may be transferred from a community or junior college.*

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# Minimum Academic Preparation Standards (MAPS)

One unit equals one year of high school study or one semester of college course work.

College of Architecture & Planning	College of Arts & Sciences / Journalism & Mass Communication	Leeds School of Business	College of Engineering & Applied Science	College of Music
<b>English: 4</b>	<b>English: 4</b> (includes 2 of composition)	<b>English: 4</b> (includes 2 of composition)	<b>English: 4</b>	<b>English: 4</b>
<b>Mathematics: 4</b> (includes at least 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions)	<b>Mathematics: 4</b> (includes at least 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions)	<b>Mathematics: 4</b>	<b>Mathematics: 4</b> (includes at least 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions)	<b>Mathematics: 4</b>
<b>Natural science: 3</b> (includes physics and/or biology)	<b>Natural science: 3</b> (includes 2 of lab science, 1 of which must be either chemistry or physics)	<b>Natural science: 3</b> (includes 2 of lab science, 1 of which must be either chemistry or physics)	<b>Natural science: 3</b> (includes 1 of physics AND 1 of chemistry or biology, OR 2 of chemistry AND 1 of physics or biology, OR 2 of biology AND 1 of chemistry or physics)	<b>Natural science: 3</b>
<b>Social science: 3</b>	<b>Social science: 3</b> (includes 1 of U.S. or world history and 1 of geography; if U.S. history is used to meet the history requirement, the geography requirement may be met with 1/2 unit of geography)	<b>Social science: 3</b> (includes 1 of U.S. or world history and 1 of geography; if U.S. history is used to meet the history requirement, the geography requirement may be met with 1/2 unit of geography)	<b>Social science: 3</b>	<b>Social science: 2</b>
<b>Single foreign language: 3</b>	<b>Single foreign language: 3</b>	<b>Single foreign language: 3</b>	<b>Single foreign language: 3</b> (or 2 units in each of 2 separate foreign languages)	<b>Single foreign language: 3</b>
<b>Academic elective: 1</b>				<b>Academic elective: 2</b> (in the arts)
<b>Total units: 17</b>	<b>Total units: 17</b>	<b>Total units: 16</b>	<b>Total units: 17</b>	<b>Total units: 16</b>

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## Advanced Placement (AP) Credit

AP Subject	Examination Title	Exam Score	CU-Boulder Course Equivalent*	Semester Hours
<b>Biology</b>	Biology	5, 4	EBIO 1210, 1220, 1230, and 1240	8
<b>Chemistry</b>	Chemistry	5	CHEM 1113/1114 and 1133/1134	10
		4	CHEM 1113/1114	5
<b>Classics</b>	Latin: Virgil	5	CLAS 2114, 2124, 3024	11
		4	CLAS 2114 and 2124	8
		3	CLAS 2114	4
		5	CLAS 2114, 2124, 3024	11
		4	CLAS 2114 and 2124	8
		3	CLAS 2114	4
<b>Computer Science<sup>a</sup></b>	Computer Science <sup>a</sup>	5	CSCI 1300	4
<b>Economics</b>	Economics: Micro	5, 4	ECON 2010	4
	Economics: Macro	5, 4	ECON 2020	4
<b>English</b>	English Literature and Composition	5, 4	ENGL 1500	3
	English Language and Composition	5	WRTG 1150 and 1250	6
		4	WRTG 1150	3
<b>Environmental Science</b>	Environmental Science	5, 4	ENVS 1000	4
<b>Fine Arts</b>	Studio: Drawing Portfolio or Studio: General Portfolio	5, 4	ARTS 1012	3
	Art History	5, 4	ARTH 1300 and 1400	6
<b>Foreign Language</b>	Chinese Language and Culture	5	CHIN 1020, 2110, and 2120	15
		4	CHIN 1020 and 2110	10
		3	CHIN 1020	5
	French Language	5	FREN 2110, 2120, and 2500	9
		4	FREN 2110 and 2120	6
		3	FREN 2110	3
	French Literature	5, 4	FREN 3110 and 3120	6
		3	FREN 3120	3

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	German Language	5	GRMN 2020 and 3010	7
		4	GRMN 2010 and 2020	8
		3	GRMN 2010	4
	Japanese Language and Culture	5	JPNS 1020, 2110, and 2120	15
		4	JPNS 1020 and 2110	10
		3	JPNS 1020	5
	Italian Language and Culture	5	ITAL 1020, 2110, and 2120	11
		4	ITAL 1020 and 2110	8
		3	ITAL 1020	5
	Spanish Language <sup>b</sup>	5	SPAN 2110, 2120, and 3000	11
		4	SPAN 2110 and 2120	6
		3	SPAN 2110	3
	Spanish Literature <sup>b</sup>	5	SPAN 1000 and 3200	6
		4	SPAN 1000	3
<b>Geography</b>	Human Geography	5, 4, 3	GEOG 1992	3
<b>Government</b>	Comparative	5, 4	PSCI 2012	3
	United States	5, 4	PSCI 1101	3
<b>History</b>	U.S. History	5, 4	HIST 1025	3
	European History	5, 4	HIST 1020	3
	World History	5, 4	Determined by department <sup>c</sup>	3
<b>Mathematics</b>	Math: Calculus AB <sup>d</sup>	5, 4	MATH 1300	5
	Math: Calculus BC <sup>d</sup>	5, 4	MATH 1300 and 2300	10
	Math: Calculus BC	3	MATH 1300	5
	and AB subscore <sup>d, e</sup>	5, 4, 3		
	Math: Calculus BC	2, 1	MATH 1300	5
	and AB subscore <sup>d, e</sup>	5, 4		
	Statistics	5, 4	MATH 2510	3
<b>Music</b>	Music Listening and Literature	5	MUEL 1832 and 2752	6
		4	MUEL 1832	3
	Music Theory	5	MUSC 1101, 1111, 1121, and 1131	6
		4	MUSC 1101 and 1121	3
<b>Physics</b>	Physics B <sup>f</sup>	5, 4	PHYS 2010 and 2020	10
	Physics C: Mechanics	5, 4	PHYS 1110	4
	Physics C: Electricity and Magnetism	5, 4	PHYS 1120	4
<b>Psychology</b>	Psychology	5, 4	PSYC 1001	4

\* There is no guarantee that all AP credit will apply to a specific degree program. The dean's office of each college and school makes the final determination on how AP credits apply toward degree requirements.

a Engineering students will need to gain experience with C or C++ before taking further computer science courses.

b Students who want to continue taking Spanish courses beyond their AP credit level must take the Spanish department placement test. If the results of this test place them below their AP level, the Spanish department strongly recommends enrolling at the lower of the two levels.

c Three lower-division credits meeting the historical context core requirement in the College of Arts and Sciences and the Leeds School of Business.

d Specific credit awarded may depend on major. Check with academic advisor in major department.

e Students taking the Calculus BC exam automatically receive an AB subscore.

f Does not apply toward degree requirements for students in the College of Engineering and Applied Science.

NOTE: This table was prepared based on spring 2011 exams. Credit awarded is subject to change based on faculty review of spring 2012 exams.

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## International Baccalaureate (IB) Credit

IB Subject Examination Title	Exam Level	Exam Score	UCB Course Equivalent*	Semester Hours
Anthropology	Higher	4	ANTH 2100 and 3 lower-division credits meeting human diversity requirement	6
Art	Higher	4	Elective credits (consult faculty with portfolio for further consideration of fine arts course equivalents)	6
Biology	Higher	4	EBIO 1210, 1220, 1230, and 1240	8
Business and Management	Higher	4	BCOR 1010 and BADM 2999	6
Chemistry	Higher	5	CHEM 1113/1114 and 1133/1134	10
	Higher	4	CHEM 1113/1114	5
Chinese (A-1)	Higher	4	CHIN 3110, 3120	10
	Standard	4	CHIN 2110, 2120	10
Chinese (A-2)	Higher	4	CHIN 3110, 3120	10
	Standard	4	CHIN 2110, 2120	10
Chinese AB Initio	Standard	5	CHIN 1010, 1020	10
	Higher	7, 6	CHIN 3110, 3120	10
Chinese (B)	Higher	5, 4	CHIN 2120, 3110	10
	Standard	4	CHIN 2110, 2120	10
	Higher	4	Elective credits; performance scores required to determine credit awarded	1-3
Dance	Higher	4	Elective credits	6
Economics	Higher	4	ECON 1000	4
English (A-1)	Higher	4	ENGL 1500	3
English (A-2)	Higher	4	ENGL 1500	3
French (A-1)	Higher	4	FREN 3050 and 3100	6
French (A-2)	Higher	7, 6	FREN 3010, 3050, and 3100	9
	Higher	5, 4	FREN 2110 and 2120	6
French (A-2)	Standard	6	FREN 1050 and 2110	8
French B	Higher	7	FREN 2120 and 2500	6
	Higher	6, 5	FREN 2110 and 2120	6
	Higher	4	FREN 2120	3
French B	Standard	7	FREN 2110 and 2120	6
	Standard	6	FREN 2110	3

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	Standard	5	FREN 1050	5
	Standard	4	FREN 1010	5
<b>French AB</b>	Initio	7	FREN 1050	5
	Initio	6, 5	FREN 1010	5
<b>Geography</b>	Higher	4	GEOG 1992 and 3 lower-division credits	6
<b>German (B)</b>	Higher	6, 7	GRMN 2020 and 3010	7
	Higher	5, 4	GRMN 2010 and 2020	8
	Standard	4	GRMN 1010 and 1020	8
<b>History: Africa</b>	Higher	4	Lower-division credits meeting historical context core requirement	6
<b>History: Americas</b>	Higher	4	HIST 1025 and 3 lower-division credits meeting historical context core requirement	6
<b>History: East and Southeast Asia and Oceania</b>	Higher	4	Six lower-division credits meeting historical context core requirement	6
<b>History: Europe/Middle East</b>	Higher	4	Lower-division credits meeting historical context core requirement	6
<b>Italian (A-1)</b>	Higher	4	ITAL 3010 and 2130	6
<b>Italian (A-2)</b>	Higher	7, 6	ITAL 3010 and 2130	6
	Higher	5, 4	ITAL 2110 and 2120	6
<b>Italian (A-2)</b>	Standard	6	ITAL 1020 and 2110	8
<b>Italian B</b>	Higher	7, 6, 5	ITAL 2110 and 2120	6
	Higher	4	ITAL 2110	3
<b>Italian B</b>	Standard	7	ITAL 2110 and 2120	6
	Standard	6	ITAL 2110	3
	Standard	5	ITAL 1020	5
	Standard	4	ITAL 1010	5
<b>Italian AB</b>	Initio	7	ITAL 1020	5
	Initio	6, 5	ITAL 1010	5
<b>Japanese (A-1)</b>	Higher	4	JPNS 3110, 3120	10
	Standard	4	JPNS 2110, 2120	10
<b>Japanese (A-2)</b>	Higher	4	JPNS 3110, 3120	10
	Standard	4	JPNS 2110, 2120	10
<b>Japanese AB Initio</b>	Standard	5	JPNS 1010, 1020	10
<b>Japanese (B)</b>	Higher	7, 6	JPNS 3110, 3120	10
	Higher	5, 4	JPNS 2120, 3110	10
	Standard	4	JPNS 2110, 2120	10
<b>Korean</b>	Higher	4	Semester hours awarded and course equivalent are determined by oral exam	
<b>Latin</b>	Higher	4	Waives MAPS foreign language requirement	—
<b>Mathematics</b>	Higher AND Further	5	MATH 1300 and 2300	10

<b>Mathematics</b>	Higher	5	MATH 1300	5
		4	3 general math credits fulfilling the quantitative reasoning and mathematical skills core requirement	3
<b>Music</b>	Higher	4	Elective credits	6
<b>Philosophy</b>	Higher	4	PHIL 1000 (meets ideals and values core requirement) and 3 lower-division credits	6
<b>Physics</b>	Higher	4	PHYS 2010 and 2020	10
<b>Psychology</b>	Higher	4	PSYC 1001 and 2 lower-division credits	6
<b>Russian (B)</b>	Higher	4	RUSS 2010 and 2020	8
	Standard	5	RUSS 2010 and 2020	8
<b>Spanish (A-1)</b>	Higher	4	SPAN 3000 and 3100	8
<b>Spanish (A-2)</b>	Higher	7, 6	SPAN 2110, 2120, and 3000	11
	Higher	5, 4	SPAN 2110 and 2120	6
	Standard	6	SPAN 1020 and 2110	8
<b>Spanish (B)</b>	Higher	7, 6	SPAN 2110, 2120, and 3000	11
	Higher	5, 4	SPAN 2110 and 2120	6
	Standard	4	SPAN 1010 and 1020	10
<b>Spanish (AB)</b>	Standard	6	SPAN 1010	5
<b>Theatre</b>	Higher	4	THTR 1019 and 3 lower-division theatre credits	6

\* There is no guarantee that all IB credit will apply to a specific degree program. The dean's office of each college and school makes the final determination on how IB credits apply toward degree requirements.

NOTE: This table was prepared based on spring 2011 exams. Credit awarded is subject to change based on faculty review of spring 2012 exams.

## University Catalog 2012-2013

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## University Catalog 2012-13

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# How to Apply

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## Application Priority Dates and Admission Notification

Applications for degree candidates may be submitted beginning in August for the following spring, summer, and fall terms.

The university reserves the right to deny admission to applicants whose total credentials reflect an inability to assume those obligations of performance and behavior deemed essential by the university and relevant to any of its lawful missions, processes, and functions as an educational institution.

## Spring Freshman Applicants

Spring applications are processed on a rolling basis. The Office of Admissions begins notifying applicants about admission decisions in October. Decisions are made approximately four to six weeks after an application is complete. Full consideration is given to applications that are complete (including the application fee and all required credentials) by the October 1 deadline.

## Summer and Fall Freshman Applicants

There are two admission notification periods for fall and summer 2012 candidates.

### *Non-Binding Early Notification*

Freshman applicants who complete their file by **December 1, 2011**, are guaranteed early notification and will receive an admission decision on or before **January 15, 2012**. Students meeting the non-binding, early notification deadline may be admitted, postponed, or denied admission. Postponed students will receive an additional review and are strongly encouraged to submit additional academic information to strengthen their applications. Students who are postponed do not typically receive an admission decision until **April 1, 2012**. Early notification students are not required to enroll at the University of Colorado Boulder, but must, if they choose to attend, confirm their intent to enroll by **May 1, 2012**.

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## *Freshman Application Deadline*

The freshman application deadline is **January 15, 2012**. Students may begin applying and completing their files in August. All applicants with completed files by **January 15, 2012**, will be notified of their admission decision no later than **April 1, 2012**. Students must, if they choose to attend, confirm their intent to enroll by **May 1, 2012**.

## Transfer Applicants

Transfer applications are processed on a rolling basis. Full consideration is given to transfer applications completed by the **October 1** deadline for spring admission, or the **April 1** deadline for summer and fall admission. From the time a transfer application is complete, it takes a minimum of four to six weeks for it to be reviewed.

## Complete an Online Application

Applicants should use the online application through their MyCUBoulder account at [mycuboulder.colorado.edu](http://mycuboulder.colorado.edu).

For a student to be considered for admission, the Office of Admissions must receive a completed application, the application fee, and all required credentials. Processing of an application will be delayed until all required information is received.

## Application Fee

The \$50 application fee (\$70 U.S. for international students) is nonrefundable. If paying by check or money order it should be made payable to the University of Colorado. Important: The applicant's name and date of birth must appear on the check or money order.

Some students may be faced with financial constraints in paying the application fee. Therefore, waivers are granted to those students with documented hardships who submit fee-waiver forms available in high schools, from the CU-Boulder Office of Admissions, or at [admissions.colorado.edu/undergraduate/apply/forms](http://admissions.colorado.edu/undergraduate/apply/forms).

Students currently enrolled in an undergraduate degree program at another University of Colorado campus, who are applying to an undergraduate degree program on the Boulder campus, are not required to pay the application fee.

## Required Credentials

Credentials or information sent by fax cannot be accepted as official documentation. Do not submit samples or photographs of design or artwork. A portfolio is not used for admission purposes and cannot be returned.

## *Official Transcripts*

*Official transcripts must be sent directly to the Office of Admissions from the issuing institution and must have the appropriate seals and signatures. Other transcripts are not considered official.*

Transcripts that are marked, for example, "student copy," "issued to student," or "unofficial" are not accepted as official. Unofficial transcripts cannot be used for admission or transfer credit purposes.

## *High School Transcript*

Students should request that their high school send an official transcript of all work completed, beginning with grade 9, directly to the Office of Admissions, regardless of the number of college hours

the student has completed (if any) or the date at graduation from high school. Students who have attended more than one high school and whose most recent transcript does not include the complete high school record must submit official transcripts from each school. If any part of the high school record is missing from the transcript, the processing of the application will be delayed. Students who have not graduated and do not plan to graduate from high school must request an official certificate of high school equivalency and official GED scores, plus an official transcript of any high school work (grades 9–12) completed, to be sent to the Office of Admissions.

## College Transcripts

Students should request that their official transcripts from each collegiate institution attended (except any campus of the University of Colorado) be sent directly from the issuing institution to the Office of Admissions. Be sure to include all institutions, regardless of the length of attendance, whether or not courses were completed, and whether or not the record might affect admission or transfer credit. Also include any institutions attended during summers, interim terms, and during high school. *Failure to list and submit transcripts from all institutions previously attended before enrolling at CU-Boulder is considered to be a violation of academic ethics and may result in the cancellation of admission or dismissal from the university.*

## SAT or ACT Test Scores

Boulder requires SAT or ACT scores for admission. The ACT will be accepted with or without the writing test. Students should request that the testing agency submit scores directly to the Office of Admissions. CU-Boulder's code for the SAT is 4841; the code for the ACT is 0532. Scores recorded on an official high school transcript are also acceptable. *These scores must be submitted unless 24 or more semester hours of transferable college work have been completed at the time of application.* Do not delay sending in the application and other credentials because college entrance test scores are not yet available.

Results from SAT or ACT tests taken in December or later may be received too late to be considered for summer or fall admission of the same year.

For further information, consult a high school counselor, visit the SAT website at [www.collegeboard.com](http://www.collegeboard.com), phone **609-771-7600**, or write to the College Board (SAT), P.O. Box 6200, Princeton, NJ 08541-6200. Visit the ACT website at [www.act.org](http://www.act.org), phone **319-337-1270**, or write to ACT Registration, P.O. Box 414, Iowa City, IA 52243-0414.

## Personal Essays

The University of Colorado Boulder requires applicants to submit two short personal essays. Applications without essays are considered incomplete and will not be reviewed. Personal essays are the best way for the Office of Admissions to learn about applicants as individuals and to evaluate a student's academic performance within the appropriate context. There are no "correct" answers to the questions—responses should reflect the unique aspects and experiences of the applicant. The specific essay questions are available on the application.

## Letters of Recommendation

Students may submit letters of recommendation if they wish; however, doing so is optional.

## MyCUBoulder Account

MyCUBoulder ([mycuboulder.colorado.edu](http://mycuboulder.colorado.edu)) is a personalized electronic tool that all undergraduates may use to explore the opportunities available at CU and keep track of what needs to be done before they arrive on campus. Applicants should use their MyCUBoulder account to apply for admission,

check their status, apply for scholarships and financial aid, and take care of other pre-enrollment university business.

## Where to Send the Application, Fee, and Credentials

Unless otherwise instructed, mail all application materials to: **Office of Admissions**, Regent Administrative Center 125, University of Colorado Boulder, 552 UCB, Boulder, CO 80309-0552

## Mailing Address

Applicants must keep their mailing address current at all times. It is used for mailings until the applicant arrives on campus. Notices are also sent to this address regarding admission, registration, and orientation, as well as other information. If an address changes or is no longer valid, notify the Office of Admissions immediately at **303-492-6301**.

## Application Checklist

1. Online application for admission
2. \$50 nonrefundable (\$70 U.S. for international students) application fee, payable online (if sending a check or money order, make payable to the University of Colorado; print student's name and date of birth on check)
3. Official high school transcript
4. Official college transcripts (if applicable)
5. SAT or ACT test scores (if applicable)
6. Personal essays
7. Letters of recommendation (optional)

## Confirmation Procedures

All admitted students are encouraged to confirm their intent to enroll as soon as possible after receiving their admission notification. Admission must be confirmed by official notification and the nonrefundable confirmation deposit of \$200 through your MyCUBoulder account.

Confirmations and deposits submitted by the dates listed below will be accepted. After these dates, confirmations can be accepted only if space is still available.

### *Confirmation Postmark Deadlines*

- Freshmen: fall, **May 1**; summer, **May 1**; spring, **Dec. 15**
- Transfers: **varies**; see *confirmation instructions*

If students register for classes and then decide not to attend, they may be assessed tuition depending upon the circumstances. Guidelines are given on the registrar's website ([registrar.colorado.edu](http://registrar.colorado.edu)) for spring and fall and in the summer catalog for summer terms. Close attention must be given to statements regarding policies for new, readmitted, and transfer students.

The confirmation deposits are used as registration deposits each semester as long as registration is completed by the published deadline. Once students have attended CU-Boulder, the deposit (minus any fees or other charges owed) will be returned when they graduate or officially withdraw from the university according to established deadlines.



# Other Applicants

## On This Page:

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- [Second Undergraduate Degree Applicants](#)
- [Readmit Students](#)
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## International Students

The university invites applications from qualified international students. International applicants are those who already have, or will be applying for, a temporary U.S. visa such as F-1 and J-1. Applicants who are United States citizens, permanent residents, asylees, or refugees are not considered international. These students should follow application and admission procedures for undergraduates or graduates as described elsewhere in this catalog.

Over 1,000 international students from more than 100 countries study at CU-Boulder. Applications for admission are processed by the Office of Admissions. Assistance after admission is provided by International Student and Scholar Services, located in the Office of International Education. Boulder offers a full range of services to international students, including a host family program, orientation, special programs and activities for international students, and personal attention to individual needs.

Intensive English instruction is also offered by the International English Center. For information, go to [www.colorado.edu/iec](http://www.colorado.edu/iec) or write or call the International English Center, University of Colorado Boulder, 63 UCB, Boulder, CO 80309-0063, **303-492-5547**.

International students who wish to pursue a full-time program of study at the undergraduate or graduate level should go to the international student website at [www.colorado.edu/prospective/international](http://www.colorado.edu/prospective/international) for admission information and online application forms.

Prospective graduate students should go to the website at [www.colorado.edu/prospective/graduate](http://www.colorado.edu/prospective/graduate) for information and application forms specific to the academic department in which they are interested. Prospective graduate students can also call the campus telephone operator at **303-492-1411** and ask to have the call transferred to the department of interest or write to the specific department, University of Colorado Boulder, Boulder, CO 80309.

## *International Nondegree Students*

The University of Colorado Boulder welcomes visiting (nondegree) students from around the world. International students who are requesting a form I-20 (for an F-1 visa) are required to enroll full time (6 credits in the summer and 12 in the fall and spring semesters). Students are not allowed to drop below that limit and maintain their visa status. Students on a tourist visa may be eligible to take one class. An individual who holds a temporary nonimmigrant visa or temporary immigration status may register as a nondegree student after demonstrating English proficiency through the approval to register process administered by the International English Center, and only if the individual also

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meets academic prerequisites.

E-mail [ceadvisor@colorado.edu](mailto:ceadvisor@colorado.edu) or [ssdean@colorado.edu](mailto:ssdean@colorado.edu) for additional information.

## Readmit Students

Former CU-Boulder undergraduate degree students who have not attended the Boulder campus for three semesters must submit the Application for Readmission for undergraduate degree students. No application fee is required. Students who have attended any college or university since their last attendance at CU-Boulder will need to submit official transcripts directly from the issuing institution(s) to the Office of Admissions.

If the student is changing from a previous college or school, the change should be noted on the application. Otherwise, it is assumed that the student is returning to the same field of study, if eligible to do so. If a college or school change is requested for which the student is not eligible, the student will need to request reconsideration for his or her previous program.

Former arts and sciences students wishing to return to arts and sciences must apply to their previous major. Students who wish to pursue a second undergraduate degree must apply to a major different from the one in which they received their degree. Students may not apply for a second bachelor's degree in the Leeds School of Business or the Journalism and Mass Communication Program.

Beginning with the fall 2010 semester, continuing undergraduate degree-seeking students who temporarily withdraw will be automatically eligible to return within a given time period without having to readmit. Review the "Return Chart" located at [registrar.colorado.edu/students/withdrawal.html](http://registrar.colorado.edu/students/withdrawal.html). (Degree-seeking students who are taking classes only through the Division of Continuing Education and Professional Studies are considered enrolled students.)

During the semesters of non-enrollment, students' CU-Boulder e-mail and portal accounts remain open. To return, students need to register for classes during the regular enrollment period for the returning term. If the student's confirmation deposit was refunded, they must repay it when returning.

The above policy is not applicable to graduate students but these students may be eligible for the Time Off Program if they wish to take a leave of absence. Graduate students not eligible for the Time Off Program will need to reapply for admission. This policy also is not applicable for new degree students (or transfer students) who enroll and then withdraw prior to the census date. For more information, see [registrar.colorado.edu](http://registrar.colorado.edu). Degree students who withdraw from CU-Boulder during summer session may not need to reapply to continue into the fall semester unless they are changing schools, colleges, or degree programs.

## Nondegree Students

Students who wish to take University of Colorado Boulder courses but are not currently admitted to a degree program at the university are classified as "nondegree students." Students apply as nondegree students through the Division of Continuing Education and Professional Studies (**303-492-5148** or [conted.colorado.edu](http://conted.colorado.edu)). Nondegree students may enroll in credit classes through the ACCESS (Available Credit Courses for Eligible Special Students) Program, the Boulder Evening Program, CAETE (Center for Advanced Engineering and Technology Education), the Independent Learning Program, Applied Music Program, and Summer Session.

If students have been denied admission to an undergraduate degree program, they may not enroll as nondegree students in the ACCESS Program for the semester for which they sought degree program admission. Nondegree student admission does not guarantee future admission to any degree program.

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Nondegree students may also enroll for courses on a *pass/fail* basis. These courses are counted toward hours of *pass/fail* course work permitted according to the rules of the college or school to which students are admitted once they achieve degree status.

Nondegree students must maintain a 2.000 cumulative GPA. Failure to maintain the required GPA will result in academic suspension.

High school students interested in taking courses at CU-Boulder apply as nondegree students through the High School Concurrent Program administered by the division.

For more information, contact the Division of Continuing Education and Professional Studies at **303-492-5148** or visit [conted.colorado.edu](http://conted.colorado.edu).

International students who want to apply to the university as nondegree students should read the International Students section above. Students interested in teacher licensure should refer to the School of Education section.

### *Nondegree Students Transferring to a Degree Program*

Students who are currently enrolled or have been enrolled at any CU campus as non-degree students may apply for admission to an undergraduate degree program.

Students wishing to transfer to a graduate degree program should refer to the Graduate School section and individual college and school sections.

A degree-seeking applicant may transfer an unlimited number of credits taken as a nondegree student on any University of Colorado campus. However, applicability of these hours toward degree requirements is established by the colleges and schools. It is suggested that a student apply to a degree program as soon as admission requirements, including MAPS deficiencies, have been met. It is essential that former nondegree students actively seek academic advising from the appropriate dean's office once they have been accepted into a degree program.

## Second Undergraduate Degree Applicants

Students may apply for a second undergraduate degree at the University of Colorado Boulder, but should explore the various options in graduate study available at the university before doing so. Students applying for a second undergraduate degree must follow transfer admission guidelines, and those students who are admitted must keep in mind that all college and major requirements must be met in order to complete degree programs satisfactorily. Restrictions mandated by general university policies, as well as specific college and school policies, include the following:

1. Applicants may not apply to the major in which they received their first undergraduate degree.
2. Applicants must apply to a specific major; applications for an open option or undetermined major cannot be considered.
3. Second undergraduate degree applicants in the College of Architecture and Planning are encouraged to investigate graduate programs.
4. The Leeds School of Business and the Journalism and Mass Communication Program do not consider students who have already completed an undergraduate degree. These students are strongly encouraged to investigate graduate study.
5. Students who already have an undergraduate degree from the College of Engineering and Applied Science and who desire a second undergraduate degree are strongly encouraged to investigate graduate study as an option.
6. The School of Education offers graduate and teacher certification programs only.

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- Credit hours earned as a nondegree student at the University of Colorado may not be used toward major degree requirements for a second degree in the College of Arts and Sciences.

## Students from Other CU Campuses

Students who wish to transfer to Boulder from another University of Colorado campus (Colorado Springs or Denver), from CU Study Abroad, or from CU Continuing Education and Professional Studies should refer to the Transfer Applicants section. These students must send a high school transcript, SAT or ACT scores, and an official transcript from each college or university attended (outside the University of Colorado system) to the Office of Admissions. Currently enrolled degree students are not required to pay the application fee. Special consideration is given to applicants transferring from degree programs at other campuses of the University of Colorado. Course work completed at other campuses in the University of Colorado System will be a part of the student's cumulative university record and will not be considered as transfer credit. However, the applicability of this course work toward specific CU-Boulder degree requirements will be determined solely by CU-Boulder colleges and schools. External transfer credit presented by students to other University of Colorado campuses will be evaluated by CU-Boulder guidelines upon the student's matriculation into a degree program at CU-Boulder.

## Transfer of College-Level Credit

The Office of Admissions performs an initial evaluation of transfer credit after applicants have been admitted. A complete evaluation of transfer credit cannot be made until all official credentials have been received.

The evaluation is made using the official transcripts sent directly to the university from each one of the applicant's previous colleges. Official transcripts exhibit the official seal and signature of the registrar. Transcripts that are marked "student copy," "issued to student," or "unofficial" are not accepted as official. Faxed transcripts are not accepted.

Course work of comparable content and scope to the CU-Boulder curriculum will generally be transferred if it was completed at colleges or universities accredited by the North Central Association of Colleges and Schools, or other regional associations at the time the work was completed. For international colleges or universities, the international equivalent of regional accreditation or Ministry of Education recognition will be considered. If course work was completed at a school not regionally accredited, the student may specifically request that their course work be considered for transfer. CU-Boulder will utilize the recommendations of American Association of Collegiate Registrars and Admissions Officers (AACRAO) when making its decision.

These recommendations include but are not limited to:

- Educational quality of the sending institution
- Comparability of credit to be transferred to CU-Boulder
- Applicability of the credit in relation to the programs being offered at CU-Boulder
- Additional documentation that students may be required to provide regarding the course work for transferability

### *Exceptions to Recognition of Regional Accreditation*

Transferability is based on the practices of the leading university, as reported to AACRAO, in the state where the institution is located. CU-Boulder will make the decision on transferability based on the above criteria for institutions within the state of Colorado.

For Advanced Placement, International Baccalaureate, College Level Examination Program, or

military credit, refer to the detailed criteria in the corresponding sections.

## *Evaluation of Credit*

Only courses taken at a college or university of recognized standing with grades of C- (1.700) or better are accepted for transfer. All transferred courses are recorded on the student's academic record.

Each college and school at CU-Boulder determines:

- How transferred course semester credit hours are applied toward graduation requirements in accordance with the policies of the college or school
- The maximum number of semester credit hours that may transfer from a two-year or four-year postsecondary institution
- The minimum number of semester credit hours that must be completed on the Boulder campus in order to receive a degree
- The minimum number of semester credit hours that must be completed as a degree student in residence on the Boulder campus to receive an undergraduate degree
- The maximum number of semester credit hours earned through correspondence or in a similar format that are accepted toward a baccalaureate degree

Credit hours should have been earned no more than 10 years prior to transferring into an undergraduate degree program at the University of Colorado Boulder. Any determination of acceptance of semester credit hours toward the degree based on the content and the age of the credit is made in the college or school dean's office or by the student's major department.

College-level work taken during high school is evaluated in accordance with general guidelines for transfer credit at CU-Boulder. Official college transcripts of work taken must be received in order for transfer credit to be awarded.

## *Course Work Requiring Additional Review*

The following course work will require additional information before a decision can be made on acceptance for transfer credit.

- Independent study courses
- Internships
- Workshops
- Graduate course work
- Military credit
- Professional programs

## *Course Work Not Accepted for Transfer Credit*

The following course work will not be accepted for transfer credit and will not count toward a degree at Boulder:

- any courses in which the grade earned is below a C- (1.700)
- courses identified by CU-Boulder as remedial, such as remedial English, mathematics, science, and developmental reading
- vocational-technical courses that are offered at two-year and proprietary institutions (exceptions may be granted only by the CU-Boulder dean responsible for the student's curriculum—when exceptions appear to be warranted, appropriate department heads make recommendations to their respective deans regarding credit for such courses)
- courses in religion that constitute specialized religious training or that are doctrinal in nature

- credits earned for work experience or through a cooperative education program
- outdoor leadership education course work
- credits earned in physical education activity courses
- courses or programs identified as college orientation

## *Appeals Process*

Students who wish to appeal the transferability of course work must write a letter within the first semester after the work is posted on the University of Colorado Boulder record or after receiving notice from the Office of Admissions that the course work was not accepted for transfer credit. The letter must be addressed to the Transfer Credit Department, Office of Admissions and include:

- The name(s) of the previous institution(s) attended, the course number and title of each course for which the student was denied transfer credit, and the date(s) of enrollment in each course
- A copy of the catalog description (from the appropriate year) for each course in question
- A copy of the syllabus or course outline (from the appropriate year) for each course in question. This information can be obtained from the sending institution
- A statement indicating why the credit(s) should be accepted

The Admissions Office will re-evaluate the course(s) for which the student is requesting reconsideration in consultation with the appropriate dean or chair. A written response will be delivered to the student in a timely manner once the appropriate faculties have reviewed the course materials, past practices, and the student's specific circumstances.

## *University of Colorado Campuses*

Course work completed at other campuses in the University of Colorado system will be a part of the student's cumulative university record and will not be considered as transfer credit. However, the applicability of this course work towards specific CU-Boulder degree requirements will be determined solely by CU-Boulder colleges and schools. External transfer credit presented by students to other University of Colorado campuses will be evaluated by CU-Boulder guidelines upon the student's matriculation into a degree program at CU-Boulder.

## *Number of Credit Hours Required for Graduation*

Transfer students are held to the same residency and degree requirements as students who begin their undergraduate degree program on the Boulder campus. This assumes that transfer credit hours are in courses comparable in level and content to those required for graduation from an undergraduate degree program at the Boulder campus. College or school residency requirements, meaning the number of hours required to be taken as a degree student once admitted on the Boulder campus, are the same for transferring and nontransferring students.

## *Credit for Correspondence and Online Work*

Each college and school determines the maximum number of credits taken through correspondence and online programs that are accepted toward a baccalaureate degree.

## *College-Level Work Taken during High School*

College-level work taken during high school is evaluated in accordance with general guidelines for transfer credit at CU-Boulder. College-level work taken concurrently with a high school program may be used to satisfy MAPS requirements. Official college transcripts of work taken must be received for transfer credit to be awarded.

## *Advanced Placement Examinations*

Credit for College Board Advanced Placement examinations cannot be evaluated from college or high

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school transcripts; score reports from the College Board must be submitted directly to the university for evaluation. For more information, and a guide to equivalencies, refer to Freshman Applicants and the chart in this section or download the PDF at [admissions.colorado.edu/undergraduate/admissions/freshman/credit](https://admissions.colorado.edu/undergraduate/admissions/freshman/credit).

### *College-Level Examination Program*

Credit for College Board subject examinations of the College-Level Examination Program (CLEP) in general biology, general chemistry, general psychology, introductory macroeconomics, introductory microeconomics, introductory sociology, and calculus may be granted for a score at or above the 67th percentile. This credit is applied toward degree requirements at the discretion of the student's dean. Refer to the appropriate dean's office for the policy of that college or school.

Credit for CLEP subject examinations cannot be evaluated from college or high school transcripts; score reports must be submitted directly from the College Board. CLEP general examinations are not accepted for credit at CU-Boulder.

### *International Baccalaureate Examinations (IB)*

In general, credit is granted for approved IB examinations at the higher level with a score of 4 or better. Credit for IB examinations cannot be evaluated from college or high school transcripts. An IB certificate or diploma must be submitted to the Office of Admissions from the IB organization for evaluation. For more information and a guide to equivalencies, refer to [Freshman Applicants](#).

### *Military Credit*

Credit for military schooling is evaluated upon receipt of Form DD 214, Service Separation Certificate, or the Sailor/Marine American Council on Edwardian Registry Transcript (SMART). Only work that has received an upper-division baccalaureate recommendation by the American Council on Education (ACE) can be awarded credit. This work, however, is transferred and recorded at the lower-division level. Foreign language credit taken through the State Department, Department of Defense, or Defense Language Institute is assigned the recommended ACE credit.

### *Credit by Examination*

This option provides limited opportunities for students to take an examination and earn credit for a course without registering for or taking the course. Specific courses must be approved for credit by examination. Students may want to exercise this option if they do not receive transfer credit for a course they have taken at a previous college. Information on participating colleges and schools, requirements, and an application for credit by examination are available at the Office of the Registrar, Regent Administrative Center 105, University of Colorado Boulder, 20 UCB, Boulder, CO 80309-0020, **303-492-6970**. Permission of the instructor, the department chair, the dean of the college or school in which the course is offered, and the student's dean (if different) is required for approval. An examination fee is charged.

### *Transfer Credit Conversion*

Many campuses operate on the quarter system, with the academic year divided into three terms. Other campuses, including CU-Boulder, operate on a two-term or semester system. Course credits from quarter system institutions must be converted from quarter hours to semester hours or credits. One quarter credit is equivalent to two-thirds of a semester credit. To convert quarter hours to semester hours, multiply the number of quarter hours by two-thirds and round off the total to the nearest tenth. For example, 4 quarter hours  $\times \frac{2}{3} = 2.67$  or 2.7 semester hours of credit, or 3 quarter hours  $\times \frac{2}{3} = 2$  semester hours of credit.

### *Intrauniversity Transfer Students*

Students wishing to change colleges or schools within the CU-Boulder campus must obtain an Intrauniversity Transfer (IUT) application from the college or school to which they wish to transfer.

For more information on recommended course work in preparation for an IUT and other criteria, students need to consult college and school sections of this catalog or talk with an academic advisor in the program to which they plan to transfer. Some colleges and schools do not accept intrauniversity transfer students during the summer. It is important to note that admission to a college through the IUT process is competitive, and not all students who apply are admitted. Decisions are based on course preparation, hours completed, grade point average, and other criteria required by the specific college or school.

### *Denied Admission as a Freshman*

Students who were not admissible to the University of Colorado Boulder based on high school academic records are encouraged to apply for transfer admission after at least 24 semester hours of transferable college-level course work are completed or in progress. This includes any minimum academic preparation standards (MAPS) requirements not met in high school.

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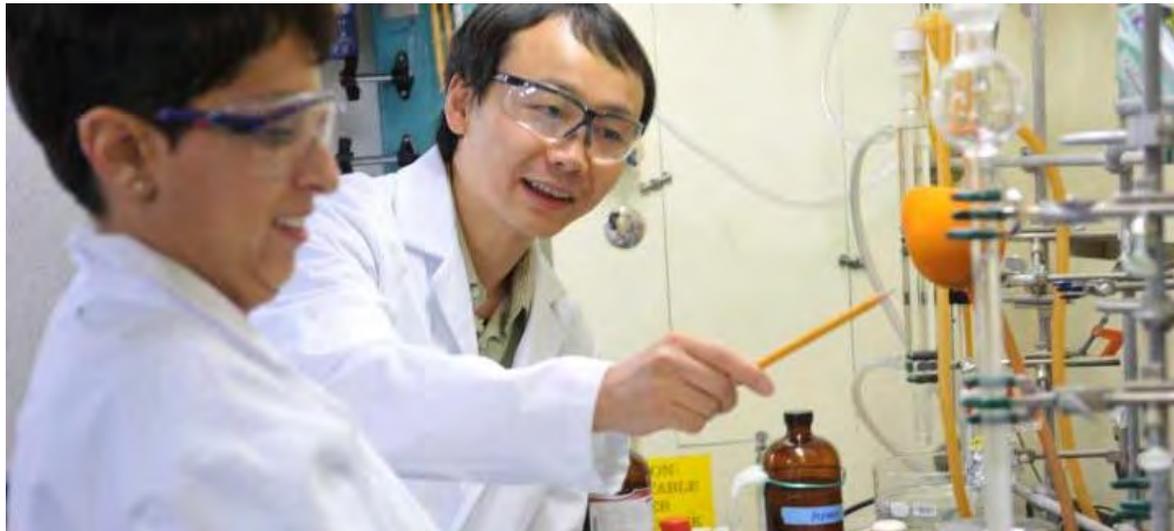
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## Graduate Admission



GRADUATE SCHOOL ADMISSION is handled by individual academic departments; see the department or specific graduate program for details. For more information, go to [admissions.colorado.edu/graduate](http://admissions.colorado.edu/graduate) and see the [Graduate School](#) section of this catalog.

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## Courses

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Search by Course Number

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ACCT

### ACCT-2820 (3) Introduction to Personal Financial Planning

Introduces the concepts, tools, and applications of personal financial planning. Provides the students with tools and techniques for managing their personal finances. With these skills, students gain the ability to effectively deal with their ever-changing financial environment. Restricted to students with at least 26 hours completed.

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### ACCT-3220 (3) Corporate Financial Reporting 1

First of a two-course sequence intended to provide students with increased fluency in the language of business. Focuses on U.S. and international accounting concepts and methods that underlie financial statements and the related implications for interpreting financial accounting information. Prereqs., BCOR 2000 and BCOR 2200. Restricted to 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

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### ACCT-3230 (3) Corporate Financial Reporting 2

Second in a two-course sequence building and extending detailed knowledge of preparation, analysis, and use of financial statements. Prereqs., ACCT 3220 and 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

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### ACCT-3320 (3) Cost Management

Provides cost analysis for the support of management decision making. Analyzes activities, cost behavior, role of accounting in planning,

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financial modeling, and managerial uses of cost data. Prereq., BCOR 2000 and BCOR 2200. Restricted to 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

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## ACCT-4240 (3) Advanced Financial Accounting

Examines advanced financial accounting theory and practice, emphasizing U.S. and international accounting for business combinations, consolidated financial statements, and accounting for partnerships. Prereqs., ACCT 3230. Restricted to Accounting or Finance majors with 52-180 units completed. Same as ACCT 5240. Prerequisites: Restricted to Accounting or Finance majors with 52-180 units completed.

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## ACCT-4250 (3) Financial Statement Analysis

Focuses on the use of U.S. and international accounting information by decision-makers external to the firm. Considers judgments made by investors, security analysts, bank lending officers, and auditors. Emphasizes equity valuation and risk analysis. Restricted to Accounting, Finance or Accounting Concurrent Degree majors only with 52-180 units completed. Prereq., ACCT 3220. Prerequisites: Restricted to Accounting, Finance or Accounting Concurrent Degree majors only with 52-180 units completed.

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## ACCT-4430 (3) Personal Financial Planning

Extends the concepts, tools, and applications of personal finance and investments beyond ACCT 2820. Focuses on the development of a financial plan to achieve financial goals. Restricted to 52 hours completed.

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## ACCT-4440 (3) Income Taxation of Individuals

Examines concepts and structure of the United States income tax system. Focuses on concepts affecting all taxpayers, with emphasis on individual taxation. Prereq., ACCT 3220. Same as ACCT 5440. Prerequisites: Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed.

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## ACCT-4540 (3) Accounting Information Systems

Considers the interaction of accountants with information systems and the role of accounting information systems in business processes. Focuses on the tools used by accountants and provides an understanding of accounting as an information system. Prereq., ACCT 3220. Same as ACCT 5540. Prerequisites: Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed.

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## ACCT-4620 (3) Auditing and Assurance Services

Emphasizes the value of assurance services, including the market for financial-statement audits, and the audit decision process, from obtaining a client through planning and testing, to issuance of the audit report. Focuses on making judgments and decisions under conditions of uncertainty and continually evaluating the substance of business transactions over their form. Prereq., ACCT 3230. Same as ACCT 5620. Prerequisites: Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed.

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## ACCT-4800 (3) Accounting for Government and Nonprofit Organizations

Reporting, planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting, and fund accounting. Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed. Prereq., ACCT 3220. Same as ACCT 5800. Prerequisites: Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed.

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## ACCT-4820 (3) Topics in Business

Offered irregularly to provide opportunity for investigation of new frontiers in accounting. Prereq., ACCT 3220. Same as ACCT 5820. Prerequisites: Restricted to Accounting or Accounting Concurrent Degree majors 52-180 units completed.

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## ACCT-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Accounting. Restricted to juniors/seniors. Same as ACCT 5825.

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## ACCT-4850 (3) Senior Seminar in Accounting

This seminar examines the nature of accounting theory and practice from perspectives of economics, law, globalization, accounting, ethics, and moral reasoning. This course also explores issues including implications of institutional factors, such as Sarbanes-Oxley, SEC, FASB, IFRS, and capital markets. Prereqs., ACCT 3230, one 4000-level ACCT course. Restricted to 102 hours completed and to graduating senior ACCT majors. Formerly BCOR 4001. Prerequisites: Restricted to Accounting majors with 102-180 units completed.

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## ACCT-4900 (1-3) Independent Study

Requires prior consent of dean and instructor under whose direction study is taken. Intended only for exceptionally well-qualified business seniors. Departmental form required.

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## ACCT-5240 (3) Advanced Financial Accounting

Examines advanced financial accounting theory and practice, emphasizing U.S. and international accounting for business combinations, consolidated financial statements, and accounting for partnerships. Prereq., ACCT 3230. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5250 (3) Financial Statement Analysis

Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Prereq., ACCT 3220. Same as ACCT 4250. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5330 (3) Advanced Cost Management

Critically analyzes advanced topics in cost management. Uses cases and current readings. Prereq., ACCT 3320. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5440 (3) Income Taxation of Individuals

Prereq., ACCT 3220. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4440. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5540 (3) Accounting Information Systems

Prereq., ACCT 3220 or equivalent. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4540. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5620 (3) Auditing and Assurance Services

Emphasizes the value of assurance services, including the market for financial-statement audits, and the audit decision process, from obtaining a client through planning and testing, to issuance of the audit report. Focuses on making judgments and decisions under conditions of uncertainty and continually evaluating the substance of business transactions over their form. Prereq., ACCT 3230. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4620. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5700 (3) International Accounting

Intensive focus on international financial statement analysis, cultural and economic differences that affect financial reporting in various countries. Examples include international financial reporting standards and accounting for foreign currency transactions. Prereq., ACCT 3230. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4700. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5800 (3) Accounting for Government and Nonprofit Organizations

Reporting, planning and control of government and nonprofit organizations. Includes program budgets, responsibility accounting, and fund accounting. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Prereq., ACCT 3220. Same as ACCT 4800. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-5820 (3) Topics in Business

Prereq., ACCT 3230 or equivalent. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4820. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

## ACCT-5825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Accounting. Prereq. ACCT 3230. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as ACCT 4825. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.



## Courses

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ACCT

### ACCT-6000 (1-4) Academic Internship in Accounting

Offers students the opportunity to gain professional work experience in an accounting or tax position while still in school. Provides academically relevant work experience that complements students' studies and enhances their career potential. Includes lectures and a course paper. Students may not preregister for this course, and they must contact the Director of the concurrent degree program in accounting for approval. Restricted to graduate students only. Prereq., ACCT 3230, at least 90 credit hours of course work and a minimum GPA of 3.00, and instructor consent. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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### ACCT-6220 (3) Corporate Financial Reporting

Provides an in-depth study of the concepts underlying contemporary financial accounting practice. Includes preparation and analysis of financial statements and the application of concepts to selected current issues. Students with credit for ACCT 3220 and 3230 or equivalents may not receive credit for ACCT 6220. Prereq., MBAC 6020 or equivalent. Same as MBAX 6700.

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### ACCT-6250 (3) Financial Statement Analysis

Focuses on the use of accounting information by decision makers external to the firm. Considers judgments made by investors, security analysts, bank lending officers, and auditors. Emphasizes equity analysis. Prereq., MBAC 6020 or equivalent. Same as MBAX 6710.

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## ACCT-6260 (3) Seminar: Managerial Accounting

Explores cost management, especially as related to organizational decision making, planning, and control. Emphasizes case analysis and applications. Prereq., MBAC 6020 or equivalent, or instructor consent.

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## ACCT-6270 (3) Seminar: Income Determination

Critical analysis of problems and theory of measurement and reporting of periodic net income of business organizations. Net income models, research efforts, and role of professional accounting organizations. Current issues and problems given special attention. Prereq., ACCT 3230 or equivalent, or instructor consent.

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## ACCT-6350 (3) Current Issues in Professional Accounting

Examines the nature of accounting theory and practice from perspectives of economics, law, globalization, accounting, ethics, and moral reasoning. This course also explores issues including implications of institutional factors, such as Sarbanes-Oxley, SEC, FASB, IFRS, and capital markets. Counts as senior seminar for Concurrent degree students. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-6420 (3) Research and Writing in Income Taxation

Studies and applies the method used in tax research and tax planning, with the goal of developing tax research, technical writing, and tax planning skills. Topics include examining primary and secondary sources of federal tax law, evaluating the hierarchy of these sources, and developing technical writing skills using deductive legal reasoning. Prereq., ACCT 5440 or equivalent, or instructor consent. Prerequisites: Restricted to graduate students in Accounting, Finance, Mgt Sci-Information Systems, Organizational Management, Marketing, Business Administration, or Master of Business Administration.

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## ACCT-6430 (3) Taxation of Partnerships

Studies federal income taxation of pass-through entities such as those used by most small businesses in the U.S. Includes creation, operation, distributions, sale of interests, and liquidation. Prereq., ACCT 5440 or equivalent, or instructor consent. Coreqs., ACCT 6420 and 6700. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as LAWS 6167. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-6440 (2-3) Tax Policy

Offers a research seminar exploring policy issues of taxation including recent legislative proposals. Students prepare a publishable research paper on a tax policy topic agreed upon with the instructor. Prereq., ACCT 5440 or equivalent, or instructor consent. Coreqs., ACCT 6420 and 6700.

## ACCT-6450 (3) Taxation of Corporations

Studies federal income taxation related to taxable corporations, the entities through which a large part of the economic activity in the U.S. is conducted. Includes creation, operation, distributions, sale of interests, and liquidation. Prereq., ACCT 5440 or instructor consent. Coreqs., ACCT 6420 and 6700. Same as LAWS 6157. Prerequisites: Restricted to Business Administration, Accounting, Accounting-Taxation, Accounting-Information Systems, Mgt Sci-Information Systems, Finance, Marketing or Master of Business Admin graduate students only.

## ACCT-6490 (3) Taxation of Natural Resources

Concerned with tax problems encountered in acquisition, operation, and disposition of natural resource properties. Topics include depletion, lease bonuses, intangible drilling costs, depreciation, and financing arrangements. Prereqs., admission to the graduate tax program, ACCT 6700 or equivalent, or instructor consent.

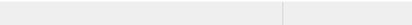
## ACCT-6500 (3) Special Topics in Taxation

Covers a diverse array of issues in taxation. Highlights areas of current interest and draws on the strengths of leading outside authorities as guest lecturers in various topic areas. Prereq., ACCT 6420 and 6700.

## ACCT-6620 (3) Advanced Auditing: Business Risk and Decision Analysis

Explores contemporary issues, historical developments, and selected topics pertinent to business assurance services by independent accountants. Emphasizes improving both the decision behavior of decision makers and the quality of information, or its context, for decision makers. Prereq., ACCT 5620 or equivalent.

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## ACCT-6700 (4) Income Taxation

Emphasizes the fundamentals of the federal income tax system and examines its impact on the individual. Prereq., ACCT 5440 or equivalent. Same as LAWS 6007. Prerequisites: Restricted to Accounting (ACCT), Accounting-Information Systems (ACIS), Accounting - Taxation (ACTX), Master of Business Admin (MBA) or Business Administration (BUAD) graduate students only.

## ACCT-6710 (3) Federal Estate and Gift Tax

Analyzes federal estate and gift taxation of inter vivos and testamentary transfers, introduces income taxation of estates and trusts, and involves elementary estate planning. Prereq., ACCT 5440 or equivalent. Coreqs., ACCT 6420 and 6700. Same as LAWS 7207. Prerequisites: Restricted to Accounting (ACCT), Accounting-Information Systems (ACIS), Accounting - Taxation (ACTX), Master of Business Admin (MBA) or Business Administration (BUAD) graduate students only.

## ACCT-6720 (2) Estate Planning

Discusses problems and solutions for owners of various-sized estates and different types of assets including jointly-held property, stock in closely-held corporations and farms, analysis of federal taxation of generation-skipping transfers in trust, postmortem estate planning, and drafting of trusts and wills. Prereq., ACCT 6710 or equivalent. Same as LAWS 7217.

## ACCT-6780 (3) International Taxation

Covers basic aspects of the United States taxation of income earned abroad by its citizens and the taxation income derived by foreign persons from U.S. sources, including the implications of income tax treaties. Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only. Same as LAWS 7617. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

## ACCT-6820 (1-3) Graduate Seminar

Experimental seminar offered irregularly to provide opportunity for investigation of new frontiers in accounting. Prereq. varies.

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## ACCT-6900 (1-6) Independent Study

Requires prior consent of instructor under whose direction study is taken. Departmental form required. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

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## ACCT-6940 (1) Master's Degree Candidacy

Departmental form required. Prerequisites: Restricted to Business graduate students only.

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## ACCT-6950 (1-4) Master's Thesis

Prerequisites: Restricted to Business graduate students only.

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## ACCT-7300 (3) Doctoral Seminar: Introduction to Accounting Research

Introduces students to seminal accounting research, covering a variety of topics and research methods. Provides students with instruction and experience in reading, critiquing and discussing accounting research. Provides a framework for understanding the financial reporting choice from both contracting and valuation perspectives.

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## ACCT-7320 (3) Doctoral Seminar: Accounting and Capital Markets I

One semester of a two-semester course in accounting-related capital markets and research, spanning topics such as: information intermediaries; earnings management; auditing and other monitoring mechanisms; efficient versus opportunistic accounting choice related to contracts between the firm and its stakeholders; cost of capital; and market efficiency with respect to accounting information. Papers covered apply primarily economics-based archival and empirical research methods. Prereq., ACCT 7300.

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## ACCT-7330 (3) Doctoral Seminar: Accounting and Capital Markets 2

The second semester of a two-semester course in accounting-related capital markets research. See ACCT 7320 for a description of the

course content which is allocated evenly between ACCT 7320 and 7330.

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## ACCT-7340 (3) Doctoral Seminar: Managerial Accounting Research

Survey of managerial accounting research, emphasizing a variety of methodologies including economics-based archival empirical and experimental approaches. Topics include: management performance measurement; management incentives; non-financial performance measures; management control systems; cost behavior and cost structure; intra-firm transfer pricing; inter-firm relations and knowledge sharing; risk preferences; risk taking and risk sharing; strategic performance measurement; agency theory; and budgetary slack and performance. Prereq., Acct 7300. Prerequisites: Restricted to Graduate Students only.

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## Courses

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ACCT

### ACCT-7800 (3) Doctoral Seminar: Accounting Theory

Follows the evolution of game-theoretic analytical research and application of analytical methods to topics including: accounting-based valuation, discretionary disclosure, stewardship role of accounting, insider trading and imperfect capital market models, signaling through accounting choice, deferred tax accounting, audit sampling, auditor rotation, and low balling. Describes implications of analytical results for primarily economics-based empirical research designs. Open only to doctoral students.

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### ACCT-7830 (3) Doctoral Seminar: Accounting Research

Designed to assist the doctoral student in integrating courses and fields of study in order to be able to apply knowledge and skills to problems in accounting. Special attention given to the development of thesis topics.

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### ACCT-8820 (1-6) Graduate Seminar

Provides opportunity for investigation of new frontiers in accounting through an experimental seminar. May be repeated up to 6 total credit hours. Prereq. varies. Offered irregularly.

[Leeds School of Business](#) | [Accounting](#)

### ACCT-8900 (1-3) Independent Study

Requires instructor's consent and departmental form (taught as doctoral seminar). Prerequisites: Restricted to Business graduate students only.

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## ACCT-8990 (1-10) Doctoral Thesis

Prerequisites: Restricted to Business graduate students only.

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# Courses

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AIRR

## AIRR-1010 (1) Foundations of the United States Air Force 1

One 1-hour lecture and one 2-hour lab per week. Introduces students to the U.S. Air Force and the USAF officer profession. Uses instructor lectures, films and videos, and group activities to examine Air Force issues, officership qualities, and military customs and courtesies. Emphasizes the communication skills necessary for an Air Force officer.

[Cross College Programs](#)
[Reserve Office Training Corp](#)
[Air Force Aerospace Studies](#)

## AIRR-1020 (1) Foundations of the United States Air Force 2

A continuation of AIRR 1010-1. One 1-hour lecture and one 2-hour lab per week.

[Cross College Programs](#)
[Reserve Office Training Corp](#)
[Air Force Aerospace Studies](#)

## AIRR-2010 (1) The Evolution of USAF Air and Space Power 1

One 1-hour lecture and one 2-hour lab per week. Studies air power from balloons and dirigibles through the jet age and historically reviews air power employment in military and nonmilitary operations in support of national objectives. Looks at the evolution of air power concepts and doctrine and introduces the development of communicative skills.

[Cross College Programs](#)
[Reserve Office Training Corp](#)
[Air Force Aerospace Studies](#)

## AIRR-2020 (1) The Evolution of USAF Air and Space Power 2

a continuation of Airr 2010. One 1-hour lecture and one 2-hour lab per week.

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[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Air Force Aerospace Studies](#)

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## AIRR-3010 (3) Air Force Leadership Studies I

Two 1 1/2-hour seminars plus one 2-hour lab per week. Provides an integrated management course emphasizing concepts and skills required by the successful manager and leader. Includes individual motivational and behavioral processes, leadership, communication, and group dynamics while providing foundation for the development of the junior officer's professional skills (officership). Emphasizes decision making and use of analytic aids in planning, organizing and controlling in a changing environment. Discusses organizational and personal values (ethics), management of change, organizational power, politics, managerial strategy, and tactics within the context of military organization. Uses actual Air Force case studies throughout the course to enhance the learning and communication process.

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## AIRR-3020 (3) Air Force Leadership Studies II

Two 1 1/2-hour seminars and one 2-hour lab per week. Continuation of AIRR 3010. Emphasizes basic managerial processes while employing group discussions, case studies, and role playing as learning devices. Continues to emphasize the development of communicative skills.

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[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Air Force Aerospace Studies](#)

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## AIRR-4010 (3) National Security Affairs/Preparation for Active Duty

Two 1 1/2-hour seminars and one 2-hour lab per week. Studies U.S. national security policy which examines the formulation, organization, and implementation of national security policy; context of national security; evolution of strategy; management of conflict; and civil-military interaction. Also includes blocks of instruction on the military profession/officership, the military justice system, and communicative skills. Provides future Air Force officers with the background of U.S. national security policy so they can effectively function in today's Air Force.

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[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Air Force Aerospace Studies](#)

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## AIRR-4020 (3) National Security Forces in Contemporary American Society 2

Two 1 1/2-hour seminars and one 2-hour lab per week. a continuation of AIRR 4010. Includes defense strategy conflict management, formulation/implementation of U.S. defense policy, and organizational factors and case studies in policy making, military law, uniform code of military justice, and communication skills.

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## Courses

Search by College, Department & Category

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All

Search by Course Number

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ANTH

### ANTH-1030 (3) Principles of Anthropology 1

Evolution of humanity and culture from beginnings through early metal ages. Covers human evolution, race, prehistory, and rise of early civilizations. This course is taught through Continuing Education. Meets MAPS requirements for social science: general.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-1040 (3) Principles of Anthropology 2

Surveys the world's major culture areas. Covers components of culture, such as subsistence, social organization, religion, and language. This course is taught through Continuing Education. Meets MAPS requirement for social science: general.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-1100 (3) Exploring a Non-Western Culture: The Tamils

Surveys the social and economic patterns, ideas and values, and aesthetic achievements of the Tamils, a Hindu people who live in South India and Sri Lanka. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-1105 (3) Exploring a Non-Western Culture: Tibet

Introduction to Tibetan culture, history, religion, and society from an anthropological perspective, including traditional as well as contemporary dimensions. Topics will include Tibetan Buddhism, politics, nomadism, gender, refugee issues, and the global Tibetan

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diaspora, all framed within the larger methods and concepts of cultural anthropology. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-1110 (3) Exploring a Non-Western Culture: Japan

Examines modern Japan in terms of cultural styles, social patterns, work practices, aesthetic traditions, ecological conditions, and historical events that shape it as both a non-Western culture and a modern industrial state. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-1115 (3) The Caribbean in Post-Colonial Perspective

Introduces the student to the varied peoples and cultures in the Caribbean region, emphasizing the historical, colonial, and contemporary political-economic contexts of their social structure and cultural patterns. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-1120 (3) Exploring a Non-Western Culture: Hopi and Navajo

Explores two American Indian cultures, Hopi and Navajo, and cultural interrelationships from the prehistoric through the contemporary period, using an integrated, holistic, and humanistic viewpoint. Same as ETHN 1123. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-1135 (3) Exploring a Non-Western Culture: TBA

Examines the geography, kinship, politics and religious values of a particular non-Western people in historical and contemporary context through an anthropological perspective. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-1140 (3) Exploring a Non-Western Culture: The Maya

Explores the culture of the Maya of Central America, emphasizing their material adaptations, social organizations, ideals and values, and artistic achievements in the past and the present. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Anthropology

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## ANTH-1145 (3) Exploring a Non-Western Culture: The Aztecs

Explores the culture of the Aztec people of Central Mexico: their subsistence, society, religion, and achievements, as well as the impact of the Aztec empire in Mesoamerica. Also reviews the clash of a non-western society with the western world with the arrival of the Spanish conquistadors. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Anthropology

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## ANTH-1150 (3) Exploring a Non-Western Culture: Regional Cultures of Africa

Explores a small number of cultures in a specific sub-region of Africa from an integrated holistic viewpoint, emphasizing material adaptations, social patterns, ideas and values, and aesthetic achievements. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Anthropology

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## ANTH-1160 (3) The Ancient Egyptian Civilization

Emphasizes the origin of the Egyptian culture, its importance, and its impact on other cultures. In addition, the different points of view of various scholars are discussed with a comparative study of the ancient Egyptian culture and modern culture of Egypt and the Middle East. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Anthropology

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## ANTH-1170 (3) Exploring Culture and Gender through Film

Uses films and written texts to explore the concepts of culture and gender, as well as ethnicity and race. By looking at gender, ethnicity, and race cross-culturally, students will know how these concepts are constructed in their own society, as well as in others. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Anthropology

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## ANTH-1180 (3) Maritime People: Fishers and Seafarers

Explores important milestones in the development of human societies and cultures that live from the sea. Emphasizes the evolution of maritime adaptations associated with fishing and seafaring from more than 10,000 years ago through the present. Approved for arts and

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sciences core curriculum: historical context.

College of Arts & Sciences Anthropology

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## ANTH-1190 (3) Origins of Ancient Civilizations

Examines origins of the world's first civilizations in Mesopotamia, Egypt, the Indus Valley, Mesoamerica, and the Andes. Covers archaeology of ancient cities, trade, economy, politics, warfare, religion, and ideology. Seeks insights into general processes of cultural evolution. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences Anthropology

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## ANTH-1200 (3) Culture and Power

Compares contemporary sociopolitical systems across cultures, from non-Western tribal groups to modern states. Introduces students to anthropological approaches for understanding and analyzing political forces, processes, and institutions that affect cultures such as colonialism, warfare, violence, ethnicity, migration, and globalization. Approved for arts and sciences CORE curriculum: contemporary societies.

College of Arts & Sciences Anthropology

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## ANTH-2009 (3) Modern Issues, Ancient Times.

Considers issues of vital importance to humans, both now and in ancient times. Topics such as food, death, sex, family, literacy, or power are explored to consider how ancient societal norms and attitudes evolved, and how they relate to modern culture. Draws on material and literary evidence to develop an understanding of the complexities of ancient life. Same as CLAS 2009. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences Anthropology

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## ANTH-2010 (3) Introduction to Physical Anthropology 1

Detailed consideration of human biology, the place of humans in the animal kingdom, primate ecology, and fossil evidence for human evolution. Credit not granted for this course and ANTH 2050. Required for ANTH majors. Meets MAPS requirement for natural science: non-lab. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Anthropology

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## ANTH-2020 (3) Introduction to Physical Anthropology 2

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Continuation of ANTH 2010. Emphasizes genetics, human variation, and microevolution. Prereq., ANTH 2010. Credit not granted for this course and ANTH 2060. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Anthropology

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## ANTH-2030 (1) Laboratory in Physical Anthropology 1

Lab in human osteology and musculoskeletal system emphasizing comparative primate morphology, adaptation, and the fossil record documenting the natural history of primates. Coreq., ANTH 2010. Meets MAPS requirement for natural science: lab, when taken with ANTH 2010. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Anthropology

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## ANTH-2040 (1) Laboratory in Physical Anthropology 2

Experiments and hands-on exercises designed to enhance understanding of the principles and concepts presented in ANTH 2020. One two-hour class per week. Coreq., ANTH 2020. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences Anthropology

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## ANTH-2070 (3) Bones, Bodies, and Disease

Studies the human skeleton and introduces techniques used to evaluate demographic variables. Applies techniques through evaluation of photographic images of an excellently preserved mummified skeletal population from ancient Nubia to reconstruct prehistoric patterns of adaptation and biocultural evolution. Offered through Continuing Education only. Recommended prereq., ANTH 2010.

College of Arts & Sciences Anthropology

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## ANTH-2100 (3) Frontiers of Cultural Anthropology

Covers current theories in cultural anthropology and discusses the nature of field work. Explores major schools of thought and ethnographic fieldwork in a range of cultures studied by anthropologists. Required for ANTH majors.

College of Arts & Sciences Anthropology

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## ANTH-2200 (3) Introduction to Archaeology

Discusses history, basic concepts, techniques, and theoretical construction of archaeological field and laboratory investigations, as well as a general outline of world prehistory. Required for ANTH majors.

## ANTH-2210 (1) Laboratory Course in Archaeological Methods

Studies analytical methods in archaeological research including those employed both in the field and in the laboratory. Deals with practical exercises illustrating many of the theoretical principles covered in ANTH 2200. Coreq., ANTH 2200.

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# Courses

Search by College, Department & Category

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ANTH

## ANTH-3000 (3) Primate Behavior

Surveys naturalistic primate behavior. Emphasizes social behavior, behavioral ecology, and evolution as they lead to an understanding of human behavior. Restricted to students with 57-180 credits (Junior or Senior). Prereqs., ANTH 2010 or EBIO 1210. Approved for arts and sciences core curriculum: natural science. Prerequisites: Requires pre-requisite course of ANTH 2010 or EBIO 1210. Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Anthropology](#)

## ANTH-3010 (3) The Human Animal

Identifies genetic, anatomical, physiological, social, and behavioral characteristics humans share with other mammals and primates. Explores how these characteristics are influenced by modern culture. Prereq., ANTH 2010 or equivalent. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#) [Anthropology](#)

## ANTH-3100 (3) Africa: Peoples and Societies in Change

Examines culture and politics in Africa through works by anthropologists and historians, as well as novels, films, and journalistic accounts. Special attention is devoted to the ways in which various African cultures have creatively and resiliently responded to the slave trade, European colonialism, and post-colonialism.

[College of Arts & Sciences](#) [Anthropology](#)

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## ANTH-3110 (3) Ethnography of Mexico and Central America

A broad overview, focusing on Mexico and Guatemala. Major topics include ethnohistory, indigenous and mestizo peoples, and contemporary problems and issues. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-3160 (3) Peoples of the South Pacific

Surveys traditional island cultures and contemporary changes in the Pacific, focusing on how the Pacific Islands were first settled, some of the great anthropologists who studied the islanders, and how current environmental changes, such as global warming, threaten the future existence of the islands. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-3170 (3) America: An Anthropological Perspective

Historical and contemporary aspects of American life are considered from an anthropological perspective. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences Anthropology

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## ANTH-3180 (3) Gender, Culture, and Sexuality

Focuses on gender, that is, the making of men and women, and how gender is culturally constructed in different societies. Gender describes many areas of behavior, feelings, thoughts, and fantasies that cannot be understood as primarily biologically produced. Sexuality and sexual systems are sometimes viewed as products of particular gendering practices, but recent theories suggest that sexual systems themselves constitute gender. Prereq., ANTH 2100. Similar to WMST 2080.

College of Arts & Sciences Anthropology

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## ANTH-3218 (3) Peoples and Cultures of West Africa

Deals with the history and anthropology of selected west African societies in the period before the imposition of European colonial rule. Same as HIST 3218.

College of Arts & Sciences Anthropology

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## ANTH-3300 (3) Elements of Religion

Explores universal components of religion, as inferred from religions of the world, ranging from smaller-scale oral to larger-scale literate traditions. Restricted to sophomores/juniors/seniors. Same as ETHN 3301. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4000 (3) Quantitative Methods in Anthropology

Surveys ways of deriving meaning from anthropological data by numerical means, including but not confined to basic statistical procedures. Prereqs., ANTH 2010 and 2020. Same as ANTH 5000. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4020 (3) Explorations in Anthropology

Special topics in cultural and physical anthropology, as well as archaeology. Check with the department for semester offerings. May be repeated up to 9 total credit hours. Restricted to Junior or Senior Anthropology Majors only. Same as ANTH 5020. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4045 (3) Introduction to Museum Anthropology

This courses traces the development of Anthropology and museums in America from late 19th century to present day. Students are encouraged to: explore museum theory and practice; think critically about the history of relations among Native Americans, Anthropology, and museums; consider the legacy of collecting and challenges of representing others; and, examine the interplay of Anthropology, material culture, and colonialism. ANTH 4045, ANTH 5045, and MUSM 5045 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4050 (3) Anthropology of Jews and Judaism

Explores topics in Jewish anthropology. Course will use the lens of anthropological inquiry to explore, discover and analyze different concepts within Jewish culture. Topics explored will include customs, religious practices, languages, ethnic and regional subdivisions, occupations, social composition, and folklore. Courses will explore fundamental questions about the definition of Jewish identity, practices and communities. May be repeated up to 9 total credit hours. Restricted to students with 57-180 credits (Junior or Senior). ANTH 4050 and JWST 4050 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4060 (3) Nutrition and Anthropology

Overview of the evolution of human diet and ecological and cultural factors shaping modern diets. Introduces fundamentals of nutrition and analysis of nutritional status. Analyzes ecological, social, and cultural factors leading to hunger and undernutrition, as well as biological and behavioral consequences of undernutrition. Prereqs., ANTH 2010 and 2020, or EBIO 1210 and 1220, or EBIO 1030 and 1040. Same as ANTH 5060. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## ANTH-4070 (3) Methods in Biological Anthropology

Provides laboratory-based research experience in selected areas of biological anthropology. Research designs, methods and applications will be used to develop research skills. Students will read original research papers and carry out a research project of their own design. Area of emphasis within biological anthropology will depend on instructor. May be repeated up to 6 total credit hours. Prereqs., ANTH 2010 and 2020. Recommended prereqs., ANTH 2030, 2040, and 4000. Restricted to juniors/seniors. Same as ANTH 5070.

## ANTH-4110 (3) Human Evolutionary Biology

Detailed consideration of the fossil evidence for human evolution. Covers the discovery of important fossils and interpretations; descriptive information about the fossils; and data and theory from Pleistocene studies relating to ecology, ecological and behavioral data on modern apes, and molecular studies that have bearing on the study of human evolution. Restricted to students with 57-180 credits (Junior or Senior). Prereqs., ANTH 2010 or 2020, or EBIO 1210 or 1220. Same as ANTH 5110. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4120 (3) Advanced Physical Anthropology

Selected topics in physical anthropology emphasizing faculty specialties. Topics may include population genetics and its application to understanding modern human diversity, human population biology, and primate ecology and evolution. May be repeated up to 6 total credit hours. Prereq., ANTH 2010 or 2020, or EBIO 1210 or 1220. Same as ANTH 5120. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## ANTH-4129 (3) Aegean Art and Archaeology

A detailed study of the cultures of prehistoric Greece, the Cycladic Islands, and Crete, their art and archaeology, and their history within the broader context of the eastern Mediterranean, from earliest human settlement to the collapse of the Bronze Age at about 1100 B.C.E. Emphasis is on palace states. Same as ARTH/CLAS 4129, ANTH 5129.

## ANTH-4130 (3) Advanced Osteology

Detailed study of the human skeleton with special attention to health and demographic conditions in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. Prereqs., ANTH 2010, 2020, and 4000. Restricted to juniors and seniors. Same as ANTH 5130.

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College of Arts & Sciences Anthropology

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## ANTH-4150 (3) Human Ecology: Biological Aspects

Discusses role of human populations in local ecosystems, factors affecting population growth, and human adaptability to environmental stress. Detailed consideration of case studies of small-scale societies in different ecosystems. Prereqs., ANTH 2010 and 2020, or EBIO 1210 and 1220. Same as ANTH 5150.

College of Arts & Sciences Anthropology

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## ANTH-4170 (3) Primate Evolutionary Biology

Focuses on the fossil record of nonhominoid primates. Special emphasis placed on delineating the origins of the order Primates, the origins of the primate semiorders Strepsirhini and Haplorhini, and the adaptations of extinct primates in light of our understanding of the modern primate adaptive radiations. Prereqs., ANTH 2010 or EBIO 1210. Same as ANTH 5170. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4180 (3) Anthropological Perspectives: Contemporary Issues

Students read, discuss, and write critical evaluations of contemporary publications in anthropology. Identifies basic themes that inform major anthropological perspectives. Students then bring these perspectives to bear on issues currently facing the human species. May be repeated up to 6 total credit hours. Restricted to junior or senior Anthropology majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4210 (3) Southwestern Archaeology

Explores the prehistory of the American Southwest from the earliest entry of humans into the area to the Spanish entrada. Focuses on important themes in cultural development: the adoption of agricultural strategies, sedentism, population aggregation, population movement, and social complexity. Prereq., ANTH 2200. Same as ANTH 5210.

College of Arts & Sciences Anthropology

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## ANTH-4220 (3) From Olmec to Aztec: The Archaeology of Mexico

Examines the archaeology of Mexico from the initial peopling of the Americas to the Spanish conquest of the Aztec empire. Studies origins of complex societies; ancient Mexican cities, states, and empires; religion and politics; trade and interaction; ecology and economy; and social organization. Prereq., ANTH 2200. Restricted to juniors or seniors. Same as ANTH 5220. Prerequisites: Restricted

to students with 57-180 credits (Junior or Senior).

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## ANTH-4224 (3) Archaeology of the Maya and Their Neighbors

Begins with the environment and describes the earliest inhabitants and the Olmec civilization, then shifts to the earliest Maya and the emergence and collapse of classic Maya civilization. Compares and contrasts the societies of lower Central America. Prereq., ANTH2200. Same as ANTH 5224. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## Courses

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ANTH

### ANTH-4240 (3) Geoarchaeology

Applies geological principles and instruments to help solve archaeological problems. The focus is on site formation processes, soils, stratigraphy, environments, dating, remote sensing, and geophysical exploration. Environmental and ethical considerations are included. Prereq., ANTH 2200. Same as ANTH 5240. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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### ANTH-4270 (3) Plains Archaeology

Archaeological evidence for Native American ways of life on the North American Great Plains from the initial peopling of the region into the 19th century. Restricted to students with 57-180 credits (Junior or Senior). Prereq., ANTH 2200. Same as ANTH 5270. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-4330 (3) Human Ecology: Archaeological Aspects

Surveys archaeological approaches to ecology, economy, and landscape: glaciation, geomorphology, and other physical processes creating and affecting sites and regions; environmental reconstruction; theories of human-environment interaction; landscape formation by forager, agricultural, and complex societies; and ideologically structured landscapes. Prereq., ANTH 2200. Restricted to sophomores, juniors and seniors. Same as ANTH 5330. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-4340 (3) Archaeological Method and Theory

Surveys archaeological theories and methods within the context of the history of archaeology. Includes archaeological approaches to data

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recovery, analysis, and interpretation as well as an overview of cultural resources management and ethical issues in contemporary archaeology. Prereq., ANTH 2200. Restricted to juniors and seniors.

College of Arts & Sciences Anthropology

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## ANTH-4350 (2-6) Archaeological Field and Laboratory Research

Students participate in archaeological field research or conduct laboratory analysis of archaeological materials and data. Students work with faculty on archaeological research projects with a field or lab focus, depending on the project undertaken. May be repeated up to 6 total credit hours. Prereq., ANTH 2200. Restricted to juniors/seniors. Same as ANTH 5350.

College of Arts & Sciences Anthropology

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## ANTH-4380 (3) Lithic Analysis and Replication

Uses diversity of approaches to the analysis of ancient stone tools, including fracture mechanics, lithic technology, materials, heat treatment, and functional analysis. Percussion and pressure-flaking experiments are performed. Prereq., ANTH 2200. Same as ANTH 5380. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4390 (3) Research Methods in Archaeology I

Method and theory of archaeology, emphasizing the interpretation of materials and data and the relationship of archaeology to other disciplines. Prereq., ANTH 2200 and instructor consent. Same as ANTH 5390. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4420 (3) Archaeology of Ancient Egypt

Archaeology of ancient Egypt in light of recent excavations; the history of excavations of the different sites; and the art of ancient Egypt through time. Restricted to juniors and seniors. Same as ANTH 5420.

College of Arts & Sciences Anthropology

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## ANTH-4430 (3) Biblical Archaeology

Old Testament history in the light of archaeological investigation; the Old Testament within the framework of the literature of the ancient near East. Same as ANTH 5430.

College of Arts & Sciences Anthropology

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## ANTH-4440 (3) Egyptian Hieroglyphics 1

Studies the ancient Egyptian language to shed light on the history and cultures of ancient Egypt. Involves reading and translating hieroglyphics into the English language. Same as ANTH 5440.

College of Arts & Sciences Anthropology

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## ANTH-4500 (3) Cross-Cultural Aspects of Socioeconomic Development

Examines goals of international agencies that support development in underdeveloped countries. Anthropological perspective is provided for such issues as urban planning, health care and delivery, population control, rural development, and land reform. Same as ANTH 5500. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4505 (3) Globalization and Transnational Culture

Covers the historical foundations for contemporary global change, addressing colonialism, global outsourcing, and cultural imperialism, with a particular emphasis on gender, class, and consumerism. Prereq., ANTH 2100.

College of Arts & Sciences Anthropology

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## ANTH-4510 (3) Applied Cultural Anthropology

Analysis of problems of cultural change due to contacts between people of different cultures. Restricted to senior ANTH or ETHN majors. Same as ETHN 4521 and ANTH 5510.

College of Arts & Sciences Anthropology

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## ANTH-4520 (3) Symbolic Anthropology

Explores anthropological approaches to the study of symbolic systems, including cosmology, myth, religion, ritual, and art, as well as everyday patterns of metaphor and the presentation of self. Theoretical issues include semiotics, psychoanalysis, structuralism, liminality, and critical theory. Prereq., ANTH 2100 or instructor consent. Same as ANTH 5520.

College of Arts & Sciences Anthropology

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## ANTH-4530 (3) Theoretical Foundations of Sociocultural Anthropology

Critically examines the pivotal schools of 20th century social theory that have shaped modern sociocultural anthropology, including the ideas of cultural evolutionism, Marxism, Durkheim, Weber, Freud, structuralism, postmodernism, and contemporary anthropological approaches. Includes primary readings and seminar-style discussion. Prereq., ANTH 2100 or instructor consent. Same as ANTH 5530. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4540 (3) Hunters and Gatherers

Explores hunter-gatherer ways of life and the ways in which anthropologists have thought about those ways of life, using lectures, discussion, the professional literature, and film. Topics covered include the history of hunter-gatherer research, relations between this research and archaeological studies of the human past, critiques of classic hunter-gatherer studies, and the current status of hunting and gathering peoples. Prereqs., ANTH 2010, 2020, 2100 and 2200.

College of Arts & Sciences Anthropology

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## ANTH-4560 (3) North American Indian Acculturation

Comprehensive survey of changes in the native cultures of America north of Mexico caused by occupation of the continent by Old World populations, including a review of processes of contact, environmental changes, changes in major institutions, the nature of federal/state administration, the reservation system, and contemporary developments. Restricted to senior ANTH or ETHN majors. Same as ETHN 4563 and ANTH 5560. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Anthropology

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## ANTH-4570 (3) Anthropology of Fishing

Examines fishing methods, peoples, societies, and cultures, emphasizing anthropology's role in shaping fisheries management and development policy. Same as ANTH 5570. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4580 (3) The Holocaust: An Anthropological Perspective

Focuses on the Holocaust during the Third Reich, which involved the murder of millions of people, including six million Jews. Reviews the Holocaust's history, dynamics, and consequences as well as other genocides of the 20th century, using an anthropological approach. Restricted to juniors/seniors. Same as JWST 4580. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4610 (3) Medical Anthropology

Cultural factors determine states of health and illness in both Western and non-Western societies. The transition from traditional to modern status creates new problems including population growth, aging, changing patterns of morbidity, mortality and health care, and new socioeconomic consequences. Restricted to students with 57-180 credits (Junior or Senior). Prereq., ANTH 2100. Same as ANTH 5610. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4620 (3) Nationalism and Cultural Citizenship

Explores the nature of ethnic conflict, nationalism, and cultural citizenship in different contexts, including the United States. Is the nation-state dead? What effect do extranational and transnational organizations/institutions (e.g., European Union) have on the development of nationalism? Through the exploration of contemporary theory and case studies, this class will address these important contemporary concerns. Prereq., ANTH 2100.

College of Arts & Sciences Anthropology

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## ANTH-4630 (3) Nomadic Peoples of East Africa

Examines the issues of current concern in the study of East African pastoral peoples. The first half of the course is devoted to historical perspectives and the second half explores the transition from subsistence to market oriented economies. Restricted to junior and senior ANTH majors. Same as ANTH 5630.

College of Arts & Sciences Anthropology

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## ANTH-4690 (3-6) Anthropology of Tibet

Explores the culture of Tibet in both historical and thematic manners, considering the long-term development of Tibetan cultural practices and institutions as well as many of the abrupt changes introduced to Tibet in the 20th century. Topics covered include region, politics, gender, warfare, poetry and literature, and life under Chinese rule and as refugees around the world. Prereq., ANTH 2100. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Anthropology (ANTH) majors only.

College of Arts & Sciences Anthropology

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## ANTH-4710 (3) Departmental Honors in Anthropology 1

Course work built around theme of research design as a means of integrating previous training in the field of anthropology as well as providing an opportunity to perform creative scientific investigations. The course prepares students to write an honors thesis in ANTH 4720. Required of students doing Anthropology departmental honors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Anthropology

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# ANTH-4720 (3) Departmental Honors in Anthropology 2

Continuation of ANTH 4710. Prereq., ANTH 4710.

[College of Arts & Sciences](#) [Anthropology](#)

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# Courses

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ANTH

## ANTH-4730 (3) Latin American Politics and Culture through Film and Text

Introduces students to the political cultures and societies of Latin America. Through historical and ethnographic text, and documentary and non-documentary cinema, this course will explore class relations, ideology, and resistance from the conquest to the present.

Restricted to students with 57-180 credits (Junior or Senior). Prereq., ANTH 2100. Same as ANTH 5730. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Anthropology](#)

## ANTH-4740 (3) Peoples and Cultures of Brazil

Thematically surveys theoretical and ethnographic issues that have been important in understanding Brazil. Read and write critically about textual and visual representations of Brazil presented in the course. Prereq., ANTH 2100; three or more cultural anthropology courses recommended.

[College of Arts & Sciences](#) [Anthropology](#)

## ANTH-4750 (3) Culture and Society in South Asia

Intensive analysis of major issues in anthropological research on South Asia (India, Pakistan, Bangladesh, Nepal, and Sri Lanka), including kinship, gender, marriage, caste system, religion and ritual, ethnic conflict, and social change. Prereq., ANTH 2100 or instructor consent. Same as ANTH 5750.

[College of Arts & Sciences](#) [Anthropology](#)

## ANTH-4760 (3) Ethnography of Southeast Asia and Indonesia

Introduces the historical, political, and cultural dimensions of Southeast Asia, focusing primarily on Malaysia, the Philippines, Singapore, and Indonesia, with some coverage of mainland Southeast Asia. Prereq., ANTH 2100. Restricted to juniors or seniors. Same as ANTH 5760. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Anthropology

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## ANTH-4770 (3) Anthropology of Tourism

Introduces students to anthropological theories on tourism and considers those theories in the contexts of the varied sites and forms of tourism practiced around the world today. We will ask: why do people tour? Where do they go? And most centrally: How do the hosts to tourism feel about these outside visitors? Having been exposed to questions of globalization, development, belonging, race, gender, and desire, students will then be asked to reflect upon and theorize their own touristic experiences. Recommended prereq., ANTH 2100.

College of Arts & Sciences Anthropology

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## ANTH-4800 (3) Language and Culture

Same as LING 4800.

College of Arts & Sciences Anthropology

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## ANTH-4840 (1-6) Independent Study

For upper-division undergraduate students. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Anthropology

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## ANTH-4910 (1-3) Teaching Anthropology

Practicum by special arrangement only. Students learn to teach anthropology by serving as recitation leaders or tutors in introductory courses or as small group leaders in advanced courses. May be repeated up to 6 total credit hours. Prereq., instructor consent.

Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Anthropology

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## ANTH-4930 (1-6) Anthropology Internship

Provides academically supervised opportunities for junior and senior anthropology majors and graduate students to work in public and private sectors on projects related to students' career goals. Relates classroom theory to practice. Requires at least 48 hours on the job per credit hour and evidence (paper, employer evaluation, work journal) of significant learning. May be repeated up to 9 total credit hours. Prereqs., ANTH 2010, 2100, and 2200, junior standing, anthropology major with a minimum 3.25 GPA, and departmental consent. Same

as ANTH 5930.

College of Arts & Sciences Anthropology

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## ANTH-5000 (3) Quantitative Methods in Anthropology

Same as ANTH 4000. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5020 (3) Explorations in Anthropology

Same as ANTH 4020. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5045 (3) Introduction to Museum Anthropology

This courses traces the development of Anthropology and museums in America from late 19th century to present day. Students are encouraged to: explore museum theory and practice; think critically about the history of relations among Native Americans, Anthropology, and museums; consider the legacy of collecting and challenges of representing others; and, examine the interplay of Anthropology, material culture, and colonialism. ANTH 4045, ANTH 5045, and MUSM 5045 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5060 (3) Nutrition and Anthropology

Same as ANTH 4060. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5070 (3) Methods in Biological Anthropology

May be repeated up to 6 total credit hours. Same as ANTH 4070.

College of Arts & Sciences Anthropology

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## ANTH-5110 (3) Human Evolutionary Biology

Same as ANTH 4110.

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College of Arts & Sciences Anthropology

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## ANTH-5120 (3) Advanced Physical Anthropology

Same as ANTH 4120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5129 (3) Aegean Art and Archaeology

Same as ANTH 4129.

College of Arts & Sciences Anthropology

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## ANTH-5130 (3) Advanced Osteology

Same as ANTH 4130.

College of Arts & Sciences Anthropology

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## ANTH-5150 (3) Human Ecology: Biological Aspects

Same as ANTH 4150.

College of Arts & Sciences Anthropology

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## ANTH-5170 (3) Primate Evolutionary Biology

Same as ANTH 4170.

College of Arts & Sciences Anthropology

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## ANTH-5210 (3) Southwestern Archaeology

Same as ANTH 4210.

College of Arts & Sciences Anthropology

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## ANTH-5220 (3) From Olmec to Aztec: The Archaeology of Mexico

Same as ANTH 4220. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5224 (3) Archaeology of the Maya and Their Neighbors

Same as ANTH 4224. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5240 (3) Geoarchaeology

Same as ANTH 4240. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5270 (3) Plains Archaeology

Same as ANTH 4270.

College of Arts & Sciences Anthropology

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ANTH

## ANTH-5330 (3) Human Ecology: Archaeological Aspects

Same as ANTH 4330. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

## ANTH-5345 (3) Archaeological Theory

Provides an advanced historical introduction to archaeological theory and methods. Designed to help students understand why certain issues have been and are important to the development of archaeology, especially American archaeology. Explores issues within the context of the history of anthropology and American society as a whole. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

## ANTH-5350 (2-6) Archaeological Field and Laboratory Research

Same as ANTH 4350.

College of Arts & Sciences Anthropology

## ANTH-5380 (3) Lithic Analysis and Replication

Same as ANTH 4380. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5390 (3) Research Methods in Archaeology 1

Same as ANTH 4390. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5400 (3) Research Methods in Archaeology 2

Focuses on the design of research including constructing empirical arguments and testing them, data gathering, site formation processes, field strategies (archival resources, mapping, field survey, surface collecting/recording, excavation and preliminary analysis) and artifact analysis as it relates to research design.

College of Arts & Sciences Anthropology

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## ANTH-5420 (3) Archaeology of Ancient Egypt

Same as ANTH 4420.

College of Arts & Sciences Anthropology

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## ANTH-5430 (3) Biblical Archaeology

Same as ANTH 4430.

College of Arts & Sciences Anthropology

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## ANTH-5440 (3) Egyptian Hieroglyphics 1

Same as ANTH 4440. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5460 (3) Archaeology and Contemporary Society

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5500 (3) Cross-Cultural Aspects of Socioeconomic Development

Same as ANTH 4500. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5510 (3) Applied Cultural Anthropology

Same as ANTH 4510.

College of Arts & Sciences Anthropology

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## ANTH-5520 (3) Symbolic Anthropology

Same as ANTH 4520.

College of Arts & Sciences Anthropology

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## ANTH-5530 (3) Theoretical Foundations of Sociocultural Anthropology

Same as ANTH 4530. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5560 (3) North American Indian Acculturation

Same as ANTH 4560.

College of Arts & Sciences Anthropology

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## ANTH-5570 (3) Anthropology of Fishing

Same as ANTH 4570. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5600 (3) Human Ecology: Cultural Aspects

Reviews and critically examines the major theoretical perspectives for understanding the relationship between human social behavior and the environment developed in the social sciences, especially anthropology, over the last 100 years.

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College of Arts & Sciences Anthropology

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## ANTH-5610 (3) Medical Anthropology

Same as ANTH 4610.

College of Arts & Sciences Anthropology

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## ANTH-5630 (3) Nomadic Peoples of East Africa

Same as ANTH 4630.

College of Arts & Sciences Anthropology

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## ANTH-5730 (3) Latin American Politics and Culture through Film and Text

Same as ANTH 4730.

College of Arts & Sciences Anthropology

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## ANTH-5750 (3) Culture and Society in South Asia

Same as ANTH 4750.

College of Arts & Sciences Anthropology

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## ANTH-5760 (3) Ethnography of Southeast Asia and Indonesia

Same as ANTH 4760. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-5770 (3) Core Course---Archaeology

Provides a graduate-level overview of analytic issues relevant to all phases of archaeological research and of the diversity of theoretical perspectives within the field as a whole. Course is required for all first-year graduate students in anthropology. Prereq., graduate status in anthropology. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences Anthropology

## ANTH-5780 (3) Core Course-Cultural Anthropology

Provides an intense, graduate-level introduction to the discipline of cultural anthropology, with an emphasis upon critically assessing those methods, theories, and works that have shaped the field from the 19th century to the present time. Required of all first-year graduate students in anthropology. Restricted to anthropology graduate students or instructor consent. Prerequisites: Restricted to Graduate Students only.

## ANTH-5785 (3) Advanced Seminar in Cultural Anthropology

Details the history of theory and practice in contemporary cultural anthropology, considering the development of major theoretical schools of thought and the integration of general social theory within anthropology. Required of masters students in cultural anthropology. Restricted to ANTH graduate students or instructor consent. Prerequisites: Restricted to Anthropology graduate students only.



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### ANTH-5790 (3) Core Course---Biological Anthropology

Discusses how biological anthropologists use evidence and concepts from evolutionary theory, human biology, and ecology to understand the evolution, diversification, and adaptation of human populations. Required of all first-year graduate students in anthropology. Prereq., graduate status in anthropology. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-5795 (3) Proseminar in Anthropology

Introduces incoming first-year graduate students to the history and current state of scholarship in anthropology from across the subdisciplines, through introduction to the research of individual faculty in the department. Required of all incoming graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-5840 (1-6) Guided Study

Directed individual research based on a specific area of specialization. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Anthropology](#)

### ANTH-5930 (1-6) Anthropology Internship

Same as ANTH 4930.

College of Arts & Sciences Anthropology

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## ANTH-6150 (3) Critical and Theoretical Issues in Museums

Investigates key problems facing museum institutions and studies the staging and representation of historical knowledge, the ethics of collecting and display, the changing nature and uses of historical evidence, and relations between curatorial practice, collecting, and field work. Critically examines different approaches to museums and museology in various disciplines, both past and present. Prereq., MUSM 5011 or instructor consent. Same as MUSM 6150, HIST 6150, and ARTH 6150. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-6320 (3) Linguistic Anthropology

Serves as an advanced introduction to the empirical and theoretical foundations of contemporary linguistic anthropology, with special emphasis on the ways in which culture and society emerge semiotically through language and discourse. Same as LING 6320. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-6940 (1) Master's Candidate for Degree

College of Arts & Sciences Anthropology

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## ANTH-6950 (1-6) Master's Thesis

College of Arts & Sciences Anthropology

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## ANTH-7000 (3) Seminar: Current Research Topics in Cultural Anthropology

Discusses current research and theoretical issues in the field of cultural anthropology. May be repeated up to 6 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-7010 (3) Seminar: Contemporary Theory in Cultural Anthropology

Addresses current theoretical perspectives in cultural anthropology and controversies surrounding them. Discusses science, history, interpretation, and postmodernism. Includes the relationship between theory and method as well as the production of ethnography. May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-7020 (3) Seminar: Physical Anthropology

In-depth discussion of selected topics in physical anthropology with emphasis on recent research. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-7030 (3) Seminar: Archaeology

Intensive examination of selected theoretical or methodological topics in archaeology. Topics vary with current research emphasis. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Anthropology

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## ANTH-7140 (3) Seminar: Archaeology of Selected Areas

Considers archaeology of a specified area, either geographical or topical. Areas selected in accordance with current research interests. May be repeated upto 9 total credit hours.

College of Arts & Sciences Anthropology

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## ANTH-7300 (3) Seminar: Research Methods in Cultural Anthropology

May be repeated up to 6 total credit hours.

College of Arts & Sciences Anthropology

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## ANTH-7620 (3) Seminar: Ethnography and Cultural Theory

Explores how ethnographic writing has evolved over the past century to incorporate different forms of cross-cultural representation and to accommodate new theoretical paradigms. Includes ethnographic authority and reflexivity, as well as embedded theories and blurred genres of cultural research.

College of Arts & Sciences Anthropology

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## ANTH-7840 (1-6) Independent Research

Research aimed at developing a solution to an originally conceived research problem. May be repeated up to 6 total credit hours.

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## ANTH-8990 (1-10) Doctoral Dissertation

All doctoral students must register for no fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the graduate school section.

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APPM

## APPM-1340 (3) Calculus 1 with Algebra, Part A

Studies selected topics in analytical geometry and calculus: rates of change of functions, limits, derivatives and their applications. APPM 1340-1345 together are equivalent to APPM 1350. The sequence APPM 1340-1345 is specifically designed for students whose manipulative skills in the techniques of high school algebra and precalculus may be inadequate for APPM 1350. Prereqs., 2 years high school algebra, 1 year geometry, 1 semester trigonometry. Credit not granted for this course and MATH 1150.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-1345 (3) Calculus 1 with Algebra, Part B

Continuation of APPM 1340. Studies selected topics in calculus: derivatives and their applications, integration, differentiation and integration of transcendental functions. Algebraic and trigonometric topics are studied throughout, as needed. Prereq., APPM 1340. Credit not granted for this course and APPM 1350 or MATH 1300.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-1350 (4) Calculus 1 for Engineers

Topics in analytical geometry and calculus including limits, rates of change of functions, derivatives and integrals of algebraic and transcendental functions, applications of differentiations and integration. Prereqs., 2 years high school algebra, 1 year geometry, and 1/2 year trigonometry; or approval by faculty advisor. Credit not granted for this course and MATH 1080, 1081, 1090, 1100, 1300, 1310, APPM 1345, or ECON 1088. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

[College of Arts & Sciences](#) [Applied Mathematics](#)

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## APPM-1360 (4) Calculus 2 for Engineers

Continuation of APPM 1350. Focuses on applications of the definite integral, methods of integration, improper integrals, Taylor's theorem, and infinite series. Prereqs., APPM 1350 or MATH 1300 (min. grade C-). Credit not granted for this course and MATH 2300.

College of Arts & Sciences Applied Mathematics

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## APPM-1710 (3) Tools and Methods for Engineering Computing

Designed for students with little or no programming background. Students learn procedural and object-oriented programming through development of games, simulations, and animations using Flash/ActionScript, VB/Excel, Java, MATLAB, and real-world applications. Activities are oriented toward smaller projects that address topics in beginning science, engineering, and mathematics courses. Students gain practical, applicable skills. Same as ATLS 1710.

College of Arts & Sciences Applied Mathematics

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## APPM-1720 (3) Programming and Simulation Development

Students learn to plan, develop, and test applications (games, simulations, and animations) that embody mathematical formulations of problems in areas such as transportation, nutrition, and alternative energy. Prereq., APPM 1710 or knowledge of an object-oriented programming language. Same as ATLS 1720.

College of Arts & Sciences Applied Mathematics

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## APPM-2350 (4) Calculus 3 for Engineers

Covers multivariable calculus, vector analysis, and theorems of Gauss, Green, and Stokes. Prereq., APPM 1360 or MATH 2300 (min. grade C-). Credit not granted for this course and MATH 2400.

College of Arts & Sciences Applied Mathematics

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## APPM-2360 (4) Introduction to Differential Equations with Linear Algebra

Introduces ordinary differential equations, systems of linear equations, matrices, determinants, vector spaces, linear transformations, and systems of linear differential equations. Prereq., APPM 1360 or MATH 2300 (min. grade C-). Credit not granted for this course and both MATH 3130 and 4430.

College of Arts & Sciences Applied Mathematics

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## APPM-2450 (1) Calculus 3 Computer Lab

Selected topics in analytic geometry and calculus with a focus on symbolic computation using Mathematica or Matlab. Coreq., APPM 2350.

College of Arts & Sciences Applied Mathematics

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## APPM-2460 (1) Differential Equations Computer Lab

Selected topics in differential equations and linear algebra with a focus on symbolic computation using Mathematica or Matlab. Coreq., APPM 2360.

College of Arts & Sciences Applied Mathematics

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## APPM-2750 (4) Java: Training and Mathematical Algorithms

Preparatory course for Java programming. Provides necessary background for Java language: basic object-oriented concepts, analysis, and design. Learn to create Java applets and applications, create graphic context, and identify the key features of Java foundation classes as well as other Java-related technology. Material is taught in the context of mathematical algorithms from calculus. Prereqs., APPM 1350 and programming experience. Recommended prereq., APPM 1360.

College of Arts & Sciences Applied Mathematics

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## APPM-3010 (3) An Introduction to Nonlinear Systems: Chaos

Both majors and minors in the physical sciences are introduced to classes of tools useful in the analysis of nonlinear systems. Prereqs., APPM 1360 and 2360.

College of Arts & Sciences Applied Mathematics

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## APPM-3050 (3) Scientific Computing in Matlab

Topics covered include: approximations in computing, computer arithmetic, interpolation, matrix computations, nonlinear equations, optimization, and initial-value problems with emphasis on the computational cost, efficiency, and accuracy of algorithms. The problem sets are application-oriented with examples taken from orbital mechanics, physics, genetics, and fluid dynamics. Prereqs., APPM 1360 and 2360.

College of Arts & Sciences Applied Mathematics

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## APPM-3170 (3) Discrete Applied Mathematics

Emphasizes selected applications of graph theory to computer science, engineering, operations research, social sciences, and biology. Topics include the basic properties of graphs and diagraphs, and their matrix representations. Relates graph properties to applications such as scheduling, architecture of parallel processors, gray codes, traveling salesman problems, and assignment problems. Coreq., APPM 2350 or 2360 and some knowledge of matrix algebra.

College of Arts & Sciences Applied Mathematics

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## APPM-3310 (3) Matrix Methods and Applications

Introduces linear algebra and matrices, with an emphasis on applications, including methods to solve systems of linear algebraic and linear ordinary differential equations. Discusses vector space concepts, decomposition theorems, and eigenvalue problems. Credit not granted for this course and MATH 3130. Prereq., APPM 2350.

College of Arts & Sciences Applied Mathematics

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## APPM-3350 (3) Advanced Engineering Calculus

Extends the treatment of engineering mathematics beyond the topics covered in Calculus 3 and differential equations. Topics include non-dimensionalization, elementary asymptotics and perturbation theory, Reynold's transport theorem and extensions of Leibnitz's rule, as applied to continuum conservation equations, Hamiltonian formulations, Legendre and Laplace transforms, special functions and their orthogonality properties. Prereq., APPM 2350 and 2360 or equivalent.

College of Arts & Sciences Applied Mathematics

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## APPM-3570 (3) Applied Probability

Studies axioms, counting formulas, conditional probability, independence, random variables, continuous and discrete distribution, expectation, moment generating functions, law of large numbers, central limit theorem, Poisson process, and multivariate Gaussian distribution. Prereq., APPM 2350 or MATH 2400. Credit not granted for this course and ECEN 3810 or MATH 4510.

College of Arts & Sciences Applied Mathematics

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## APPM-4120 (3) Introduction to Operations Research

Studies linear and nonlinear programming, the simplex method, duality, sensitivity, transportation and network flow problems, some constrained and unconstrained optimization theory, and the Kuhn-Tucker conditions, as time permits. Prereqs., APPM 3310 or MATH 3130. Same as APPM 5120 and MATH 4120.

College of Arts & Sciences Applied Mathematics

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## APPM-4350 (3) Methods in Applied Mathematics: Fourier Series and Boundary Value Problems

Reviews ordinary differential equations, including solutions by Fourier series. Physical derivation of the classical linear partial differential equations (heat, wave, and Laplace equations). Solution of these equations via separation of variables, with Fourier series, Fourier integrals, and more general eigenfunction expansions. Prereqs., APPM 2350 and 2360 (min. grade C-). Coreq., APPM 3310. Same as APPM 5350.

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## APPM-4360 (3) Methods in Applied Mathematics: Complex Variables and Applications

Introduces methods of complex variables, contour integration, and theory of residues. Applications include solving partial differential equations by transform methods, Fourier and Laplace transforms, and Reimann-Hilbert boundary-value problems, conformal mapping to ideal fluid flow and/or electrostatics. Prereqs., APPM 2350 and 2360, or 3310 (min. grade C-) or instructor consent. Same as APPM 5360.

College of Arts & Sciences Applied Mathematics

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## APPM-4380 (3) Modeling in Applied Mathematics

An exposition of a variety of mathematical models arising in the physical and biological sciences. Students' modeling projects are presented in class. Topics may include: GPS navigation, medical imaging, ocean waves, and computerized facial recognition. Prereqs., APPM 2350 and 2360. Recommended prereqs., APPM 3310, 4350 and 4650. Same as APPM 5380.

College of Arts & Sciences Applied Mathematics

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## APPM-4390 (3) Modeling in Mathematical Biology

Investigates how complex systems in biology can be studied using applied mathematics. Examines several case studies which include topics from microbiology, enzyme reaction kinetics, neuroscience, ecology, epidemiology, physiology, and bioengineering. Coreq., APPM 4350 or instructor consent. Same as APPM 5390.

College of Arts & Sciences Applied Mathematics

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## APPM-4440 (3) Undergraduate Applied Analysis 1

Provides a rigorous treatment of topics covered in Calculus 1 and 2. Topics include convergent sequences; continuous functions; differentiable functions; Darboux sums, Riemann sums, and integration; Taylor and power series and sequences of functions. Prereq., APPM 2350 and 2360 or equivalent. Coreq., APPM 3310.

## APPM-4450 (3) Undergraduate Applied Analysis 2

Continuation of APPM 4440. Study of multidimensional analysis including n-dimensional Euclidean space, continuity and uniform continuity of functions of several variables, differentiation, linear and nonlinear approximation, inverse function and implicit function theorems, and a short introduction to metric spaces. Prereqs., APPM 2350, 2360, and 4440.

## APPM-4520 (3) Introduction to Mathematical Statistics

Examines point and confidence interval estimation. Principles of maximum likelihood, sufficiency, and completeness; tests of simple and composite hypotheses, linear models, and multiple regression analysis. Analyzes variance distribution-free methods. Prereq., MATH 4510 or APPM 3570. Same as APPM 5520 and MATH 4520.



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APPM

## APPM-4540 (3) Introduction to Time Series

Single and multivariable regression, forecasting using regression models, time series models, and modeling with MA, AR, ARMA, and ARIMA models, forecasting with time series models, and spectral analysis. Prereqs., APPM 3570 or MATH 4510, and APPM 4520 or MATH 4520. Same as APPM 5540 and MATH 4540.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-4560 (3) Markov Processes, Queues, and Monte Carlo Simulations

Brief review of conditional probability and expectation followed by a study of Markov chains, both discrete and continuous time. Queuing theory, terminology, and single queue systems are studied with some introduction to networks of queues. Uses Monte Carlo simulation of random variables throughout the semester to gain insight into the processes under study. Prereq., APPM 3570 or equivalent. Same as APPM 5560.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-4570 (3) Statistical Methods

Covers discrete and continuous probability laws, random variables; expectations; laws of large numbers and central limit theorem; estimation, testing hypothesis, analysis of variance, regression analysis, and nonparametric methods. Emphasizes applications with an introduction to packaged computer programs. Prereq., APPM 1360 or equivalent Calculus 2 course. Same as APPM 5570.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-4580 (3) Statistical Applications: Software and Methods

Combines statistical methods with practical applications and computer software. Develops commonly used statistical models such as analysis of variance as well as linear and logistic regression. The statistical models are implemented and interpreted in the context of actual data sets using available statistical software. Continuation of APPM 4570. Prereq., APPM 4570 or any course in statistics. Same as APPM 5580.

College of Arts & Sciences Applied Mathematics

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## APPM-4650 (3) Intermediate Numerical Analysis 1

Focuses on numerical solution of nonlinear equations, interpolation, methods in numerical integration, numerical solution of linear systems, and matrix eigenvalue problems. Stresses significant computer applications and software. Prereqs., APPM 3310 or MATH 3130, and knowledge of a programming language. Same as MATH 4650.

College of Arts & Sciences Applied Mathematics

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## APPM-4660 (3) Intermediate Numerical Analysis 2

Continuation of APPM 4650. Examines numerical solution of initial-value problems and two-point boundary-value problems for ordinary differential equations. Also looks at numerical methods for solving partial differential equations. Prereq., APPM 4650 and knowledge of a programming language. Same as MATH 4660.

College of Arts & Sciences Applied Mathematics

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## APPM-4720 (1-3) Open Topics in Applied Mathematics

Provides a vehicle for the development and presentation of new topics that may be incorporated into the core courses in applied mathematics. May be repeated up to 6 total credit hours. Prereqs., variable, depending on the topic. See instructor. Same as APPM 5720.

College of Arts & Sciences Applied Mathematics

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## APPM-4840 (1-3) Reading and Research in Applied Mathematics

Introduces undergraduate students to the research foci of the Department of Applied Mathematics. May be repeated up to 9 total credit hours. Prereq., APPM 3310 or MATH 3130. Recommended prereq., a course in ordinary or partial differential equations.

College of Arts & Sciences Applied Mathematics

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## APPM-4950 (1-3) Seminar in Applied Mathematics

Introduces undergraduate students to the research foci of the program in applied mathematics. It is also designed to be a capstone experience for the program's majors. May be repeated up to 6 total credit hours. Prereq., APPM 3310 or MATH 3130. Recommended prereq., course in ordinary or partial differential equations. Similar to APPM 4955.

College of Arts & Sciences Applied Mathematics

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## APPM-5040 (1-2) Calculus Applications for High School Teachers

A fast-paced, intensive calculus course designed for high school mathematics teachers. Provides a deeper understanding of fundamental calculus concepts and an introduction to technological tools, including computer software used in the analysis of real-world problems. Offered through Continuing Education only. Prereqs., APPM 1350 and 1360. Recommended prereqs., APPM 2350 and 2360.

College of Arts & Sciences Applied Mathematics

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## APPM-5050 (1-2) Discrete Math for K--12 Teachers

An intensive study of selected topics in discrete math, including Boolean algebra, inductive proofs, discrete probability, election theory and fair division, graph theory, and recursion. Focus on applications and technological tools to increase understanding. Offered through Continuing Education only. Prereq., one undergrad probability course. Recommended prereq., APPM 3310 or MATH 3130.

College of Arts & Sciences Applied Mathematics

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## APPM-5120 (3) Introduction to Operations Research

Same as APPM 4120 and MATH 5120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5350 (3) Methods in Applied Mathematics: Fourier Series and Boundary Value Problems

Restricted to graduate students. Same as APPM 4350. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5360 (3) Methods in Applied Mathematics: Complex Variables and Applications

Prereq., graduate status in engineering or arts and sciences, or instructor consent. Same as APPM 4360. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences Applied Mathematics

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## APPM-5380 (3) Modeling in Applied Mathematics

Same as APPM 4380. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5390 (3) Modeling in Mathematical Biology

Same as APPM 4390. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5430 (3) Methods in Applied Mathematics: Applications of Complex Variables

Reviews basic ideas of complex analysis, including solutions of ODEs and PDEs of physical interest via complex analysis; conformal mapping, including Schwarz-Christoffel transformations and generalizations; computational methods; Riemann-Hilbert problems; and topics in asymptotic methods. Prereq., APPM 4360 or 5360, or instructor consent.

College of Arts & Sciences Applied Mathematics

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## APPM-5440 (3) Applied Analysis 1

Discusses the elements of basic real and complex analysis, Banach spaces,  $L_p$  spaces, and many relevant inequalities. Includes applications of existence and uniqueness of solutions to various types of ordinary differential equations, partial differential equations, and integral equations. Prereqs., APPM 4440 and 4450 or equivalent, or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5450 (3) Applied Analysis 2

Continuation of APPM 5440. Prereq., APPM 5440 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5460 (3) Methods in Applied Mathematics: Dynamical Systems and

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## Differential Equations

Introduces the theory and applications of dynamical systems through solutions to differential equations. Covers existence and uniqueness theory, local stability properties, qualitative analysis, global phase portraits, perturbation theory, and bifurcation theory. Special topics may include Melnikov methods, averaging methods, bifurcations to chaos, and Hamiltonian systems. Prereqs., undergraduate courses equivalent to APPM 2360, 3310, and 4440.

College of Arts & Sciences Applied Mathematics

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## APPM-5470 (3) Methods of Applied Mathematics: Partial Differential and Integral Equations

Studies properties and solutions of partial differential equations. Covers methods of characteristics, well-posedness, wave, heat and Laplace equations, Green's functions, and related integral equations. Prereqs., APPM 4350 and 4360, or MATH 4430, or equivalent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5480 (3) Methods of Applied Mathematics: Approximation Methods

Covers asymptotic evaluation of integrals (stationary phase and steepest descent), perturbation methods (regular and singular methods, and inner and outer expansions), multiple scale methods, and applications to differential and integral equations. Prereq., APPM 5470 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5520 (3) Introduction to Mathematical Statistics

Prereq., one semester calculus-based probability course, such as MATH 4510 or APPM 3570. Same as APPM 4520 and MATH 5520. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5540 (3) Introduction to Time Series

Same as APPM 4540 and MATH 5540. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-5560 (3) Markov Processes, Queues, and Monte Carlo Simulations

Prereq., APPM 3570 or equivalent. Same as APPM 4560. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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# Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

APPM

## APPM-5570 (3) Statistical Methods

Same as APPM 4570. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-5580 (3) Statistical Applications: Software and Methods

Continuation of APPM 5570. Prereq., one semester of statistics. Same as APPM 4580. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-5600 (3) Numerical Analysis 1

Solution of nonlinear algebraic equations, interpolation, integration, approximation, and numerical linear algebra. Prereq., APPM 3310 or MATH 3130, and experience with a scientific programming language. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Applied Mathematics](#)

## APPM-5610 (3) Numerical Analysis 2

Numerical linear algebra, eigenvalue problems, optimization problems, and ordinary and partial differential equations. Prereq., APPM 5600 or MATH 5600. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Applied Mathematics](#)

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## APPM-5720 (1-3) Open Topics in Applied Mathematics

Same as APPM 4720.

College of Arts & Sciences Applied Mathematics

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## APPM-6470 (3) Advanced Partial Differential Equations

Continuation of APPM 5470. Advanced study of the properties and solutions of elliptic, parabolic, and hyperbolic partial differential equations. Topics include the study of Sobolev spaces and variational methods as they relate to PDEs, and other topics as time permits. Prereq., APPM 5470. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-6520 (3) Mathematical Statistics

Emphasizes mathematical theory of statistics. Topics include distribution theory, estimation and testing of hypotheses, multivariate analysis, and nonparametric inference, all with emphasis on theory. Prereq., APPM 5520 or MATH 5520.

College of Arts & Sciences Applied Mathematics

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## APPM-6550 (3) Introduction to Stochastic Processes

Systematic study of Markov chains and some of the simpler Markov processes including renewal theory, limit theorems for Markov chains, branching processes, queuing theory, birth and death processes, and Brownian motion. Applications to physical and biological sciences. Prereqs., MATH 4001, MATH 4510 or APPM 3570, or APPM 4560, or instructor consent. Same as MATH 6550.

College of Arts & Sciences Applied Mathematics

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## APPM-6610 (3) Introduction to Numerical Partial Differential Equations

Covers finite difference, finite element, finite volume, pseudo-spectral, and spectral methods for elliptic, parabolic, and hyperbolic partial differential equations. Prereq., APPM 5600. Recommended prereq., APPM 5610 or graduate numerical linear algebra. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-6640 (3) Multigrid Methods

Develops a fundamental understanding of the principles and techniques of the multigrid methodology, which is a widely used numerical approach for solving many problems in such diverse areas as aerodynamics, astrophysics, chemistry, electromagnetics, hydrology, medical imaging, meteorology/oceanography, quantum mechanics, and statistical physics.

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College of Arts & Sciences Applied Mathematics

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## APPM-6900 (1-6) Independent Study

Introduces graduate students to research foci of the Department of Applied Mathematics. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-6940 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-6950 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-7100 (3) Mathematical Methods in Dynamical Systems

Covers dynamical systems defined by mappings and differential equations. Hamiltonian mechanics, action-angle variables, results from KAM and bifurcation theory, phase plane analysis, Melnikov theory, strange attractors, chaos, etc. Prereq., APPM 5460. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-7300 (3) Nonlinear Waves and Integrable Equations

Includes basic results associated with linear dispersive wave systems, first-order nonlinear wave equations, nonlinear dispersive wave equations, solitons, and the methods of the inverse scattering transform. Prereqs., APPM 5470--5480, PHYS 5210, or instructor consent.

College of Arts & Sciences Applied Mathematics

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## APPM-7400 (1-3) Topics in Applied Mathematics

Provides a vehicle for the development and presentation of new topics with the potential of being incorporated into the core courses in applied mathematics. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate

Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-7900 (1-3) Independent Study

Introduces graduate students to research foci of the Department of Applied Mathematics. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-8000 (1) Colloquium in Applied Mathematics

Introduces graduate students to the major research foci of the Department of Applied Mathematics. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-8100 (1) Seminar in Dynamical Systems

Introduces advanced topics and research in dynamical systems. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-8300 (1-3) PDE and Analysis Seminar

Introduces the core methods in the analysis of nonlinear partial differential and integral equations or systems to graduate students. Provides a vehicle for the development, presentation, and corporative research of new topics in PDE and analysis. Prereq., APPM 5440. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-8600 (1) Seminar in Computational Mathematics

Introduces advanced topics and research in computational mathematics. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Applied Mathematics

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## APPM-8990 (1-10) Doctoral Dissertation

All doctoral students must register for no fewer than 30 hours of dissertation credit as part of the requirements for the degree. No more

than 10 credit hours may be taken in any one semester. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Applied Mathematics](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject    Number**

ARAB

## ARAB-1010 (5) Beginning Arabic 1

Introduces students to speaking, listening, reading, and writing skills in the standard means of communication in the Arab world. This course is proficiency-based. All activities within the course are aimed at placing the student in the context of the native-speaking environment from the very beginning.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Arabic](#)

## ARAB-1011 (3) Introduction to Arab and Islamic Civilizations

Provides an interdisciplinary overview of the cultures of the Arabic-speaking peoples of Southwest Asia and North Africa from the rise of Islam in the 7th century to the present. Readings include historical, religious, literary and cultural texts from both the medieval and modern eras. Taught in English. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Arabic](#)

## ARAB-1020 (5) Beginning Arabic 2

Continuation of ARAB 1010. Prereq., ARAB 1010 (min grade C) or placement.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Arabic](#)

## ARAB-2110 (3) Intermediate Arabic 1

Proficiency-based course emphasizes speaking, listening, reading, and writing. Covers a variety of topics. Students give classroom

presentations and write short essays in Arabic. Speaking ability is assessed through an oral proficiency interview. Prereq., ARAB 1020 (min grade C), or placement. Meets MAPS requirement for foreign language.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## ARAB-2120 (3) Second Year Arabic 2

Continuation of ARAB 2110. Prereq., ARAB 2110 (min grade C) or placement.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## ARAB-3110 (3) Advanced Arabic I

Designed to train students further in the four language skills (writing, speaking, reading, listening/comprehension) at an advanced level. Enables students to acquire a better and broader understanding of Arabic culture and texts drawn from various genres of Arabic letters. Prereq., ARAB 2120 (min. grade C). Formerly ARAB 3010.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## ARAB-3120 (3) Advanced Arabic II: Issues in Arabic Language and Culture for Business

Continues training in the four language skills (writing, speaking, reading, listening/comprehension) at an advanced level. Enables students to acquire a better and broader understanding of Arabic culture and texts drawn from various genres of Arabic letters. Prereq., ARAB 3010 or 3110 (min. grade C). Formerly ARAB 3020.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## ARAB-3230 (3) Islamic Culture and the Iberian Peninsula

Examines Islamic, especially Arab, culture and history as it relates to the Iberian Peninsula from 92 Ah/711 Ce to the present. Taught in English. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## ARAB-3330 (3) The Arabic Novel

Focusing on the origins and development of the novel genre in the Arabic tradition, this course examines both the aesthetic qualities of the genre as an artistic form and the ways that it has depicted and intervened in the modern social, political, and cultural upheavals that have shaped the Arab world in the 20th century. Authors include Najib Mahfuz, Abd al Rahman Munif, Hanan al-Shaykh, and Ghassan

Kanafani. Taught in English.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

## ARAB-3340 (3) Representing Islam

Explores the cultural politics of representations of the Arab and Islamic worlds both with an emphasis on literary representations of the Islamic world in travel narratives and novels from both the West and the Arab world. Examines historical, anthropological, and visual texts to consider how Islam has been narrated in colonial European imaginings about the Islamic world as well as contemporary representations.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

## ARAB-4250 (3) Arabic Media

Designed to provide students with advanced Arabic language skills for use in the media. By negotiating authentic materials in Arabic, students will gain a perspective on global issues in the Arab and Islamic world and will attain a better awareness of Arab and Islamic culture. Prereq., three years of Arabic or equivalent, or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

## ARAB-4840 (1-3) Independent Study

Departmental approval required. May be repeated up to 7 total credit hours.

College of Arts & Sciences East Asian Languages & Civilizations Arabic

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## Courses

Search by College, Department & Category

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**Subject**   **Number**

ARCH

### ARCH-3114 (3) History and Theories of Architecture 1

Surveys architecture, landscape architecture, and urban design from 3000 B.C. to A.D. 1400, emphasizing developments in the Western world. Prereqs., ENVD 2130, 3003, 3004. Coreqs., ENVD 3100, 3115. Prerequisites: Restricted to College of Architecture and Planning or College of Engineering and Applied Sciences majors only.

[College of Architecture & Planning](#) [Architecture](#)

### ARCH-3214 (3) History and Theories of Architecture 2

Surveys architecture, landscape architecture, and urban design from A.D. 1400 to the present, emphasizing developments in the Western world. Open to nonmajors on a space available basis. Prerequisites: Restricted to College of Architecture and Planning or College of Engineering and Applied Sciences majors only.

[College of Architecture & Planning](#) [Architecture](#)

### ARCH-4010 (3) Architectural Appreciation and Design

Introduces basic processes and principles of architectural design. Provides a basis for understanding and evaluating architecture. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Architectural Engineering (AREN) majors only.

[College of Architecture & Planning](#) [Architecture](#)



# Courses

Search by College, Department & Category

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**Subject    Number**

AREN

## AREN-1027 (3) Engineering Drawing

Introduces engineering drawing including sections and dimensioning, print readings, and computer 3D modeling. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) Engineering Physics (EPEN), Architectural Engineering (AREN) or Civil Engineering (CVEN) majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Miscellaneous](#)

## AREN-1037 (3) Building Information Modeling

Learn to develop and communicate physical information using three-dimensional graphical systems including Computer-Aided Design (CAD) and Building Information Models (BIM). Learn to dimension and scale physical systems and interpret scaled drawings. Get experience with industry standard software tools (REVIT) used to produce design and construction documents, and apply BIM and CAD tools in a project producing scaled 3-D drawings.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Miscellaneous](#)

## AREN-1316 (2) Introduction to Architectural Engineering

Surveys the broad subject of architectural engineering and professional practices. Includes professional design services, design documents, methods of construction delivery, materials for construction, codes and standards, life safety, professional ethics, structural systems, mechanical systems, electrical systems, and building systems integration. Prerequisites: Restricted to students with 0-56 (Freshmen or Sophomore) College of Engineering majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Miscellaneous](#)

## AREN-2050 (3) Engineering Systems for Buildings

Provides an overview of the building mechanical and electrical systems, including HVAC, plumbing, solar, power distribution, illumination, life safety, transportation, and noise control systems. Emphasizes sustainable (green) building practices. Includes a team investigation of existing commercial building. Prereqs., AREN 1027 and 2406. Prerequisites: Restricted to Architectural or Civil Engineering majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

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## AREN-2110 (3) Thermodynamics

Explores fundamental principles of thermodynamics, including first and second law of thermodynamics, thermophysical properties, power and refrigeration cycles, gas mixtures and psychrometrics. Computing in the context of engineering problems is introduced. Prereq., PHYS 1110. Coreq., APPM 1360. Prerequisites: Restricted to Architectural, Civil, or Environmental Engineering majors or Civil/Environmental Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

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## AREN-2120 (3) Fluid Mechanics and Heat Transfer

Explores fundamental principles of fluid dynamics and heat transfer. Topics include fluid statics, momentum, and energy conservation, laminar and turbulent viscous flow, convection heat transfer, conduction heat transfer, heat exchangers, and heat transfer. Prereqs., APPM 2350 and AREN 2110. Coreq., APPM 2360.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

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## AREN-2406 (3) Introduction to Building Construction

Covers the broad subject of building materials, assembly details, and their method of construction. Includes codes and classifications, foundations, wood, steel, concrete, masonry, cladding, doors and windows, interiors, and finishes. Formerly AREN 3406. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) Architectural Engineering (AREN) majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Construction](#)

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## AREN-3010 (3) Mechanical Systems for Buildings

Lecture course on the analysis and design of buildings and their systems to satisfy the requirements for a comfortable and healthy indoor environment. Examines psychrometrics, thermal comfort, building heating and cooling loads, fluid flow basics, and HVAC components and systems. Prereqs., AREN 2120 (or MCEN 3021 & 3022) and AREN 2110 (or GEEN 3852, or MCEN 3012, or ASEN 2002) and AREN 2050. Restricted to Architectural or Civil Engineering majors only. Prerequisites: Requires pre-requisite courses of AREN 2120 (or MCEN 3021 & 3022) and AREN 2110 (or GEEN 3852, or MCEN 3012, or ASEN 2002) and AREN 2050. Restricted to Architectural or Civil Engineering majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

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## AREN-3050 (3) Environmental Systems for Buildings 1

Introduces the operation and design of building systems for climate control, water and drainage, life safety, electrical supply, illumination, transportation (elevators and escalators), and noise control. For non-engineering majors. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Architecture and Planning majors only.

College of Engineering & Applied Science   Civil Engineering   Building Systems Engineering

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## AREN-3060 (3) Environmental Systems for Buildings 2

Continues the operation and design of building systems for climate control, water and drainage, life safety, electrical supply, illumination, transportation (elevators and escalators), and noise control. For non-engineering majors.

College of Engineering & Applied Science   Civil Engineering   Building Systems Engineering

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## AREN-3130 (3) Building Energy Laboratory

Laboratory course offering both hands-on experience with building and renewable energy systems and exposing students to the fundamentals of measurements, instrumentation, data acquisition, and statistical data analysis. Measurements and experiments will allow evaluation of building construction material, electrical equipment, lighting systems, heating and cooling systems, and solar energy devices, among others. Prereq., AREN 3010.

College of Engineering & Applied Science   Civil Engineering   Building Systems Engineering

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## AREN-3140 (3) Illumination Laboratory

Introduces the measurement of photometric and psychophysical quantities used in lighting. Experience is acquired in using light measurement instruments to evaluate lighting equipment and luminous environments. Prereq., AREN 3540.

College of Engineering & Applied Science   Civil Engineering   Building Systems Engineering

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## AREN-3540 (3) Illumination I

Studies the fundamentals of architectural illumination. Introduces and applies basic principles and vocabulary to elementary problems in the lighting of environments for the performance of visual work and the proper interaction with architecture. Prereq., GEEN 1300. Prerequisites: Requires pre-requisite course of GEEN 1300 (minimum grade C-).

College of Engineering & Applied Science   Civil Engineering   Building Systems Engineering

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## AREN-4010 (3) HVAC System Modeling and Control

Engineering course devoted to building automation and control systems. Topics include HVAC control technology and strategies, measurement and device technologies, analysis and modeling of dynamic systems, simulation of conventional and advanced control

approaches, assessment of control loop performance, and hands-on direct digital control (DDC) programming exercises as used in current building control practice. Prereq., AREN 4110. Same as CVEN 5010.

College of Engineering & Applied Science Civil Engineering Building Systems Engineering

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## AREN-4035 (3) Architectural Structures 1

Analyzes basic structural systems. Covers principles of mechanics and mechanical properties of materials and analysis and design of trusses, arches, and cable structures. For nonengineering students; does not apply toward an engineering degree. Prereq., PHYS1110, and APPM 1350 or MATH 1300. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Architecture and Planning majors only.

College of Engineering & Applied Science Civil Engineering Structures

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## AREN-4045 (3) Architectural Structures 2

Analyzes basic structural systems. Covers principles of mechanics as applied to the design of flexural members, columns, continuous beams, and rigid frames. For nonengineering students; does not apply toward an engineering degree. Prereq., AREN 4035.

College of Engineering & Applied Science Civil Engineering Structures

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## AREN-4110 (3) HVAC Design 1

Applies engineering principles to the design of heating, ventilating, and air conditioning (HVAC) systems for buildings. Covers HVAC systems description, load estimating, applied psychometrics, coils and heat exchangers, air and water distribution systems, and primary equipment and systems. Prereq., AREN 3010. Same as CVEN 5110.

College of Engineering & Applied Science Civil Engineering Building Systems Engineering

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## AREN-4315 (3) Design of Masonry Structures

Covers modern masonry construction; properties and behavior of the reinforced masonry component materials, clay and concrete masonry units, mortar, grout, and steel reinforcement; vertical and lateral load types and intensities; and design of reinforced masonry walls, beams, and columns by working stress and strength design methods. Prereq., CVEN 3525.

College of Engineering & Applied Science Civil Engineering Structures

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## AREN-4317 (4) Architectural Engineering Design

Provides a capstone experience to AREN students. Students design a modest commercial building and complete an integrated engineering design of the building systems executed for the conceptual, schematic, and design development phases. Students' teams

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work on structural, mechanical, electrical/lighting, and construction engineering management design. Each stage produce a professional-quality design document. Faculty and industry mentors participate in the teaching and evaluation of designs. Prereqs., AREN 2406, 3010, CVEN 3246, 3525, and AREN 3540. Coreq., AREN 4570.

College of Engineering & Applied Science | Civil Engineering | Miscellaneous

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## AREN-4420 (3) Cost Engineering

Focuses on conceptual cost estimating and evaluation techniques to support engineering design. Topics include assemblies estimating, probabilistic estimating, value engineering, constructability concepts, and life-cycle costing. Prereq., CVEN 3246.

College of Engineering & Applied Science | Civil Engineering | Construction

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## AREN-4466 (3) Construction Planning and Scheduling

Comprehensively studies project management activities for scheduling and delivering construction projects, including the contractor's role in preconstruction and construction activities and the application of CPM/PERT techniques to the planning, scheduling, and control of a construction project. Prereq., CVEN 3246. Restricted to Architectural or Civil Engineering majors only. Prerequisites: Restricted to Architectural or Civil Engineering majors only.

College of Engineering & Applied Science | Civil Engineering | Construction

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## AREN-4540 (3) Exterior Lighting Systems

Engages students in exploring and solving lighting problems for exterior environments. Provides an understanding of the design criteria and lighting equipment used in three primary exterior applications: parking lots and roadways, floodlighting of buildings, and sports facilities. Prereq., AREN 3540. Recommended prereqs., AREN 3140 and 4550. Same as CVEN 5540. Taught intermittently.

College of Engineering & Applied Science | Civil Engineering | Building Systems Engineering

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## AREN-4550 (3) Illumination 2

Applies the principles studied in Illumination 1. Provides further study in architectural lighting design methods. Uses lighting studio work to develop a broad knowledge of lighting equipment, design methods, and their application in a series of practical design problems in modern buildings. Prereq., AREN 3540. Prerequisites: Requires pre-requisite course of AREN 3540 (minimum grade C-).

College of Engineering & Applied Science | Civil Engineering | Building Systems Engineering

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## AREN-4560 (3) Luminous Radiative Transfer

Teaches fundamentals of radiative exchange as applied to illumination engineering. Describes and uses principal numerical techniques for radiative transfer analysis. Applies techniques to lighting design and analysis. Prereq., AREN 3540. Taught inermittently.

## AREN-4570 (3) Building Electrical Systems Design 1

Introduces the generation and distribution of electrical power. Focuses on understanding the loads, control, and protection of secondary electrical distribution systems in building. Applies the national electric code to residential and commercial buildings. Prereq., ECEN 3030.



# Courses

Search by College, Department & Category

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AREN

## AREN-4580 (3) Daylighting

Applies the fundamental principles of illumination engineering to architectural daylighting design, exploring the quantitative methods and tools used to develop daylighting designs and evaluate their performance. Topics include solar and sky modeling, luminous radiative transfer, design methods, and controls for integration with electric lighting systems. Prereq., AREN 3540.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

## AREN-4590 (3) Computer Graphics in Lighting Engineering

Studies the numerical methods and computer implementation of computer graphics visualization for architectural lighting engineering and design. Implements finite element radiative transfer and ray-tracing in computer programs. Studies the use of computer graphics visualization in lighting analysis. Prereq., AREN 3540 and 4560.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems Engineering](#)

## AREN-4830 (1-3) Special Topics for Seniors/Grads.

Supervised study of special topics of interest to students under instructor guidance. May be repeated up to 12 total credit hours. Prereq., instructor consent required.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Special Topics](#)

## AREN-4836 (1-3) Special Topics For Seniors/Grads

Supervised study of special topics of interest to students under instructor guidance. Prereq., instructor consent.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Special Topics](#)

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## AREN-4837 (3) Special Topics for Seniors/Grads

Supervised study of special topics of interest to students under instructor guidance. Prereq., instructor consent.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Special Topics](#)

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## AREN-4849 (1-3) Independent Study

Offers an independent, in-depth study, research, or design in a selected area of architectural engineering. Offerings are coordinated with individual faculty. Students should consult the Department of Civil, Environmental, and Architectural Engineering. Numbered AREN 4840 through AREN 4849.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Special Topics](#)

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# Courses

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ARSC

## ARSC-1000 (3-4) Expository Writing

Develops college-level reading, writing, and thinking. Students are asked to read critically, then construct written responses that are revised and crafted into more formal essays and position papers. Offered through the Student Academic Services Center. Prereq., program coordinator consent required.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Writing](#)

## ARSC-1080 (4) College Writing and Research

Introduces academic and professional genres through the research and inquiry process. Students practice close reading, oral presentation, drafting, synthesis, analysis and research skills in discussion, writing workshops, and one-on-one conferences. Meets MAPS requirement for English. Approved for arts and sciences CORE curriculum: written communication.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Writing](#)

## ARSC-1081 (1) SASC Coseminar: College Writing and Research

One-credit seminar provides extended instruction in written composition for students enrolled in ARSC 1080. Graded assignments enrich students' understanding of genre, organization, research skills, and grammar. Coreq., ARSC 1080.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Writing](#)

## ARSC-1150 (3) Writing in Arts and Sciences

Emphasizes the development of effective writing skills with instruction provided in expository and analytical writing. Reviews basic elements of grammar, syntax, and composition as needed. Meets MAPS requirement for English. May be repeated up to 6 total credit hours. Approved for arts and sciences CORE curriculum: written communication.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Writing](#)

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## ARSC-1200 (1-3) Topics in Arts and Sciences

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Special Curricula](#)

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## ARSC-1400 (1) MASP Coseminar: Chemistry 1 & 2

Supplements and strengthens student experiences in chemistry. Allows particularly gifted students an opportunity to extend their understanding of the subject and to explore possible careers in science. May be repeated up to 2 total credit hours.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Miramontes Arts & Sciences Pgr](#)

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## ARSC-1420 (1) MASP Coseminar: Introduction to EEB

Designed to supplement and strengthen student experiences in EBIO 1210 and 1220. Allows particularly gifted students an opportunity to extend their understanding of the subject and possible careers in science. May be repeated up to 2 total credit hours.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Miramontes Arts & Sciences Pgr](#)

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## ARSC-1432 (1) MASP Coseminar: Economics

Designed to supplement and strengthen student experiences in microeconomics. Allows particularly gifted students an opportunity to extend their understanding of the subject and to explore possible careers in social science. May be repeated up to 2 total credit hours.

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## ARSC-1440 (1) MASP Coseminar: Mathematics

Offers an unusual and essential opportunity for students to receive small-group enrichment and reinforcement. Supplements and strengthens student experiences in mathematics, allowing particularly gifted students an opportunity to extend their understanding of the subject in a supportive environment, and to explore possible careers in science. May be repeated up to 2 total credit hours.

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## ARSC-1460 (1) MASP Coseminar: Introduction to Mcd Biology

Supplements and strengthens student experiences in MCDB 1150 and 2150. Allows particularly gifted students an opportunity to extend their understanding of the subject and to explore possible careers in science. May be repeated up to 2 total credit hours.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Miramontes Arts & Sciences Pgr](#)

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## ARSC-1480 (1) MASP Seminar: Exploration of Public Discourse through the Social Sciences

Fosters an appreciation of the humanities and social sciences. Readings, discussions, cooperative learning exercises, and outside activities illustrate the interconnections between different bodies of knowledge. Emphasizes relationships between the humanities/social sciences and the real world. May be repeated up to 2 total credit hours.

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## ARSC-1490 (1) MASP Seminar: Activating the Humanities and Social Sciences

Building on ARSC 1480, enhances students' knowledge and appreciation of the humanities and social sciences. Readings, discussions, cooperative learning exercises, workshopping papers and presentation, guest speakers, and outside activities are designed to enhance both students' appreciation of the subject matter and their performance in their regular courses. Emphasis is on actively using knowledge of humanities and social sciences in a variety of ways. Prereq., ARSC 1480. May be repeated up to 2 total credit hours.

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## ARSC-1492 (1-3) MASP Research Seminar

Building on ARSP 1490, this course seeks to enhance students' knowledge and appreciation of the humanities and social sciences. Readings, discussions, cooperative learning exercises, workshopping papers and presentations, guest speakers, and outside activities are designed to enhance both students' appreciation of the subject matter and their performance in their regular courses. Emphasis is placed on actively using knowledge of humanities and social science in a variety of ways. May be repeated up to 6 total credit hours.

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## ARSC-1600 (1) The University of Colorado Experience

Provides an effective transition to the university by giving students a solid base for developing scholarship, citizenship, decision making, and involvement in their university community. Topics include academic and campus resources, safety, health, and diversity.

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## ARSC-1710 (1) Calculus Bridge Course

Provides motivated pre-calculus students with more in-depth and more challenging coverage of material assumed in calculus. Students complete advanced problems that cannot be covered in pre-calculus courses due to time constraints. Mastery of material is emphasized. Prereq., proficiency in high school mathematics. Coreq., MATH 1001/1021.

## ARSC-1720 (1) SASC Coseminar: Calculus Work Group

This 1-credit seminar provides motivated calculus students with more in-depth and more challenging coverage of material assumed in calculus. Students complete advanced problems that cannot be covered in calculus courses due to time constraints. Mastery of material is emphasized. Prereq., proficiency in pre-calculus mathematics. Recommended prereq., A/B average in pre-calculus sequence. Coreq., MATH1300.

## ARSC-1800 (3) Methods of Inquiry

Introduces students to methodologies used in different academic disciplines, e.g., how a paleographer dates a manuscript. Course is team-taught. Students must also enroll in two of four co-requisite course sections, all in different areas of the CORE curriculum. The co-requisite course sections are listed in the online Schedule Planner.

## ARSC-1810 (1) Open Option Seminar: Academic Exploration and Critical Decision Making

Survey the major exploration process in a guided and intentional way, critically evaluate your strengths and interests, learn decision making skills, and learn academic skills necessary to succeed in a major discipline. Complete the course well equipped to declare a major of interest in a timely fashion and to supplement your degree with study abroad, undergraduate research and/or co-curricular experiences. Offered Pass/Fail only. Restricted to Arts and Sciences Open Option students only. Prerequisites: Restricted to Arts and Sciences Open Option students only.

## ARSC-2000 (3) Ways of Knowing: Constructions of Knowledge in the Academy and Beyond

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Explores different ways of knowing from interdisciplinary, cross-cultural perspectives. Course begins with personal interrogations of students' primary learning modes. It goes on to examine cultural assumptions about schooling, learning and knowledge, juxtaposing western and eastern philosophies of knowing and looking at how gender, race, class, and other categories of identity shape and interpret concepts of knowledge. Same as NRLN 2000. Approved for arts and sciences CORE curriculum: ideals and values.

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## ARSC-2274 (3) Peer Counseling

Introduction to basic peer education and counseling theory and techniques. Students learn experientially by practicing a variety of skills in an informal atmosphere. The material learned is valuable to students professionally (as employee or supervisor in any field or as helping professional) regardless of career path. Students increase self-awareness and apply it to their own lives. Offered Fall semesters only. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Special Curricula](#)

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## ARSC-2400 (1) MASP Coseminar: Organic Chemistry

Supplements and strengthens student experiences in organic chemistry. Allows gifted students an opportunity to extend their understanding of the subject and to explore possible careers in science. May be repeated up to 2 total credit hours.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Miramontes Arts & Sciences Pgr](#)

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## ARSC-2470 (1) MASP Coseminar: Physics 1 and 2

Supplements and strengthens student experiences in physics. Allows particularly gifted students an opportunity to extend their understanding of the subjects and to explore possible careers in science. May be repeated up to 2 total credit hours.

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## ARSC-3001 (6) Social Engagement & Human Rights: The South Africa Model

Examines the concept of reconciliation from a multidimensional and multidisciplinary approach as it specifically contributes to subjects of difference, inequality, and historical legacies of intractable relations. Using an experiential approach, the study of reconciliation is situated in an international environment in which reconciliation is being practiced and later in the United States context. Recommended prereq., any course with substantive race, class, gender, difference, and inequality emphasis. Offered through Study Abroad Program. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Special Curricula](#)

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## ARSC-3100 (3) Multicultural Perspective and Academic Discourse

Teaches students how to write academic papers related to race, class, gender, sexuality, and other areas of cultural identity. Students acquire expertise on issues through readings, guided discussion, and research and practice oral presentation skills, drafting, and workshopping of papers. Prereq., lower level writing course(s) or waiver. Restricted to juniors/seniors. Approved for arts and sciences CORE curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Arts & Sciences Admin](#) [Writing](#)

## ARSC-3600 (3) Diversity Issues: Higher Education

Uses Internet dialogue, computing, and media technology to improve communication and develop research and inquiry skills and critical thinking. Race, class, gender, and sexual orientation issues are addressed to foster understanding of university codes of inquiry and modes of interaction in scholarly communities. Prereq., admission to McNair Program, junior standing, minimum GPA of 2.50, and strong interest in graduate school).

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ARSC

### ARSC-3650 (3) Diversity Issues in Graduate Education

Guides students through research on diversity and retention issues in graduate education. Participants use Tinto's work on academic and social integration as a conceptual framework. Further, students investigate how specific institutions support diversity goals in their graduate programs. Prereq., admission to McNair Program (minimum 2.50 GPA, three recommendation letters, personal statement, strong interest in graduate school).

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### ARSC-3700 (1-5) McNair Seminar: Research Design

Multidisciplinary course guiding critical thinking as students design a formal investigation. Includes presenting and writing a prospectus. Students revise the prospectus, creating a proposal for funding the research as well as HRC proposals. May be repeated up to 6 total credit hours. Prereq., admission to McNair Program (junior standing, minimum GPA of 2.50, and a strong interest in graduate school).

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### ARSC-3935 (1-6) Internship

May be repeated up to 6 total credit hours.

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### ARSC-4000 (3) Multimedia Applications in Foreign/Second Language

## Education

Focuses on knowledge and skills in accessing, evaluating, and integrating technology-assisted, mediated material in the teaching and learning of foreign languages. Also focuses on hands-on design and production of instructional software for foreign languages. Recommended prereq., a language-teaching methodology course. Same as ARSC 5000.

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## ARSC-4040 (1-3) Arts and Sciences Special Topics

Same as ARSC 5040.

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## ARSC-4700 (1-5) The McNair Seminar: Research Practices and Procedures

Within the range of scholarly modes, student researchers examine discipline-specific rationales for evidence and analysis. Lecturers distinguish popular concepts of investigation from scholarly research. Students learn to take great care describing and discussing methods, findings, interpretations, assertions, and conclusions. May be repeated up to 10 total credit hours. Prereq., admission to McNair Program (junior standing, meeting TRIO guidelines, strong interest in graduate school).

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## ARSC-4750 (3) Social Foundations of Professional Life in Washington DC

In this course, students will gain deep exposure to the historical, cultural, and socio-economic traditions and pressures that drive domestic and international policy making in Washington D.C. Students will read widely, prepare papers, and lead discussions on fundamental aspects of Washington's professional life. Course takes place in the nation's capital and is taken in conjunction with a professional internship.

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## ARSC-4909 (2-6) Senior Thesis for Individually Structured Major

May be repeated up to 6 total credit hours.

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## ARSC-4910 (1) McNair Practicum: Principles and Practices of University Teaching

Teaches the core principles of pedagogy at the university level and provides students guidance and feedback on constructing a teaching session in collaboration with a faculty mentor. Using the instructional practices of their discipline, students discuss issues university faculty encounter in their quest toward teaching excellence. The expertise of the Graduate Teacher Program, the Preparing Future Faculty Network and the Faculty Teaching Excellence Program will be drawn upon for supplemental resources, seminars and workshops. May be repeated up to 3 total credit hours. Prereq., ARSC 4700. Restricted to McNair Program Students.

College of Arts & Sciences Arts & Sciences Admin Special Curricula

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## ARSC-5000 (3) Multimedia Applications in Foreign/Second Language Education

Same as ARSC 4000.

College of Arts & Sciences Arts & Sciences Admin Graduate-Level Courses

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## ARSC-5040 (1-3) Arts and Sciences Special Topics

Same as ARSC 4040.

College of Arts & Sciences Arts & Sciences Admin Graduate-Level Courses

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## ARSC-5050 (3) Graduate Seminar on Applied Behavior Science 1

The first part of a two-semester sequence designed to introduce graduate students in the social sciences to interdisciplinary theory, concepts, and methods as applied to important social problems. Prereq., completion of first year of graduate work in a social science department.

College of Arts & Sciences Arts & Sciences Admin Graduate-Level Courses

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## ARSC-5060 (3) Graduate Seminar on Applied Behavior Science 2

The second part of a two-semester sequence designed to introduce graduate students in the social sciences to interdisciplinary theory, concepts, and methods as applied to important social problems. Prereq., ARSC 5050.

College of Arts & Sciences Arts & Sciences Admin Graduate-Level Courses

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# Courses

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ARTF

## ARTF-5000 (3) Advanced Digital Postproduction

Class explores the advanced practices and aesthetics of computer-based moving-image art editing. Topics include how to edit and manage a postproduction cycle, how to use digital editing systems and capabilities such as compositing, digital audio, and optical effects treatments. Prereqs., FILM 1502,2000 or 2300, 2500, and 3400 or 3600, or instructor consent. Cannot be taken simultaneously with FILM 3400 or 3600. Same as FILM 4000.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

## ARTF-5003 (3) Film and Fiction

Explores similarities and differences between literature and film as narrative arts. Studies several novels, short stories, and plays and films made from them. Examines problems in point of view, manipulation of time, tone, structure, and setting. Same as FILM 4003. COML 5003 and ARTF 5003 are the same course. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

## ARTF-5004 (3) Topics in Film Theory

Provides topic-centered analyses of controversial areas in film theory. Students read extensive materials in the topic area, analyze and summarize arguments as presented in the literature, write "Position" papers, and make oral presentations in which they elaborate their own arguments about specific assigned topic, establishing critical dialogue with the primary materials. May be repeated up to 6 total credit hours. Prereq., FILM 3051 or instructor consent. Restricted to senior FILM, FMST, or HUMN majors. Same as FILM 4004. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5010 (1-3) Topics in Film Studies-Production

Prepares students for advanced Film Studies production courses. Subject matter varies each semester. May be repeated up to 9 total credit hours, provided the topics are different. Same as FILM 4010. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5013 (3) Film, Photography and Modernism

Provides interdisciplinary study of film, photography, and modernism, focusing on issues such as dystopia, alienation, sexuality, subjectivity, and self-referentiality. Photographs by Stieglitz, Strand, Weston, Evans, Cartier-Bresson, Kertesz, and Moholy-Nagy. Films by Dziga-Vertov, Eisenstein, Resnais, Antonioni, Bergman, Bunuel, and Bertolucci. Prereq., FILM 1502. Recommended prereq., FILM 3051. Same as FILM 4013.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5021 (3) Directing/Acting for the Camera

Offers an intensive workshop that provides students with experience directing dramatic material, acting before a camera, and interpreting or adopting dramatic material for film. No experience in directing or acting required. Attendance, research, and papers required. Recommended prereq., FILM 1502. Same as FILM 4021. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5023 (3) Topics in International Cinema

Focuses on major international filmmakers who have had a decisive impact on world cinema. Students will learn how directors create their own innovative body of work with specific formal and thematic patterns, and will also learn to place such work within multiple frameworks that will cover film history, theory, aesthetics, philosophy, and social and cultural analysis. May be repeated up to 6 total credit hours provided topics are different. Prereq., FILM 1502. Recommended prereqs., FILM 3051 and 3061. Same as FILM 4023. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5024 (3) Advanced Research Seminar

Focuses on a specific topic, director, or genre chosen by the professor. Research skills and critical thinking are emphasized. With faculty guidance, students determine individual projects and present them to the class. Class participation is mandatory. Each student submits a thorough and original research paper for a final grade. May be repeated up to 6 total credit hours. Prereq., FILM 1502. Recommended prereqs., FILM 3051, 3061. Same as FILM 4024. Prerequisites: Restricted to Graduate Students only.

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## ARTF-5030 (3) Visiting Filmmakers Seminar

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Examines creative issues in contemporary cinema art. Graduate and advanced undergraduate students explore filmmaking ideas with guest artists within a seminar setting. Filmmakers, videographers and programmers of national and international reputation, with an emphasis on "Experimental" practice, interact with graduate and advanced undergraduate students, and discuss their work at seminar meetings, public lectures or events. May be repeated up to 6 total credit hours. Recommended prereqs., FILM 1502 and 4453 or instructor consent. Same as FILM 4030.

College of Arts & Sciences Art & Art History Graduate Film Courses

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## ARTF-5043 (1-3) Topics in Film Studies-Critical Studies

Prepares students for advanced Film Studies critical studies courses. Subject matter varies each semester. May be repeated up to 9 total credit hours, provided the topics are different. Same as FILM 4043. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Graduate Film Courses

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## ARTF-5105 (3) Advanced Screenwriting

Introduces professional screenwriting, in the form of a creative writing workshop. Admission by portfolio (see film department). Students write scenes and scripts for short films, feature treatments, etc., and are graded on a final portfolio. Prereq., approved writing sample. Recommended prereqs., FILM 3051 and 3061. Same as FILM 4105.

College of Arts & Sciences Art & Art History Graduate Film Courses

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## ARTF-5200 (3) Flow Visualization

Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and shadowgraphy and schlieren. Reviews optics and fluid physics, especially atmospheric clouds. Assignments are student-driven, to individuals and mixed teams of grad, undergrad, engineering majors and photography/video majors. Please see <http://flowvis.colorado.edu>. Prereq., MCEN 3021 or equivalent, or significant imaging experience (photography/video). FILM 4200 and ARTF 5200 are the same course. Same as MCEN 4151/5151.

College of Arts & Sciences Art & Art History Graduate Film Courses

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## ARTF-5453 (3) Elective Affinities: Avant-Garde Film and the Arts

Traces the history and aesthetics of avant-garde/ experimental films in light of similar ideas found in the other arts, particularly painting, poetry, photography and music. Topics covered include Dada and the early avant-garde; surrealism and psychodramas; Brakhage and abstract expressionism; feminist arts and film since the 1980s; the idea of the sublime in painting, music, and film; landscape in painting, photography, and film; post-modernism and the cinema; queer theory, gender/identity politics, and aesthetics of recent films; and specific multiple disciplinary artists such as Andy Warhol, Michael Snow, Helen Levitt, and Gunvor Nelson. Prereq., FILM 1502. Same as FILM 4453. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Graduate Film Courses

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## ARTF-5500 (3) Cinema Production 2

Advanced exploration of creative cinema production through short production and post-production projects. Course focuses on the tactics and strategies of independent cinema production exploring either documentary, experimental, or narrative genres. May be repeated up to 9 total credit hours. Prereq., FILM 3400. Same as FILM 4500. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5600 (3) Creative Digital Cinematography

Explores creative approaches to single camera digital cinematography through short projects, discussions, and screenings. Relates creative photography and poetic approaches to the digital camera cinema. May be repeated up to 9 total credit hours. Prereqs., FILM 2000, 3600, or ARTS 4246 or 5346 or instructor consent. Restricted to FILM majors. Same as FILM 4600.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5604 (3) Colloquium in Film Aesthetics

Seminar for the serious round table discussion and critique of film as an art form, emphasizing development of appropriate verbal and written language skills for description of film. May be repeated upto 6 total credit hours. Same as FILM 4604. Prerequisites: Restricted to Graduate Students only.

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## ARTF-5610 (3) Image-makers Graduate Seminar

Explores advanced graduate studio work in a seminar setting. The course will focus on the development of ideas and activities which advance creative image making. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5717 (1-3) Graduate Studio Critique

May be repeated up to 6 total credit hours with any single faculty member. Prereq., graduate standing and/or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

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## ARTF-5846 (1-3) Graduate Independent Study-Video

Participate in graduate independent study. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent.

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[College of Arts & Sciences](#) [Art & Art History](#) [Graduate Film Courses](#)

## ARTF-5857 (1-3) Graduate Independent Study

Participate in graduate independent study. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent.

Prerequisites: Restricted to Graduate Students only.

## ARTF-6959 (1-6) Master's Thesis Film

Preparation, research, writing of critical studies Master's thesis in fulfillment of concurrent BAMA in Film. Prereq., ARTF 5004. May be

repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

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ARTH

## ARTH-1300 (3) History of World Art 1

Surveys major art styles from the Paleolithic period through the Renaissance, including European, Asian, and the Pre-Columbian/Islamic world. Emphasizes comparison of Western and non-Western visual expressions as evidence of differing cultural orientations. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Art & Art History](#) [Art History](#)

## ARTH-1400 (3) History of World Art 2

Surveys major art styles from about 1600 to the present, including Europe, Asia, the Islamic world, the Americas, and tribal arts. Emphasizes comparison of Western and non-Western visual expressions as evidence of differing cultural orientations. Credit not granted for this course and FINE 1409. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Art & Art History](#) [Art History](#)

## ARTH-1509 (4) Trash and Treasure, Temples and Tombs: Art and Archaeology of the Ancient World

Introduces the art and archaeology of ancient Egypt, Mesopotamia, Greece, and Rome, examining various ancient approaches to power, religion, death, and the human body. Analyzes art, architecture, and everyday trash to learn about ancient humanity. Same as CLAS 1509. Approved for arts and science core curriculum: historical context or literature and the arts.

[College of Arts & Sciences](#) [Art & Art History](#) [Art History](#)

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## ARTH-1709 (3) Freshmem Seminar: Critical Introduction to Art History

Provides a broad introduction to understanding and appreciating art and art history within a critical lecture seminar and discussion format. The focus of this course is a selected Particularity directed to nonmajors. Formerly FINE 1709. Approved for arts and science core curriculum: literature and the arts.

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## ARTH-2019 (3) Pompeii and the Cities of Vesuvius

Introduces the towns and villas buried by the eruption of Mt. Vesuvius in 79 C.E. Explores the layout and decoration of ancient Roman houses, the variety of artifacts uncovered as evidence for daily life and the history of the excavations. Same as CLAS 2019. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences Art & Art History Art History

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## ARTH-2409 (3) Intro to Asian Art

Designed for those having no previous experience in the study of Asian art. Traces development of sculpture, painting, architecture, and the other visual arts of South Asia, the Far East, and Southeast Asia, with a synopsis of developments from 1453 through the 18th century. Approved for arts and science core curriculum: literature and the arts.

College of Arts & Sciences Art & Art History Art History

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## ARTH-3009 (3) Critical Thinking in Art History

Through structured discussions, selected readings, and written assignments provides an understanding of how art history has evolved as an academic discipline and how art historians evaluate complex issues of style, form, content, and theory in the visual arts. Prereqs., ARTH 1300, 1400.

College of Arts & Sciences Art & Art History Art History

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## ARTH-3029 (3) Medieval and Early Modern Visual Culture, A.D. 400 to A.D. 1750

Introduces students to the literature, history, culture and art of Europe and the Mediterranean basin from late antiquity through the early modern period. Interdisciplinary approach to visual culture focuses on uses of sacred religious practices and lay devotion. Prereqs., ARTH 1300 and 1400.

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## ARTH-3039 (3) Greek Art and Archaeology

Covers prehistoric Aegean through the fourth century B.C.E., considering architecture, pottery, painting, sculpture, and personal ornament. Societal customs such as use of space and burial patterns are considered as well as art and its uses, to help understand developments in Greek culture. Credit not granted for this course and FINE/CLAS 1009. Same as CLAS 3039. Approved for arts and sciences core curriculum: literature and the arts.

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## ARTH-3049 (3) Introduction to Roman Art and Architecture

Introduces the monuments and sites of the ancient Roman world from the foundation of Rome (753 B.C.E.) to Constantine (306-307 C.E.). Emphasizes the relationship of art, architecture, and artifacts to the political, social, and religious institutions of Italy and the provinces. Same as CLAS 3049. Credit not granted for this course and CLAS 1019. Approved for arts and sciences core curriculum: literature and the arts.

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## ARTH-3079 (3) Medieval Art Survey

Surveys the history of Western art from Constantine to around the year 1300, including Carolingian, Ottonian, Anglo-Saxon, Romanesque, and Gothic. Considers "Barbarian," Byzantine, and Islamic influences. Prereqs., ARTH 1300, 1400.

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## ARTH-3109 (3) Art in Contemporary Society

Examines writings by philosophers and art critics as they address the question: What is art for? Readings focus on the 19th and 20th centuries, including current theories and some non-Western theories. Students are encouraged to develop their own responses to the question. Prereqs., ARTH 1300 and 1400. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

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## ARTH-3209 (3) Art, Culture, and Gender Diversity, 1400--1600: Renaissance Art Out of the Canon

Studies the rising status of painting, sculpture, and architecture in Europe and how Europeans perceived non-Western art during the early modern period. Introduces history of race/ethnicity, gender, and class concerns embodied in the European category visual arts. Emphasizes new methods for interpreting history without imposing Eurocentric viewpoints. Prereqs., ARTH 1300 and 1400. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

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## ARTH-3210 (3) The Art of Renaissance Cities and Courts

Surveys the development and spread of humanist culture associated with the modern term "Renaissance Art" from c. 1400-1600, organized by location, artist, and patron. Presents significant works of paintings, sculpture and architecture at a number of major artistic centers including Florence, Rome, Venice, Fontainebleau, and Prague. Prereq., ARTH 1300 or 1400.

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## ARTH-3309 (3) European Art, 1300--1800

Covers high visual culture in Europe from 1300 to 1800. Discussions of this concept with its implications for aesthetics, semiotics, and ideology form the core of the course. Prereqs., ARTH 1300 and 1400.

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## ARTH-3419 (3) Modern Art Survey

Surveys the loss of beauty in art and discusses whether or not that loss is regrettable. Questions the function and historical meaning of modern and postmodern art: is it all hype and strategic positioning by artists for fame and fortune? Is it serious? Are the fine arts still fine? Prereq., ARTH 1300, 1400.

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## ARTH-3509 (3) American Art

Surveys American art and material culture from the precolonial era to the present day. Considers cultural and artistic interaction, ethnic expressions, patronage, European and non-Western influences, and the struggle to develop a uniquely American artistic identity. Prereqs., ARTH 1300 and 1400. Approved for arts and sciences core curriculum: United States context.

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## ARTH-3519 (3) Modern Architecture, 1780--1960

Introduces the major movements and developments in European and American architecture from Neoclassicism to Postmodernism. Considers the impact of exhibitions, expositions, and vernacular architecture. Prereqs., ARTH 1300, 1400.

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## ARTH-3539 (3) Contemporary Art

Examines contemporary art and theory in the transition from modern to postmodern expression. Discusses painting, sculpture, installations, performance, video, photography, and architecture with attention to historical context and criticism. Considers neoexpressionist, feminist, minority, political, and public art. Prereq., one 3000-level art history course. Same as ARTH 5539. Formerly ARTH 4539.

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## ARTH-3619 (3) The Arts of China

Surveys Chinese painting, sculpture, architecture, and other arts from neolithic to modern times. Prereqs., ARTH 1300, or 1400, or 2409, or HIST 1608.

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## ARTH-3629 (3) The Arts of Japan

Offers an appreciation and chronological development of the arts of Japan. Emphasizes the arts of Shintoism and Buddhism as well as the particular Japanese aesthetic from prehistoric times to the present. Prereq., one 3000-level art history course.

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## ARTH-3719 (3) History of Media Arts

Surveys the development of technological media both as sources of information and as art. Photography and related media, film, video, holography, and electronic imaging systems are surveyed as art and as technologies, emphasizing major artists, movements, exhibitions, and other productions in the 19th and 20th centuries. Prereqs., ARTH 1300 and 1400.

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## ARTH-3729 (3) Foundations in Latin American Art

Examines Latin America's cultural pluralism and art production beginning in pre-Columbian times and following through to the present. Considers the various functions of art as well as the relationship between objects, artists, and the cultures from which they come. Provides students with a broad frame of reference for many historical periods and equips students to evaluate art objects and their cultural contexts. Prereqs., ARTH 1300 and 1400.

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## ARTH-3929 (1-3) Special Topics in Art History

May be repeated up to 18 total credit hours when topic varies. Prereqs., ARTH 1300 and 1400.

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## ARTH-4039 (3) Byzantine Art

Examines art of the East Christian Empire from the accession of Constantine to the conquest of Constantinople with a synopsis of developments from 1453 through the 18th century. Prereq., one 3000-level art history course. Same as ARTH 5039.

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# Courses

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ARTH

## ARTH-4069 (3) Medieval Manuscripts

Surveys decorated books from late antiquity to the advent of the printing press. Examines the various roles manuscripts played within different medieval communities. Prereq., ARTH1300 and 1400. Same as ARTH 5069.

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## ARTH-4089 (3) Romanesque and Gothic Art

Examines major artistic trends in Europe between the years 1000 and 1300, a period that witnessed, among others, the development of gothic cathedrals and the rise of the professional artist. Particular attention will be given to exchange with other cultures. Prereqs., ARTH 1300 and 1400.

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## ARTH-4109 (3) Ancient Italian Painting

Explores the problems, theories and methods for understanding the iconography, styles, topologies, contexts and techniques of fresco wall painting in ancient Italy from the 6th century B.C.E. to the 4th century C.E. Topics covered include Etruscan tomb paintings, late Republican and early imperial fresco paintings from Rome and Campania, and later Roman wall paintings, including the painted images in ancient catacombs. Previous coursework on ancient Italy or the history of pre-modern art is highly recommended. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 4109.

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## ARTH-4119 (3) Roman Sculpture

Examines ancient Roman sculpture with emphasis on the display, iconography, and production of private and public monuments in the Roman Empire. Explores sculpture as evidence for historical developments, societal and gender attitudes, and state ideologies in the ancient Roman world. Recommended prereqs., ARTH 1300 or CLAS 1019. Same as CLAS 4119.

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## ARTH-4129 (3) Aegean Art and Archaeology

A detailed study of the cultures of prehistoric Greece, the Cycladic Islands, and Crete, their art and archaeology, and their history within the broader context of the eastern Mediterranean, from earliest human settlement to the collapse of the Bronze Age at about 1100 B.C.E. Emphasis is on palace states. Same as ANTH/ARTH 4129, CLAS 5129.

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## ARTH-4139 (3) Greek Vase Painting

A comprehensive overview of Greek vase painting, from prehistoric through the fourth century B.C.E. Emphasis is on learning the development of primary decorative styles and on refining skills of visual analysis, scholarly research, critical thinking, oral commentary, and written presentation. Same as CLAS 4139.

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## ARTH-4149 (3) Greek Cities and Sanctuaries

Examines Greek architecture in context, from the ninth century B.C.E. into the Hellenistic period, considering the use of space, both in religious and in civic settings, and using texts as well as material culture. Emphasis is on developing analytical skills. Same as CLAS 4149.

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## ARTH-4169 (3) Topics in Ancient and Classical Art and Archaeology

In-depth consideration of an aspect of ancient Mediterranean culture. Topics vary; they may include ancient wall painting, Greek sculpture, artists and patrons, the ancient Near East, Egyptian art and archaeology, or Etruscan art and archaeology. Maybe repeated up to 9 total credit hours providing the topics are different. Same as CLAS 4169. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

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## ARTH-4189 (3) Medieval Art

Focuses on one area of medieval art. Topics vary, but may include Carolingian, Ottonian, Romanesque, or Gothic art. Emphasizes critical thinking, methods of scholarly research, and development of writing skills. Prereqs., ARTH 1300 and 1400.

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## ARTH-4199 (3) Roman Architecture

Examines the designs, functions, and construction methods of ancient Roman towns, temples, baths, houses, and civic structures, as well as utilitarian structures including roads and aqueducts. Emphasizes Roman architectural forms and spaces as vehicles for political propaganda and empire consolidation. Same as CLAS 4199.

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## ARTH-4209 (3) Classical Archaeological Field Methods

Offers experiential learning in theories and methods of field excavation at the Villa of Maxentius in Rome. Applies methods for stratigraphic excavation, electronic surveying with Gis, ceramic analysis, numismatic analysis, architectural construction materials and methods, artifact conservation and data processing and documentation. Offered abroad only. May be repeated up to 6 total credit hours. Coreq., ARTH 4219 for first 3 credit hours. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 4209 and 5209.

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## ARTH-4219 (3) Maxentius and the City of Rome

Combines seminar discussion and site visits in Rome and Tivoli to understand the excavations at the Villa of Maxentius and its artifacts in the broader contexts of Roman architectural development, late Roman art, and late imperial Roman history. Offered abroad only. Must be taken concurrently with CLAS/ARTH 4209 or CLAS 5209. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 4219.

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## ARTH-4269 (3) Art and Archaeology of the Ancient Near East

Examines civilizations of the Iran-Iraq region from the rise of urbanism in Mesopotamia through the era of the first 'world empire,' Achaemenid Persia. Emphasizes the material record of religious and state institutions of the ancient Near East, especially monuments that illustrate concepts of kingship. Explores notions of style, symbolism, visual rhetoric, text-image synthesis, patronage, creativity, and roles of artists. Recommended prereq., CLAS/ARTH 1509. Same as CLAS 4269. Approved for arts and science core curriculum: human diversity.

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## ARTH-4279 (3) Michelangelo (1475--1564)

Focuses on Michelangelo's long career, marked by outstanding achievements in sculpture, painting, architecture, and poetry. Emphasizes his projects and achievements in light of 16th century artistic theory, including relationships to his contemporaries in the arts and literature. Prereq., one 3000-level art history course. Same as ARTH 5279.

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## ARTH-4309 (3) Neoclassicism and Romanticism: 1760--1840

Surveys painting and sculpture in England and France from the last quarter of the 18th century through the first half of the 19th century. Prereq., one 3000-level art history course. Same as ARTH 5309.

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## ARTH-4319 (3) European Art from 1830 to 1886

Surveys the major movements in painting in France and England from the Revolution of 1830 to the impressionist crisis of 1886. Emphasizes and discusses painting and major expressions in sculpture and architecture. Same as ARTH 5319.

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## ARTH-4329 (3) Modern Art 1

Provides an in-depth study of the fin de siècle, stressing postimpressionism, art nouveau, and symbolism. Concludes with fauvism in France and the expressionist movement in Germany. Prereq., one 3000-level art history course. Same as ARTH 5329. Approved for arts and sciences core curriculum: literature and the arts.

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## ARTH-4339 (3) Modern Art 2

Begins with early Picasso and cubism, including analytic and synthetic cubism and emphasizing the various isms of the 20th century. Also studies Italian futurism, de Stijl and the Bauhaus, dada, and surrealism. Prereq., one 3000-level art history course. Same as ARTH 5339.

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## ARTH-4409 (3) Arts of Africa and Oceania

Covers native arts of non-Western peoples of Africa and Oceania, including sculpture, architecture, and minor arts for both archaeological and ethnological cultures. Emphasizes the function of art in society as well as aesthetic analysis. Prereq., one 3000-level art history course. Same as ARTH 5409.

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## ARTH-4419 (3) The Arts of Colonial Mexico and Peru

Examines important works, artists, and themes that comprise the artistic production of colonial Latin America. Focuses on the intermingling, convergence, and at times the clash of European, Amerindian, and African cultures, which established the foundation of Latin America's pluralism. Prereqs., ARTH 1300 and 1400. Recommended prereq., ARTH 3729.

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## ARTH-4439 (3) Native North American Art

Surveys art of North American Indian cultures, including the northwest coast, southwest, southeast, northeast, and plains, covering architecture, sculpture, and minor arts for both archaeological and ethnological cultures. Prereq., one 3000-level art history course. Same as ARTH 5439.

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## ARTH-4459 (3) Precolumbian Art of Mesoamerica

Introduces students to the art, architecture, and cultures of Mesoamerica--a region that encompasses modern-day Mexico, Guatemala, Belize, and parts of El Salvador, and Honduras. Focuses on major Pre-Columbian art objects and monuments to learn about the societies and cultures from which they came. Also considers the various roles that the visual arts and architecture played in these societies. Covers Olmec through Aztec civilizations. Prereqs., ARTH 1300 and 1400. Recommended prereq., ARTH 3729.

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## ARTH-4559 (3) Twentieth-Century Architecture

Examines the major movements and development in European and American architecture, 1900-1960's. Considers the major styles, as well as cultural interactions, race/ethnicity, gender and class concerns as they relate to both the practice and profession of architecture. Prereqs., ARTH 1300,1400.

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## ARTH-4569 (3) United States Architecture

Examines architecture as it developed in the area now defined as the continental United States from early cultures to the present. Considers the major styles and issues of cultural interaction, race/ethnicity, gender and class concerns as they relate to the practice, theory, and profession of architecture. Prereq., ARTH 1300 and 1400.

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## ARTH-4629 (3) Degas Seminar

Introduces current Degas studies and research methods by drawing upon recent books, exhibition catalogues, and scholarly journal articles. Fulfills requirement for ARTH 4919, Capstone Seminar.

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### ARTH-4639 (3) Manet Seminar

Introduces current Manet studies and research methods by drawing upon recent books, exhibition catalogues, and scholarly journal articles. Fulfills requirement for ARTH 4919, Capstone Seminar.

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### ARTH-4649 (3) Impressionism & Post-Impressionism

Fosters creative study of the background and foundation in modern art. Considers 19th-century European painting and, to a lesser degree, sculpture, in relation to social, cultural, and political history from 1863 to 1900. Focuses on France, but gives attention to other countries as well.

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### ARTH-4669 (3) Romanticism & Realism

Fosters creative study of the background and foundation of modern art. Considers 19th-century European (and, to a lesser degree, American) painting and sculpture in relation to social, cultural, and political history from 1789 (the French Revolution) to 1863 (the Salon des refuses). Focuses on France, but gives attention to other countries as well.

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### ARTH-4679 (3) Romanticism Seminar

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Introduces current Romanticism studies and research methods by drawing upon recent books, exhibition catalogues, and scholarly journal articles.

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## ARTH-4689 (3) Post-Impressionism Seminar

Introduces current Post-Impressionism studies and research methods by drawing upon recent books, exhibition catalogues, and scholarly journal articles.

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## ARTH-4739 (3) The Intellectual Roots of Italian Renaissance Art

Studies critical issues raised in the literature on art, focusing on Renaissance interpretations of key historical themes such as imitation and decorum. Carefully examines the language used in primary sources (available in English). Prereq., one 3000-level art history course.

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## ARTH-4749 (3) Italian Renaissance Art: Studies in the Exchange between Theory and Practice

Addresses how artists developed new compositional procedures, graphic techniques, and audiences, and how these procedures were theorized in an age when artists' intellectual and social status rose dramatically. Explores reception of new graphic technology. Studies specific commissions and primary texts in depth. Prereq., one 3000-level art history course. Same as ARTH 5749.

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## ARTH-4759 (3) 17th Century Art and the Concept of the Baroque

Surveys 17th century European painting, sculpture, and architecture, along with a critical study of artistic theory, artistic institutions (such as the Academiadi San Luca and the Academie Royal), and the concept of the term baroque. Prereq., one 3000-level art history course. Same as ARTH 5759. Approved for arts and sciences core curriculum: literature and the arts.

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## ARTH-4769 (3) Gender Studies in Early Modern Visual Culture

Examines 15th and 16th century European ideas about women from a variety of feminist perspectives. Focuses on recent contributions to history of women as they intersect with the visual arts. Prereq., one 3000-level art history course. Same as ARTH 5769 and WMST 4769.

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Approved for arts and sciences core curriculum: human diversity.

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## ARTH-4779 (3) Multicultural Perspectives on New Mexican Santos

Reflects upon the question: In what sense were the regional variants of European devotional images the effects of meaningful cultural interaction? Evidence considered includes oral traditions, pueblo pottery, and painting, emphasizing interpretations that respect rights of communities to maintain privacy. Prereqs., ARTH 1300, 1400, and one 3000-level art history course. Same as ARTH 5779.

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## ARTH-4819 (3) Contemporary Chicano Art

Examines Chicano art world, focusing on contemporary scene. Lecture/discussion/dialogue explored through readings and visual presentations including: video, guest lecturers, and visits to local spaces. Prereq., any 3000-level art history course or instructor consent.

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## ARTH-4909 (1-3) Independent Study---Art History

May be repeated up to 7 total credit hours.

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## ARTH-4919 (3) Undergraduate Seminar: Selected Topics in Art History

Seminar course dealing with selected areas or problems within the history of art. Consult current online Schedule Planner for seminar topic. May be repeated up to 7 total credit hours. Prereq., instructor consent. Restricted to Art History Majors only. Prerequisites: Restricted to Art History (AAAH) majors only.

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## ARTH-4929 (1-3) Special Topics in Art History

May be repeated up to 18 total credit hours when topic varies. Same as ARTH 5929.

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## ARTH-4939 (3-6) Art Museum Internship

Focuses on opportunities at the Denver Art Museum, working with individual curators and master teachers in selected areas, such as audience interpretation, interpretive research files, and public school curriculums. Introduces students to the professional culture and activities of art museums. May be repeated up to 6 total credit hours. Prereqs., ARTH 1300 and 1400. Same as ARTH 5939.

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## ARTH-4959 (3) Art History Honors Thesis

May be elected during the final semester. Consists of a substantial, original written thesis. Requires faculty sponsorship. Does not guarantee a student will receive honors.

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## ARTH-5109 (3) Ancient Italian Painting

Same as CLAS 5109.

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## ARTH-5119 (3) Roman Sculpture

Same as CLAS 5119. Prerequisites: Restricted to Graduate Students only.

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## ARTH-5139 (3) Greek Vase Painting

Same as CLAS 5139.

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## ARTH-5159 (3) Hellenistic Art and Archaeology

Examines art and archaeology from the period following the death of Alexander the Great (late fourth century B.C.E.) to the conquest of Greece by the Romans (middle second century B.C.E.). Same as CLAS 5159. Prerequisites: Restricted to Graduate Students only.

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## ARTH-5169 (3) Topics in Ancient and Classical Art and Archaeology

Same as CLAS 5169.

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## ARTH-5179 (3) City of Athens

Explores in detail the buildings, sculptures, pots, foreign imports, and society of Athens, considering material culture of individuals as much as civic programs. Emphasis is on ways the textual and archaeological evidence complement and/or contradict one another. The course focuses on the Periklean period, considering ways in which it developed from earlier times and influenced later ones in Athens. Same as CLAS 5179.

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## ARTH-5189 (3) City of Rome

Explores in detail the architecture, sculptures, coins, frescos, and other material evidence alongside the political and social history of Augustan Rome. Emphasis is on ways in which the textual and archaeological evidence complement and/or contradict one another. Will explore the impact of the early imperial period on later Roman phases of urban design and image making in the capital city. Same as CLAS 5189. Prerequisites: Restricted to Graduate Students only.

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## ARTH-5269 (3) Art and Archaeology of the Ancient Near East

Same as CLAS 5269.

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## ARTH-5909 (1-3) Graduate Independent Study---Art History

May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

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### ARTH-5929 (1-3) Special Topics in Art History

May be repeated up to 18 total credit hours. Same as ARTH 4929. Prerequisites: Restricted to Graduate Students only.

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### ARTH-5939 (3-6) Art Museum Internship

May be repeated up to 6 total credit hours. Same as ARTH 4939.

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### ARTH-5949 (3) Visiting Scholars Seminar

Brings speakers to campus to work with seminar students, usually four guest scholars per semester, subjects vary. Students read scholar's work and discuss methodological issues. Focuses on the research and insight of scholars who are currently shaping the field and defining research agendas. Required for all MA art history students, open to others. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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### ARTH-5959 (3) Introduction to Critical Theory for Visual Studies

Provides overview for critical theory from Marx to contemporary writers with emphasis on their relevance to visual studies. Addresses issues that underlie a wide range of academic discussion in arts and sciences. Foucault, Derrida, Said, Lacan and other authors will be subject to weekly discussions leading to research papers, presentations, and projects. Class fulfills critical theory requirement for MFA and MA students. Prerequisites: Restricted to Graduate Students only.

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## ARTH-6150 (3) Critical and Theoretical Issues in Museums

Investigates key problems facing museum institutions and studies the staging and representation of historical knowledge, the ethics of collecting and display, the changing nature and uses of historical evidence, and relations between curatorial practice, collecting, and field work. Critically examines different approaches to museums and museology in various disciplines, both past and present. Prereq., MUSM 5011 or instructor consent. Same as MUSM 6150, HIST 6150, and ANTH 6150. Prerequisites: Restricted to Graduate Students only.

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## ARTH-6929 (3) Seminar: Theories of Art History

Provides a systematic critical overview of the development of art history as a discipline beginning with 18th century theories of aesthetics and ending with current interdisciplinary models of critical interpretation. Weekly readings, discussions, reports, and written papers constitute the format of this seminar in methodology. Topics vary from semester to semester. May be repeated up to 6 total credit hours within a term. Required for MA (art history) students. Prerequisites: Restricted to Graduate Students only.

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## ARTH-6939 (3) Graduate Seminar: Open Topics in Art History

Subjects and topics vary. May be repeated up to 9 total credit hours. Prereq., graduate standing. Prerequisites: Restricted to Graduate Students only.

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## ARTH-6949 (1) Master's Candidate for Degree

Prerequisites: Restricted to Graduate Students only.

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## ARTH-6959 (1-6) Master's Thesis (Art History)

Prerequisites: Restricted to Graduate Students only.

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## ARTH-6969 (1-6) Master's Project (Art History)

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ARTS

## ARTS-1002 (3) Beginning Drawing 1

In this studio course the formal visual elements are presented through a study of spatial relationships. The course is built around a series of related problems, each of which is designed to develop fluency in drawing, offer experience in handling media, foster self-confidence, and promote an understanding of the visual elements and their role in the development of pictorial space. Prereqs., ARTS 1010, 1020, and 1030.

[College of Arts & Sciences](#) [Art & Art History](#) [Painting/Drawing](#)

## ARTS-1003 (3) Printmaking for Non-Majors

Emphasizes processes involved with both nonmultiple and multiple methods, including but not limited to metal plate etching (intaglio), lithography, collagraph, woodcut, linoleum cut, Xerox transfer, and monotype. Places equal emphases on developing drawing skills and understanding design principles.

[College of Arts & Sciences](#) [Art & Art History](#) [Printmaking](#)

## ARTS-1010 (3) Introduction to Studio Art

Presents creative activity conceptually, and art history thematically, with an interdisciplinary, experimental, and multicultural focus. Fine arts majors explore visual literacy and culture through presentations and student-centered projects that emphasize individual development. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

[College of Arts & Sciences](#) [Art & Art History](#) [Foundations](#)

## ARTS-1012 (3) Drawing for Non-Majors

Explores varied drawing techniques and media. Introduces concepts relevant to the understanding of drawing and the creative process. May not be repeated.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-1020 (3) Introduction to Studio Art 2

Presents creative activity conceptually and art history thematically, with an interdisciplinary, experimental, and multicultural focus. Art and art history majors explore visual literacy and culture through presentations and student-centered projects that emphasize individual development. Prereq., ARTS 1010. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Foundations

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## ARTS-1030 (3) Principles of Color

Introduces the relative effects of color as used by the artist. Emphasizes the practice of color relations including basic characteristics, mixtures, illusions, optical mixture, color intervals, and color quantity. May not be repeated.

College of Arts & Sciences Art & Art History Foundations

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## ARTS-1171 (3) Photography for Non-Majors

Introduces techniques and concepts of photography as art. Emphasizes photography as a means to formal and expressive ends. Students must have an adjustable camera. Credit not granted for this course and ARTS 2171.

College of Arts & Sciences Art & Art History Photography

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## ARTS-1202 (3) Beginning Painting 1

The aim of this course is to develop the basic skills, techniques and processes of painting with an understanding of basic colour principles. This integration of paint application and colour principle will develop awareness that painting and colour are used, not only as mediums for representation, but also as mediums for expressive purposes. Demonstrations, lectures, group and individual critiques will be given throughout the course. Prereqs., ARTS 1010, 1020, and 1030.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-1212 (3) Painting for Non-Majors

Explores varied painting techniques. Introduces concepts relevant to the understanding of painting and the creative process. May not be repeated.

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College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-1514 (3) Sculpture for Non-Majors

Offers an orientation involving three-dimensional form and application. Studies expressive problems based on non-objective form relationships in various sculptural materials. May not be repeated.

College of Arts & Sciences Art & Art History Sculpture

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## ARTS-1875 (3) Ceramics for Non-Majors

Encompasses broad and fundamental uses of clay. Basic instruction and demonstration of throwing, hand building, and primitive clay forming methods. Investigates utility, function, and ceramics in the broader context of contemporary art. Slide presentations explore historical and contemporary attitudes involving ceramics.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-2002 (3) Figure Drawing

Explores varied drawing techniques and media. Introduces concepts relevant to the understanding of drawing and the creative process. May not be repeated. Prereqs., ARTS 1010, 1020, and either ARTH 1300 or 1400. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-2085 (3) Ceramics 2: Handbuilding

Introduces techniques of hand-built clay forms as they relate to function and nonfunction. Various clay techniques, glazing, and firing procedures are explored. Emphasizes ceramics in the broader context of contemporary art. May not be repeated. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-2095 (3) Ceramics 2: Wheelthrowing

Introduces techniques of wheel-thrown forms as they relate to function and nonfunction. Explores various glazing and firing methods. May not be repeated. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-2126 (3) Digital Art 1

An introductory course in the use of the personal computer to create and process images in the visual arts. Prereq., ARTS 1010, 1020 and ARTH 1300 or 1400. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Media Arts

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## ARTS-2171 (3) Photography 1

Introduces techniques and concepts of photography as art. Emphasizes photography as a means to formal and expressive ends. Students must have an adjustable camera. Prereqs., ARTS 1010, 1020, and either ARTH 1300 or 1400. Credit not granted for this course and ARTS 1171. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Photography

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## ARTS-2191 (3) Photography 2

Explores more sophisticated technical and conceptual skills to the creative process. Prereq., ARTS 2171. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Photography

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## ARTS-2202 (3) Figure Painting

Explores varied painting techniques. Introduces concepts relevant to the understanding of painting and the creative process. May not be repeated. Prereqs., ARTS 1010, 1020, and either ARTH 1300 or 1400. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Painting/Drawing

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## ARTS-2504 (3) Sculpture: Materials and Techniques

Explores a variety of materials, methods, and techniques and their application with reference to contemporary sculpture, i.e., moldmaking, welding, casting, vacuforming, photo techniques, and woodworking. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only. Prereqs., ARTS 1010 & 1020. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Sculpture

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## ARTS-2524 (3) Visual Thinking (Sculpture and Post-Studio Practice)

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Explores ideas concerning the structure and nature of visual thinking and their relationship to the creative thought process. Also investigates form in terms of the organizing principles of three-dimensional design and its application to contemporary sculpture. Includes lecture and studio projects. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only. Prereq., ARTS 1010 & 1020. May be repeated up to 6 total credit hours. Prerequisites: Requires pre-requisite courses of ARTS 1010 & 1020. Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Sculpture

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## ARTS-3002 (3) Drawing Alternative Process/Materials

Continuation of Drawing 2. Offers creative possibilities in drawing and related media. Emphasizes experimentation and individual expression. Content varies by semester according to instructor; contact individual instructor for more information. May be repeated once. Prereq., ARTS 2002. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Painting/Drawing

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## ARTS-3017 (1-3) Special Topics in Studio Arts

Introduces timely subjects in studio arts courses that cannot be offered on a regular basis. Information concerning the topics in any given semester is available prior to pre-registration from the department of Art and Art History. May be repeated up to 7 total credit hours. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-3085 (3) Ceramics 3

Deals with further exploration of techniques approached in ARTH 2085 and 2095. Students are encouraged to develop personal concentration in relation to medium. May be repeated up to 6 total credit hours. Prereqs., ARTS 2085, 2095. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Ceramics

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## ARTS-3097 (1-3) Special Topics---Non-Studio

Introduces timely subjects in fine arts that cannot be offered on a regular basis. Information concerning the topics offered in any given semester is available prior to preregistration from the Department of Art and Art History. May be repeated up to 7 total credit hours. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. Prerequisites: Restricted to Studio Arts (AASA) or Fine Arts-Studio (BASA and BFAS) or Fine Arts-Art History (BAAH) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-3191 (3) Photography 3

Continues the exploration of the possibility of individual photographic expression. Students are encouraged to discover and develop a

personal position in relation to the medium. May be repeated up to 6 total credit hours. Prereq., Arts 2191. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

[College of Arts & Sciences](#) [Art & Art History](#) [Photography](#)

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

ARTS

### ARTS-3196 (3) Photo-Imaging

Introduces techniques, software, and related concepts of digital photography as art. Emphasizes digital photography as a means to formal and expressive ends. Prereq., ARTS 1171.

[College of Arts & Sciences](#) [Art & Art History](#) [Media Arts](#)

### ARTS-3202 (3) Painting Alternative Process/Materials

Continuation of Painting 2. Offers creative possibilities in painting and related media. Emphasizes experimentation and individual expression. Content varies by semester according to instructor; contact individual instructor for more information. May be repeated up to 6 total credit hours. Prereq., ARTS 2202. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

[College of Arts & Sciences](#) [Art & Art History](#) [Painting/Drawing](#)

### ARTS-3236 (3) Electronic Arts Survey

Explores the development of video as an art form through tape screenings, readings, lectures, and discussions. Prerequisite for further studies in video production.

[College of Arts & Sciences](#) [Art & Art History](#) [Media Arts](#)

### ARTS-3403 (3) Intaglio and Relief 1

Introduces the study and experimentation of intaglio and relief processes in black and white, color, and possible photo imagery. May be repeated up to 6 total credit hours. Taught with ARTS 4403/5403. Prerequisites: Restricted to students with 27-180 credits (Sophomores,

Juniors or Seniors) Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-3413 (3) Lithography 1

Introduces the study of stone and metal plate lithography, emphasizing individual creative development in black and white and further development in color printing processes. May be repeated up to 6 total credit hours. Not available to freshmen. Taught with ARTS 4413/5413. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-3423 (3) Screen Printing 1

Introduces the study of silkscreen techniques, emphasizing creativity, individual development, and experimentation in contemporary silkscreen processes. May be repeated up to 6 total credit hours. Not available to freshmen.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-3504 (3) Sculpture 3: Experiments 1

Explores materials, methods, and techniques through a series of assignments emphasizing individual ideas and their relationship to contemporary aesthetics. Prereqs., ARTS 2504 and 2524. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Sculpture

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## ARTS-3514 (3) Sculpture 3: Experiments 2

Explores individual concepts and ideas and their relationship to contemporary issues and aesthetics. a series of assignments are worked out with the instructor based on individual interest. Prereq., ARTS 3504. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Sculpture

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## ARTS-3702 (3) Special Focus in Painting and Drawing

Offers varied focus and special topics in painting, drawing, and related media to explore specialized directions and creative possibilities. Emphasizes experimentation. Content varies by semester; contact individual instructor for more information. May be repeated up to 6 total credit hours. Prereq., ARTS 2002 or 2202. Recommended prereq., ARTS 3002 or 3202.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-3841 (1-3) Undergraduate Independent Study---Photography

Reserved only for special projects in photography, not offered in the curriculum. May be repeated up to 6 total credit hours. Prereq., ARTS 3191 or 4161. Requires a detailed proposal, instructor's signature, and departmental approval.

College of Arts & Sciences Art & Art History Photography

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## ARTS-3842 (1-3) Undergraduate Independent Study---Painting

Reserved for special projects in painting not offered in the curriculum. May be repeated up to 6 total credit hours. Prereqs., ARTS 3202 and instructor consent. Requires a detailed proposal, instructor's sponsorship, and departmental approval.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-3845 (1-3) Undergraduate Independent Study---Ceramics

Reserved for special projects in ceramics not offered in the curriculum. May be repeated up to 6 total credit hours. Prereq., ARTS 3085 and instructor consent. Requires a detailed proposal, instructor's sponsorship, and departmental approval.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-3847 (1-3) Independent Study

Reserved for special projects not offered in the curriculum. May be repeated up to 6 total credit hours. Prereq., detailed proposal, instructor sponsorship, and departmental approval.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-3906 (1-3) Undergraduate Independent Study---Video

Reserved for special projects in video not offered in the curriculum. May be repeated up to 6 total credit hours. Prereq., ARTS 4246 and instructor consent. Requires a detailed proposal, instructor's sponsorship, and departmental approval.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-3937 (1-6) Internship

Gives upper-division students the opportunity to work in public or private organizations on assignments relating to their career goals, and allows them to explore the relationship between theory and practice in their major. May be repeated up to 6 total credit hours.

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Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-4002 (3) Advanced Drawing/Portfolio

Continuation of Drawing 3. Advanced studio class in drawing for creative expression and individual portfolio development. Emphasis varies by semester; contact individual instructor for more information. May be repeated up to 12 total credit hours. Prereq., ARTS 3002. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-4017 (1-3) Special Topics in Studio Arts

Introduces timely subjects in studio art courses that cannot be offered on a regular basis. Information on topics in any given semester is available prior to pre-registration in departmental office. May be repeated up to 18 total credit hours. Prereq., ARTS 1010, 1020 and Arth 1300 or 1400. Restricted to juniors and seniors. Same as ARTS 5017. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-4085 (3) Ceramics 4

Includes lectures, research, and experimentation in clay (wheel and hand construction techniques). May be repeated up to 12 total credit hours. Prereq., ARTS 3085. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-4087 (3) Selected Topics in Contemporary Art

Selectively studies significant areas of visual art of the last decade including major critical opinions. May be repeated up to 6 total credit hours. Prereq., 20 hours of ARTS or ARTH courses. Same as ARTS 5087.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-4095 (3) Special Topics in Ceramics

Designed for students majoring in ceramics. May be repeated up to 9 total credit hours. Taught with ARTS 5095. Prereq., ARTS 3085. Restricted to majors. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-4097 (1-3) Special Topics---Non-Studio

Introduces timely subjects in the visual arts that cannot be offered on a regular basis. Information concerning the topics offered in any given semester is available prior to preregistration from the fine arts department. May be repeated up to 6 total credit hours. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. Same as ARTS 5097. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-4104 (3) Performance/Installation

Primarily focuses upon personal imagery as a live situation occurring in either an invented constructed reality or real environment. Work may be individual or group configuration, and may also take on the visual linguistic form of a solo performance or of a multimedia presentation. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400. May be repeated up to 6 total credit hours with instructor consent. Same as ARTS 5104. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Art & Art History | Sculpture

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## ARTS-4107 (1-3) Special Topics

May be repeated up to 3 total credit hours.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-4117 (3) BFA Seminar

For students intending to pursue graduate work and/or a professional career in art. Emphasizes the development of a critical overview of their work and interests and how they relate to the problems of professional activity. Restricted to Studio Arts (AASF) majors only. Prerequisites: Restricted to Studio Arts (AASF) majors only.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-4118 (3) Visiting Artist Program

Artists of national and international reputation, interacting with graduate and advanced undergraduate students, discuss their studio work at seminar meetings and at public lectures or events. Provides continuous input of significant developments and a comprehensive view of contemporary issues in the arts. May be repeated up to 6 total credit hours. Prereq., portfolio review for undergraduates and senior standing. Same as ARTS 5118. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Visiting Artist Program

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## Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

**Subject**    **Number**

ARTS

### ARTS-4126 (3) Digital Art 2

Offers studio experience using personal computer in the generation and processing of imagery in the visual arts. Prereq., ARTS 2126. Same as ARTS 5126. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

[College of Arts & Sciences](#) [Art & Art History](#) [Media Arts](#)

### ARTS-4127 (3) Art from Nature

Provides an opportunity for advanced students to create nature based art. Studio work and/or appropriate on-site works will be generated through readings and individual and group experiences of nature. Prereq., one 4000 level studio course. Same as ARTS 5127.

[College of Arts & Sciences](#) [Art & Art History](#) [Seminars/Special Topics](#)

### ARTS-4130 (3) Integrated Media

Encourages experimentation with media and integration of traditional areas of drawing, painting, sculpture, and photography. Covers two- and three-dimensional collage/assemblage, correspondence art, artist's books, site-specific, performance, audio, and video art. Same as ARTS 5130.

[College of Arts & Sciences](#) [Art & Art History](#) [Integrated Arts](#)

### ARTS-4161 (3) Photography 4

Explores advanced techniques and concepts of photography as art. Emphasizes photography as a means to formal and expressive ends. May be repeated up to 12 total credit hours. Prereq., ARTS 3191. . Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History

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(AAAH) majors only.

College of Arts & Sciences Art & Art History Photography

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## ARTS-4171 (3) New Directions in Photography

Investigates the use of the photographic image in new, antique, or nonstandard ways including nonsilver, photosculpture, various color processes, photolanguage, photoinstallations, electronic media, performance, filmmaking, electrostatic art (copy machine), photobooks, photocollage, and audio/visual art. Course content changes each semester. May be repeated up to 9 total credit hours. Prereq., ARTS 3191 or equivalent. Same as ARTS 5171. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Photography

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## ARTS-4176 (3) New Directions in Digital Art

Investigates the use of digital art in various contexts including digital narrative, web publishing, Internet art, multimedia performance, animation, conceptual art, information art, sound art, language art, and network installations. Prereqs., ARTS 2126 and 4316/5316 or instructor consent. Same as ARTS 5176. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4196 (3) Advanced Photo-Imaging

Offers an in-depth exploration of digital imaging in the context of the history, aesthetics, and tradition of photography as contemporary art. Emphasis is on digital manipulation, output, and individual growth and development. Prereq., ARTS 2191 or advanced standing in photography or media arts. Same as ARTS 5196.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4202 (3) Advanced Painting/Portfolio

Continuation of Painting 3. Advanced studio class in painting for creative expression and individual portfolio development. Emphasis varies by semester; contact individual instructor for more information. May be repeated up to 12 total credit hours. Prereq., ARTS 3202. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Painting/Drawing

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## ARTS-4226 (3) Advanced Computer Imaging

Explores advanced techniques and concepts of digital image-making. Emphasizes the creative application of computer imaging in the production of visual art through individual projects. Prereq., ARTS 4126. Restricted to junior or senior ARTS or ARTH majors. Same as ARTS 5226.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4236 (3) Electronic Arts Survey 2

Continuation of electronic arts survey. Explores the development of video as an art form. Prerequisite for further studies in video production. Same as ARTS 5236.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4246 (3) Beginning Video Production

Presents a studio course on basic single camera video production strategies and concepts. Through class screenings, projects, demonstrations, discussions, and readings, students gain an introductory familiarity with camera, lighting, sound, editing and the organization and planning involved in a video project. Explores a basic theoretical understanding of video as an art form and its relationship to television, film, art, history, culture. Prereqs., ARTS 1010, 1020 and ARTH 1300 or 1400 or instructor consent. Same as ARTS 5246 and FILM 4240. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4316 (3) History and Theory of Digital Art

Explores the history and theory of digital art. Discussion topics include the emergence of Internet art, hypertext, new media theory, online exhibitions, web publishing, virtual reality, and the networked interface. Includes collaborative and individual projects. Prereq., ARTS 2126 or instructor consent. Same as ARTS 5316. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4346 (3) Intermediate Video Production

Continuation of beginning video production. Extends the knowledge of single camera video production strategies and concepts. Expands the concept of montage (editing) and strategies to develop a video project through class screenings, projects, discussions, and readings. Further theoretical understanding of video as an art form. Prereq., ARTS 4246 or instructor consent. Same as ARTS 5346 and FILM 4340.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4403 (3) Intaglio and Relief 2

Continues the study and experimentation of intaglio and relief processes in black and white, color, digital imagery, and nontoxic processes as much as possible. May be repeated up to 12 total credit hours. Prereq., ARTS 3403. Taught with ARTS 3403/5403. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

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College of Arts & Sciences Art & Art History Printmaking

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## ARTS-4413 (3) Lithography 2

Continues the study of stone and metal plate lithography, emphasizing individual creative development in black and white, and further development in color printing processes. In addition, digital imaging and nontoxic processes are emphasized as much as possible. May be repeated up to 12 total credit hours. Prereq., ARTS 3413. Taught with ARTS 3413/5413. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-4423 (3) Screen Printing 2

Introduces advanced screen printing technology, emphasizing individual creativity and the ability to resolve problems of two-dimensional form. May be repeated up to 12 total credit hours. Prereq., ARTS 3423.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-4433 (3) Alternative Printmaking (Non-Toxic)

Introduces computer-generated imaging and developing ideas as related to traditional forms of printmaking. Emphasizes original development of ideas and skills involved in learning advanced printing processes in lithography and intaglio media. May be repeated up to 12 total credit hours. Same as ARTS 5433. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-4446 (3) Advanced Video Production

Continuation of intermediate video production. Explores advanced technical skills to control the quality of the video image in production, postproduction, and distribution. Emphasizes self-motivated independent projects, conceptual realization of advanced student work and basic working knowledge of distribution and life as a media artist. Promotes further theoretical understanding of video as an art form. May be repeated up to 9 total credit hours. Prereq., ARTS 4346 or instructor consent. Same as ARTS 5446 & FILM 4440.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-4453 (3) Monotype Printing

Introduces monotype printing, with the uniqueness and diversity of its methods of producing art. The process uses some of the best qualities of painting, print making, and drawing. Emphasizes creative individual development, along with processes inherent to this media. May be repeated up to 6 credit hours. Same as ARTS 5453.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-4504 (3) Advanced Sculpture Studio

Individual studies in selected media. May be repeated up to 6 total credit hours. Prereqs., ARTS 3504 and 3514. Prerequisites: Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences Art & Art History Sculpture

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## ARTS-4717 (1-3) Studio Critique

Consists of consultations with faculty on individual studio problems and projects. May be repeated up to 6 total credit hours. Prereqs., junior standing and instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-5017 (1-3) Special Topics in Studio Arts

May be repeated up to 6 total credit hours. Same as ARTS 4017. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-5075 (3) Graduate Ceramics

May be repeated up to 18 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Ceramics

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## ARTS-5087 (3) Selected Topics in Contemporary Art

Same as ARTS 4087. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Seminars/Special Topics

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## ARTS-5095 (3) Graduate Special Topics in Ceramics

Taught with ARTS 4095. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Ceramics

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# Courses

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ARTS

## ARTS-5097 (1-3) Special Topics---Non-Studio

May be repeated up to 6 total credit hours. Same as ARTS 4097. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Seminars/Special Topics](#)

## ARTS-5104 (3) Graduate Performance/Installation

May be repeated up to 6 total credit hours with instructor consent. Same as ARTS 4104. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Sculpture](#)

## ARTS-5107 (1-3) Special Topics

May be repeated up to 7 total credit hours.

[College of Arts & Sciences](#) [Art & Art History](#) [Seminars/Special Topics](#)

## ARTS-5117 (3) Graduate Art Seminar

Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Seminars/Special Topics](#)

## ARTS-5118 (3) Graduate Visiting Artist Program

Same as ARTS 4118. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Visiting Artist Program

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## ARTS-5126 (3) Graduate Digital Art 2

Same as ARTS 4126. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Media Arts

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## ARTS-5127 (3) Art from Nature

Same as ARTS 4127.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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## ARTS-5130 (3) Integrated Media

Same as ARTS 4130.

College of Arts & Sciences | Art & Art History | Integrated Arts

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## ARTS-5140 (3) Integrated Arts Studio

Explores the creative process through a series of conceptually-based studio exercises. Students are encouraged to work across traditional media boundaries as they address themes such as identity, place, spirituality, politics, and consumerism. Includes individual and collaborative studio projects, as well as reading and writing about the course themes. May be repeated up to 9 total credit hours.

College of Arts & Sciences | Art & Art History | Integrated Arts

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## ARTS-5150 (3) Graduate Integrated Arts

Investigates the conjunction of interdisciplinary concepts in the creation of art. Looks beyond traditional media to new sources for art-making. A curious intellect, combined with exceptional research skills, will be the basis for original writing and rigorous discussion.

College of Arts & Sciences | Art & Art History | Integrated Arts

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## ARTS-5161 (3) Graduate Photography

May be repeated up to 18 total credit hours.

College of Arts & Sciences | Art & Art History | Photography

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## ARTS-5171 (3) New Directions in Photography

May be repeated up to 9 total credit hours. Same as ARTS 4171. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Photography

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## ARTS-5176 (3) Graduate New Directions in Digital Art

Same as ARTS 4176. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Media Arts

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## ARTS-5191 (3) Digital Photography in Mongolia

Same as ARTS 4191.

College of Arts & Sciences | Art & Art History | Photography

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## ARTS-5196 (3) Graduate Advanced Photo-Imaging

Same as ARTS 4196.

College of Arts & Sciences | Art & Art History | Media Arts

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## ARTS-5202 (3) Graduate Painting

May be repeated up to 18 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Painting/Drawing

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## ARTS-5226 (3) Graduate Advanced Computer Imaging

May be repeated up to 6 total credit hours. Prereq., ARTS 5126. Same as ARTS 4226.

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College of Arts & Sciences Art & Art History Media Arts

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## ARTS-5236 (3) Graduate Electronic Arts Survey 2

Same as ARTS 4236.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-5246 (3) Graduate Beginning Video Production

Same as ARTS 4246. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-5316 (3) Graduate History and Theory of Digital Arts

Same as ARTS 4316. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-5346 (3) Graduate Intermediate Video Production

Prereq., ARTS 4246/5246. Same as ARTS 4346. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Media Arts

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## ARTS-5403 (3) Graduate Intaglio and Relief

May be repeated up to 18 total credit hours. Taught with ARTS 3403/4403. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-5413 (3) Graduate Lithography

May be repeated up to 18 total credit hours. Taught with ARTS 3413/4413. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Art & Art History Printmaking

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## ARTS-5423 (3) Graduate Screen Printing

May be repeated up to 18 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Printmaking](#)

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## ARTS-5433 (3) Graduate Alternative Printmaking (Non-Toxic)

May be repeated up to 12 total credit hours. Same as ARTS 4433. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Printmaking](#)

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ARTS

## ARTS-5446 (3) Graduate Advanced Video Production

Same as ARTS 4446. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Media Arts](#)

## ARTS-5453 (3) Graduate Monotype Printing

Same as ARTS 4453. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Printmaking](#)

## ARTS-5504 (3) Graduate Sculpture

May be repeated up to 18 credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Art & Art History](#) [Sculpture](#)

## ARTS-5540 (3) Generative Art

Same as ARTS 4540.

[College of Arts & Sciences](#) [Art & Art History](#) [Integrated Arts](#)

## ARTS-5717 (1-3) Graduate Studio Critique

May be repeated up to 6 total credit hours with any single faculty member. Prereq., graduate standing and/or instructor consent.

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

## ARTS-5857 (1-3) Graduate Independent Study

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

## ARTS-5901 (1-3) Graduate Independent Study---Photography

May be repeated up to 6 total credit hours.

College of Arts & Sciences | Art & Art History | Photography

## ARTS-6957 (1-6) Master of Fine Arts Creative Thesis

College of Arts & Sciences | Art & Art History | Seminars/Special Topics

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# Courses

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ASEN

## ASEN-1000 (1) Introduction to Aerospace Engineering Sciences

Introduces aerospace history, curriculum, ethics, and the many areas of emphasis within aerospace engineering. Academic and industry speakers are invited to address various aerospace topics. Prerequisites: Restricted to students with 0-26 credits (Freshmen) Aerospace Engineering (ASEN) or Engineering Open Option majors only.

[College of Engineering & Applied Science](#)
[Aerospace Engineering](#)
[Aerospace Design & System Engr](#)

## ASEN-1400 (3) Gateway to Space

Introduces the basics of atmosphere and space sciences, space exploration, spacecraft design, rocketry, and orbits. Students design, build, and launch a miniature satellite on a high altitude balloon. Explores the current research in space through lectures from industry. Formerly ASEN 2500. Same as ASTR 2500. Prerequisites: Restricted to students with 0-26 credits (Freshmen) Aerospace Engineering (ASEN) majors only.

[College of Engineering & Applied Science](#)
[Aerospace Engineering](#)
[Aerospace Design & System Engr](#)

## ASEN-2001 (4) Aerospace 1: Introduction to Statics, Structures, and Materials

Introduces models and analytical/numerical methods for statics and structural analysis. Topics include force/moment equilibrium, truss analysis, beam theory, stress/strain, failure criteria, and structural design. Matlab proficiency required. Prereqs., APPM 1360, GEEN 1300 or CSCI 1300 or ECEN 1030 and PHYS 1110 (min. grade C). Coreq., ASEN 2002, 2012 or APPM 2350. Offered fall only. Prerequisites: Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#)
[Aerospace Engineering](#)
[Structures, Mat, & Struc Dynam](#)

## ASEN-2002 (4) Aerospace 2: Introduction to Thermodynamics and Aerodynamics

Introduces the fundamental principals and concepts of thermodynamics and fluid dynamic systems. Emphasizes the synthesis of basic science (physics), mathematics, and experimental methods that form the basis for quantitative and qualitative analyses of general aerospace technology systems. Proficiency in Matlab required. Prereqs., APPM 1360, GEEN 1300, CSCI 1300, or ECEN 1030 and PHYS 1110 (min. grade C). Coreqs., ASEN 2001, 2012 and APPM 2350. Offered fall only. Prerequisites: Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

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## ASEN-2003 (5) Aerospace 3: Introduction to Dynamics and Systems

Introduces the principles of particle and planar rigid body dynamics, systems, and controls. Topics include kinematics, kinetics, momentum and energy methods, system modeling, and simple feedback control. Class includes experimental and design laboratory exercises for aerospace applications of dynamic principles. Prereqs., ASEN 2001 and APPM 2350 (min. grade C). Coreq., APPM 2360. Offered spring only. Prerequisites: Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Systems and Control](#)

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## ASEN-2004 (5) Aerospace 4: Aerospace Vehicle Design and Performance

Introduction to design and analysis of aircraft and spacecraft. Aircraft topics include cruise performance, wing design, propulsion, stability, control, and structures. Spacecraft topics includerocket staging, orbit selection, launch systems, and spacecraft subsystems. Includes laboratory experiments and team design exercises. Prereqs., ASEN 2001, 2002 and APPM 2350 (min. grade C). Offered spring only. Prerequisites: Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerospace Design & System Engr](#)

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## ASEN-2012 (2) Experimental and Computational Methods in Aerospace Engineering Sciences

Introduces statistical, experimental, and computational methods used in aerospace engineering sciences. Usage of MatLab is extensive. Coreq., ASEN 2001 and 2002. Prereq., GEEN 1300 or CSCI 1300 or ECEN 1030. Restricted to Aerospace Engineering majors only. Prerequisites: Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerospace Design & System Engr](#)

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## ASEN-2519 (1-6) Special Topics

Studies specialized aspects of the aerospace engineering sciences or innovative treatment of required subject matter at the lower-division level. Course content is indicated in the online SchedulePlanner. Prereq., varies. Restricted to Engineering students.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-2849 (1-3) Independent Study

Study of special projects agreed upon by student and instructor. May be repeated up to 9 total credit hours. Prereq., instructor consent.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-3036 (3) Introduction to Human Spaceflight

Introduces students to the challenges of human space flight. Historical and current space programs and spacecraft are discussed with emphasis on those systems specific to sustaining human crews. Other topics include space environment with respect to sustaining human life and health, physiological and psychological concerns in a space habitat, astronaut selection and training, anomalies, mission operations motivation, costs rationale for human space exploration, and future program directions. Not accepted as a technical elective for engineering majors.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-3046 (3) Introduction to Humans in Aviation

Investigates the history of manned aviation accomplished through a review of the history of flight, the physiological and psychological limitations facing aviators, and investigates the human related causal factors in aviation accidents. The course also looks at the social and economic impacts of aviation in modern society.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-3111 (4) Aerodynamics

Develops the fundamental concepts of aerodynamics and provides a working knowledge for their application to the design of aircraft and launch vehicles operating at various speeds and altitudes, as well as the atmospheric forces on satellites. Prereqs., APPM 2350, ASEN 2002 and 2004 (min. grade C). Restricted to ASEN majors. Offered fall only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science Aerospace Engineering Aerodynamics & Fluid Mechanics

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## ASEN-3112 (4) Structures

Teaches Mechanics of Materials methods of stress and deformation analysis applicable to the design and verification of aircraft and space structures. It offers an introduction to matrix and finite element methods for truss structures, and to mechanical vibrations. Prereq., ASEN 2001, 2003, 2004, and APPM 2360 (min. grade C). Restricted to ASEN majors. Offered fall only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-3113 (4) Thermodynamics and Heat Transfer

Focuses on the applications of the first and second laws of thermodynamics to control volumes and teaches the fundamental concepts of different modes of energy and heat transfer. Learn to use these concepts in gas dynamics, high-speed vehicle spacecraft design, environmental systems, and energy analysis. Prereqs., APPM 2350 and ASEN 2002 (min grade C). Offered fall only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science   Aerospace Engineering   Thermodynamics and Propulsion

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## ASEN-3116 (3) Introduction to Biomedical Engineering

Addresses human responses to environment and physical stimuli. Makes use of engineering and physical principles in the study of human dynamics, arriving at reasonable solutions to 15 major areas of biomedical consent. Prereq., instructor consent.

College of Engineering & Applied Science   Aerospace Engineering   Bioastronautics & Microgravity

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## ASEN-3128 (4) Aircraft Dynamics

Develops the fundamental concepts of aircraft dynamics. Covers flight mechanics, performance, dynamics and control of aircraft, and how they impact aircraft design. Prereqs., ASEN 2002, 2003, 2004, and APPM 2360 (min. grade C). Restricted to ASEN majors. Offered spring only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science   Aerospace Engineering   Aerospace Design & System Engr

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## ASEN-3200 (4) Orbital Mechanics/Attitude Dynamics and Control

Presents the fundamentals of orbital mechanics, 3D rigid body dynamics, and satellite attitude dynamics and controls. Prereqs., ASEN 2003, 2004, and APPM 2360 (min. grade C). Restricted to ASEN majors. Offered spring only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science   Aerospace Engineering   Astrodynamics & Orbital Mech

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## ASEN-3300 (4) Aerospace Electronics and Communications

Provides the fundamentals of electronics and communications widely used in aerospace engineering. Includes analog instrumentation electronics, data acquisition, digital electronics, and radio communication. Prereqs., ASEN 2003, PHYS 1120, and APPM 2360 (min grade C). Offered spring only. Prerequisites: Restricted to Aerospace Engineering majors only.

College of Engineering & Applied Science   Aerospace Engineering   Systems and Control

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## ASEN-3519 (1-4) Special Topics

Studies specialized aspects of the aerospace engineering sciences or innovative treatment of required subject matter at the upper-division level. Course content is indicated in the online SchedulePlanner. Prereq., varies. Prerequisites: Restricted to College of

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Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-3930 (6) Aerospace Engineering Cooperative Education

Students will participate in a previously arranged, department-sponsored cooperative education program with a government agency or industry. Recommended prereq., GPA above 3.0. Restricted to juniors/seniors majors.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-4010 (3) Introduction to Space Dynamics

Includes central force fields, satellite orbits, rocket dynamics, orbital transfer, interplanetary mission analysis, and perturbation due to atmospheric drag and Earth oblateness. Prereq., ASEN 3200 or equivalent, or instructor consent required. Prerequisites: Requires pre-requisite course of ASEN 3200. Restricted to Aerospace Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-4012 (3) Aerospace Materials

Studies aerospace grade aluminum, magnesium, nickel, and titanium alloys. Covers heat treatment, defect structures, failure mechanisms, corrosion and its prevention, the effect of space radiation on materials, and high and low temperature effects. Introduces composite materials with a lab design and experiment. Emphasizes the selection of materials in design with procedures for choosing materials rationally. Case studies include aerogels, carbides, composites, powder metallurgy, nanomaterials, and advanced materials manufacturing technologies. Prereq., ASEN 2001 or instructor consent. Prerequisites: Requires pre-requisite course of ASEN 2001.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Structures, Mat, & Struc Dynam](#)

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## ASEN-4013 (3) Foundations of Propulsion

Describes aerothermodynamics and design of both rocket and air-breathing engines. Includes ramjets, turbojets, turbofans, and turboprop engines, as well as liquid, solid, and hybrid rockets. Prereqs., ASEN 3113 and APPM 2360 (min. grade C). Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Thermodynamics and Propulsion](#)

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## ASEN-4018 (4) Senior Projects 1: Design Synthesis

Focuses on the synthesis of technical knowledge, project management, design process, leadership, and communications within a team environment. Students progress through the design process beginning with requirements development, then preliminary design and culminating with critical design. Prereqs., ASEN 3111, 3112, 3113, 3128, 3200 and 3300 (min. grade C). Offered fall only. Prerequisites: Requires pre-requisite courses of ASEN, 3111, 3112, 3113, 3128, 3200, and 3300 (Minimum Grade C). Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Aerospace Engineering (ASEN) majors only.

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## ASEN-4028 (4) Senior Projects 2: Design Practicum

Focuses on the fabrication, integration, verification and validation of designs produced in ASEN 4018. Students work within the same teams from ASEN 4018. Prereq., ASEN 4018 (min. grade C) and instructor consent required. Restricted to ASEN majors. Offered spring only. Prerequisites: Requires pre-requisite course of ASEN 4018. Restricted to Aerospace Engineering majors only.

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ASEN

### ASEN-4047 (3) Probability and Statistics for Aerospace Engineering Sciences

Considers probability concepts and theory for better design and control of aerospace engineering systems. Includes descriptive and inferential statistical methods for experimental analysis. Also covers discrete and continuous random variable distributions, estimators, confidence intervals, regression, analysis of variance, hypothesis testing, nonparametric statistics, random processes, and quality control, including software models of same. Prereq., junior or graduate standing or instructor consent. Same as ASEN 5047.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Computational & Analytic Meth](#)

### ASEN-4090 (3) Global Positioning Systems Applications

Focuses on GPS technology, software development, and applications. Lectures will cover the principal concepts used in GPS, and weekly laboratories will apply that knowledge. The course will culminate in student design projects using GPS. Prereqs., APPM 2360 and GEEN 1300 or equivalent. Recommended junior/senior standing in engineering.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Global Positioning Systems](#)

### ASEN-4114 (3) Automatic Control Systems

Methods of analysis and design of feedback control for dynamic systems. Covers Nyquist, Bode, and linear quadratic methods based on frequency domain and state space models. Laboratory experiments provide exposure to computation for simulation and real time control, and typical control system sensors and actuators. Prereqs., ASEN 3128 and 3200. Same as ASEN 5114. Prerequisites: Requires pre-requisite course of ASEN 3128.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Systems and Control](#)

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## ASEN-4123 (3) Vibration Analysis

Highlights free and forced vibration of discrete and continuous systems. Examines Lagrange's equation, Fourier series, Laplace transforms, and matrix and computational methods. Applies knowledge to practical engineering problems. Prereq., MCEN 3030. MCEN 4123 and ASEN 4123 are the same course.

College of Engineering & Applied Science Aerospace Engineering Solids

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## ASEN-4128 (3) Human Factors in Engineering and Design

Introduces the field of human factors engineering and investigates human psychological, physiological and performance limitations in complex systems and why it is vital for engineers to understand human operational limitations when designing complex systems. Course includes studies of real accidents caused by human error, good and bad designs, latent conditions and accident-producing designs. Goal is an understanding of how to conduct engineering design with consideration of human factors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Engineering & Applied Science Aerospace Engineering Aerospace Design & System Engr

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## ASEN-4138 (3) Aircraft Design

Two lectures and one lab per week. Examines principles of aircraft configuration and design to meet given performance specifications, taking into account aerodynamic, stability and control, and flying quality considerations, as well as airworthiness regulations. Includes preliminary design of the major elements of an aircraft. Prereq., ASEN 3128. Restricted to ASEN majors. Prerequisites: Requires prerequisite course of ASEN 3128. Restricted to ASEN Majors only.

College of Engineering & Applied Science Aerospace Engineering Aerospace Design & System Engr

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## ASEN-4148 (3) Spacecraft Design

Integrates the design elements and fundamental analyses necessary to complete the conceptual (Phase A) design of an unmanned spacecraft. Lecture and discussion explore mission design, propulsion, power, structure, thermal, attitude control, communication, command, and data handling and attitude control systems. The role of project management and systems engineering are examined. Resource estimating and lessons learned in satellite programs are reviewed. Restricted to senior ASEN majors or instructor consent required. Same as ASEN 5148. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Aerospace Engineering (ASEN) majors only.

College of Engineering & Applied Science Aerospace Engineering Aerospace Design & System Engr

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## ASEN-4215 (3) Descriptive Physical Oceanography

Introduces descriptive and dynamical physical oceanography, focusing on the nature and dynamics of ocean currents and their role in the distribution of heat and other aspects of ocean physics related to the Earth's climate. Dynamical material limited to mathematical descriptions of oceanic physical systems. Restricted to seniors and graduate students. Same as ASEN 5215 and ATOC 4215. Prerequisites: Restricted to students with 87-180 credits (Seniors) or graduate students only.

College of Engineering & Applied Science Aerospace Engineering Atmospheric, Oceanic & Space S

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## ASEN-4216 (3) Neural Signals and Functional Brain Imaging

Explores bioelectric and metabolic signals generated by the nervous system from two stand points: 1) their biophysical genesis and role in neural integration and 2) neurotechnologies such as electroencephalography, magnetoencephalography, deep brain stimulation, and functional magnetic resonance imaging. Prereqs., ECEN 2260 or 3030, ASEN 3300, or instructor consent. Same as ASEN 5216 and ECEN 4811. Prerequisites: Requires pre-requisite course of ASEN 3300 or ECEN 2260 or ECEN 3030.

College of Engineering & Applied Science | Aerospace Engineering | Bioastronautics & Microgravity

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## ASEN-4218 (3) Large Space Structures Design

Develops the necessary structural analysis skills for conducting conceptual and preliminary designs of large space structures with a practical emphasis on structures considered by NASA over the past 20 years. Applies analysis skills to a broad range of space missions requiring large space structures, emphasizing low cost and practical design. Prereq., senior standing in ASEN or MCEN, or instructor consent. Same as ASEN 5218.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-4222 (3) Materials Science for Composite Manufacturing

Studies common matrix materials and the modifications and improvements of properties which can be achieved by adding second phase reinforcements. Properties will be significantly affected by the design approach and by requirements, and by the procedure of adding reinforcements. Investigates polymer, ceramic and metallic materials. Explores manufacturing, fabrication and processing techniques. Evaluates future developments. Prereq., ASEN 3112 or equivalent, or instructor consent. Coreq., ASEN 4012 or instructor consent. Same as ASEN 5222. Prerequisites: Requires pre-requisite course of ASEN 3112 and pre-requisite or co-requisite course of ASEN 4012.

College of Engineering & Applied Science | Aerospace Engineering | Structures, Mat, & Struc Dynam

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## ASEN-4238 (3) Computer-Aided Control Systems Design

Covers Matlab and Simulink software, and multivariable control system synthesis and analysis techniques for typical aerospace control problems. Students formulate control problems and synthesize control functions using lineage quadratic techniques. Includes numerical integration of differential equations and nonlinear simulation of orbit and attitude dynamics. Prereq., APPM 2360.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-4248 (3) Computer-Aided Control System Design 2

Studies theory and engineering applications of Kalman filter techniques. Covers discrete and continuous filters, the extended Kalman filter, and their application to guidance, navigation, and control, including satellite orbit and attitude problems, inertial and control navigation, and the Global Positioning System. Prereq., ASEN 4238 or instructor consent. Prerequisites: ASEN 4248 PREREQ

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## ASEN-4255 (3) Environmental Aerodynamics

a review of the properties and causes of hazards posed by the environment, ranging from atmospheric wind shear to tornadic flows. Involves a multidisciplinary approach combining analytical, numerical, scale modeling studies with extensive field measurements, wind energy, and biophysical aerodynamics. Prereq., senior standing in ASEN. Same as ASEN 5255.

## ASEN-4338 (3) Computer Analysis of Structures

Covers basic structural design concepts and finite element modeling techniques. Emphasizes use of finite element static and dynamic analysis to validate and refine an initial design. Introduces basic design optimization and tailoring. Proficiency in Matlab required. Prereq., ASEN 3112. Prerequisites: Requires pre-requisite courses of ASEN 3112

## ASEN-4426 (3) Neural Systems and Physiological Control

A biophysical exploration of human physiology from the standpoints of control systems and neural information processing. Topics include: neural control of movement and cardiovascular performance, tissue growth and repair, carcinogenesis, and physiological responses to microgravity. Prereqs., ECEN 2260 or 3030, ASEN 3300, or instructor consent. Same as ASEN 4426 and ECEN 4821/5821.

Prerequisites: Requires pre-requisite course of ASEN 3300 or ECEN 2260 or ECEN 3030

## ASEN-4436 (3) Brains, Minds, Computers

An introductory, integrative survey of brain science, cognitive science, artificial intelligence, and their interrelations. Considers central concepts and principles from each of these areas and the similarities and difference of brain, minds, computers, robots, etc. Same as ASEN 5436 and ECEN 4831/5831. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

## ASEN-4519 (1-3) Special Topics

Studies specialized aspects of the aerospace engineering sciences or innovative treatment of required subject matter at the upper-division level. Course content is indicated in the online Schedule Planner. Prereq., varies. Prerequisites: Restricted to College of Engineering majors only.

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## ASEN-4849 (1-6) Independent Study

Special projects agreed upon by student and instructor. Instructor consent required.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-4859 (1-6) Undergraduate Research

Assigns a research problem on an individual basis. Instructor consent required.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-5007 (3) Introduction to Finite Elements

Introduces finite element methods used for solving linear problems in structural and continuum mechanics. Covers modeling, mathematical formulation, and computer implementation. Prereq., matrix algebra. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-5010 (3) Spacecraft Attitude Dynamics and Control

Includes rigid body kinematics and spacecraft attitude descriptions, torque-free attitude dynamics, static attitude determination, motion and stability due to gravity gradient torque and spinning craft, passive and active methods of attitude control, nonlinear regulator and attitude tracking feedback control laws. Prereq., ASEN 3200 or equivalent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Astrodynamics & Orbital Mech

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## ASEN-5012 (3) Mechanics of Aerospace Structures

Applies fundamental concepts of continuum mechanics, theory of elasticity, and energy methods to the analysis of structures. Prereqs., APPM 2360 and ASEN 2001, 2003, and 3112, or equivalent. Similar to MCEN 5023. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-5014 (3) Linear Control Systems

Introduces the theory of linear systems, including vector spaces, linear equations, structure of linear operators, state space descriptions of dynamic systems, and state feedback control methods. Prereq., ASEN 3200. Prerequisites: Restricted to College of Engineering

graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Systems and Control](#)

## ASEN-5016 (3) Space Life Sciences

Familiarizes students with factors affecting living organisms in the reduced-gravity environment of space flight. Covers basic life support requirements, human physiological adaptations, and cellular-level gravity dependent processes with emphasis on technical writing and research proposal preparation. Prereq., graduate standing in engineering or senior with 3.25 GPA. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

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## Courses

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ASEN

### ASEN-5018 (3) Graduate Projects I

Exposes MS and PhD students to project management and systems engineering disciplines while working a complex aerospace engineering project as part of a project team. The project team may perform some or all of the following project activities during this first semester of the two-semester course sequence: requirements, definition, design and design review, build, test, and verification.

Recommended prereqs., ASEN 4138, or 5148, or 5158.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerospace Design & System Engr](#)

### ASEN-5022 (3) Dynamics of Aerospace Structures

Applies concepts covered in undergraduate dynamics, structures, and mathematics to the dynamics of aerospace structural components, including methods of dynamic analysis, vibrational characteristics, vibration measurements, and dynamic stability. Prereqs., ASEN 5012, 5227, or equivalent. Recommended prereq., MATH 3130. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Structures, Mat, & Struc Dynam](#)

### ASEN-5034 (3) Stochastic Methods for Systems Engineering

Same as ASEN 4034. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerospace Design & System Engr](#)

### ASEN-5047 (3) Probability and Statistics for Aerospace Engineering

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## Sciences

Same as ASEN 4047. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Computational & Analytic Meth](#)

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## ASEN-5050 (3) Space Flight Dynamics

Includes celestial mechanics, space navigation, and orbit determination; trajectory design and mission analysis trajectory requirements; and orbital transfer and rendezvous. Prereq., ASEN 3200 or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-5051 (3) Fluid Mechanics

Highlights physical properties of gases and liquids; kinematics of flow fields; and equations describing viscous, heat-conducting Newtonian fluids. Emphasizes exact solutions and rational approximations for low and high speed dissipative flows, surface and internal waves, acoustics, stability, and potential flows. Prereq., instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

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## ASEN-5053 (3) Rocket Propulsion

An in depth presentation of the theory, analysis, and design of rocket propulsion systems. Liquid and solid propellant systems are emphasized with an introduction to advanced propulsion concepts. Nozzle and fluid flow relationships are reviewed for background. Prereq., senior standing in ASEN or MCEN, or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Thermodynamics and Propulsion](#)

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## ASEN-5063 (3) Gas Turbine Propulsion

Designed to teach the theory, analysis and design of modern gas turbine engines used for aircraft propulsion. Will deal with cycle and performance analyses, and analysis and design of compressors, turbines, intakes, nozzles and combustors as well as component matching. Prereq., ASEN 4013 or equivalent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Thermodynamics and Propulsion](#)

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## ASEN-5070 (3) Introduction to Statistical Orbit Determination 1

Develops the theory of batch and sequential (Kalman) filtering, including a review of necessary concepts of probability and statistics. Course work includes a term project that allows students to apply classroom theory to an actual satellite orbit determination problem.

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Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-5090 (3) Introduction to Global Navigation Satellite Systems

Global Navigation Satellite Systems (GNSS) are important tools for navigation, science, and engineering. Introduces GNSS hardware, signal structure, algorithms, error sources, and modeling techniques. Programming experience is required. Restricted to Engineering (ENGR) graduate students or Aerospace Engineering-Concurrent Degree (C-ASEN) students. Prerequisites: Restricted to Engineering (ENGR) graduate students or Aerospace Engineering-Concurrent Degree (C-ASEN) students.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Global Positioning Systems](#)

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## ASEN-5111 (3) Introduction to Aeroelasticity

Introduces static and dynamic aeroelasticity of airfoils and wings. Covers the classical aeroelasticity theory and introduces computational methods for aeroelastic problems. Prereqs., ASEN 3111, MATH 3130, and MATH 4430, or equivalent, or instructor consent.

Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Structures, Mat, & Struc Dynam](#)

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## ASEN-5114 (3) Automatic Control Systems

Same as ASEN 4114. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Systems and Control](#)

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## ASEN-5116 (3) Spacecraft Life Support Systems

Provides a working knowledge of the systems needed to sustain human life in a spacecraft environment. Emphasis is on understanding functional requirements of a life support system; operational details of subsystem technologies; new concepts currently being considered in NASA's advanced programs; and conducting a technical trade study. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Bioastronautics & Microgravity](#)

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## ASEN-5122 (3) Control of Aerospace Structures 1

Introduces the basic problems in dynamic modeling and active control of large spacecraft and satellites. Includes system descriptions, model reduction, controller design, and closed-loop stability analysis. Prereq., ASEN 3200, graduate standing, or instructor consent.

Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Structures, Mat, & Struc Dynam](#)

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## ASEN-5148 (3) Spacecraft Design

Same as ASEN 4148. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-5151 (3) High Speed Aerodynamics

Provides aerodynamic theory applicable to the high speed flight of subsonic, transonic, and supersonic aircraft, and hypersonic vehicles. Topics include linear theory of subsonic and supersonic speeds, the nonlinear theories of transonic and hypersonic speeds, and compressible boundary layers. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Aerospace Engineering | Aerodynamics & Fluid Mechanics

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## ASEN-5158 (3) Space Habitat Design

Utilizes systems engineering methods for designing a spacecraft intended for human occupancy and provides a working knowledge of the technologies used to sustain life. Emphasis is placed on deriving functional requirements from stated mission objectives, developing integrated vehicle schematics, and comparing design options by trade study. Prereq., graduate standing in engineering or senior with 3.25 GPA. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-5168 (3) Remote Sensing Instrumentation Design

Reviews and makes a detailed analysis of satellite instrumentation techniques and systems to understand the components, limitations, and overall capabilities. Emphasis on optical systems with in-depth treatment of conventional radiometry. Introduces both passive and microwave methods. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-5188 (3) Space Systems Engineering

Develop an understanding and appreciation for the fundamentals and pragmatic principles of systems engineering and their application to space missions. This course establishes a working knowledge of the primary techniques systems engineers use to guide the development of complex systems, including: requirements development, system synthesis, good design practices, system optimization, exception handling, interface management and trade studies. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Aerospace Engineering | Aerospace Design & System Engr

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## ASEN-5212 (3) Composite Structures and Materials

Develops the macromechanical and micromechanical theory of the elastic behavior and failure of composite laminates. Applies basic theory to a broad range of practical problems including the buckling and vibration of composite plates, columns, and shells. Prereq., senior standing in aerospace or mechanical engineering, or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-5215 (3) Descriptive Physical Oceanography

Same as ASEN 4215 and ATOC 5215. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Atmospheric, Oceanic & Space S

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## ASEN-5216 (3) Neural Signals and Functional Brain Imaging

Same as ASEN 4216 and ECEN 5811. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-5218 (3) Large Space Structures Design

Same as ASEN 4218. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Aerospace Design & System Engr

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## ASEN-5222 (3) Materials Science for Composite Manufacturing

Prereqs., ASEN 3112 and 4012 or equivalent, or instructor consent. Same as ASEN 4222. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-5227 (3) Mathematics for Aerospace Engineering Sciences 1

Provides an introduction to the methods and mathematics of advanced engineering analysis tailored to aerospace engineering applications. Topics include vector and tensor calculus, ordinary differential equations, and an introduction to the calculus of variations. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Computational & Analytic Meth

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## Courses

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ASEN

### [ASEN-5235 \(3\) Introduction to Atmospheric Radiative Transfer and Remote Sensing](#)

Examines fundamentals of radiative transfer and remote sensing with primary emphasis on the Earth's atmosphere; emission, absorption and scattering by molecules and particles; multiple scattering; polarization; radiometry and photometry; principles of inversion theory; extinction- and emission-based passive remote sensing; principles of active remote sensing; lidar and radar; additional applications such as the greenhouse effect and Earth's radiative energy budget. Same as ATOC 5235. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Remote Sensing](#)

### [ASEN-5245 \(3\) Radar and Remote Sensing](#)

Examines active techniques of remote sensing, with emphasis on radar fundamentals, radar wave propagation, scattering processes, and radar measurement techniques and design. Examines specific radar systems and applications, such as synthetic aperture radar phased arrays for atmosphere, space, land, and sea applications. Restricted to seniors or graduate students in engineering. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Remote Sensing](#)

### [ASEN-5255 \(3\) Environmental Aerodynamics](#)

Reviews the properties and causes of hazards posed by the environment, ranging from atmospheric wind shear to tornadic flows. Involves a multidisciplinary approach, combining analytical, numerical, and scale modeling studies with extensive field measurements, wind energy, and biophysical aerodynamics. Prereq., senior standing in aerospace engineering. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Atmospheric, Oceanic & Space S](#)

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## ASEN-5307 (3) Engineering Data Analysis Methods

Gives students broad exposure to a variety of traditional and modern statistical methods for filtering and analyzing data. Topics include estimation methods, principal component analyses and spectral analyses. Introduces these methods and provides practical experience with their use. Students carry out problem assignments. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Aerospace Engineering   Computational & Analytic Meth

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## ASEN-5315 (3) Ocean Modeling

Introduces students to basic principles behind, and the current practices in, ocean modeling. Discusses different prevailing approaches. Offers students hands-on experience with the use of supercomputers and work stations for model running and pre- and post-processing. Prereqs., graduate standing or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Aerospace Engineering   Atmospheric, Oceanic & Space S

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## ASEN-5325 (3) Small Scale Processes in Geophysical Fluids

Provides an overview of mixing and wave processes in the oceans and the atmosphere. Topics include turbulent boundary layers in the lower atmosphere and the upper ocean, air-sea interactions, and surface and internal waves. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Aerospace Engineering   Atmospheric, Oceanic & Space S

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## ASEN-5335 (3) Aerospace Environment

Examines the components of the solar-terrestrial system and their interactions to provide an understanding of the re-entry and orbital environments within which aerospace vehicles operate. Includes the sun, solar wind, magnetosphere, ionosphere, thermosphere, radiation belts, energetic particles, comparative environments (Mars, Venus, etc.), orbital debris, spacecraft charging, particle effects on systems, shielding, and satellite drag. Prereq., senior or graduate standing in engineering or related physical sciences. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

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## ASEN-5347 (3) Math Methods in Dynamics

Two-part graduate-level course on dynamics. Covers both flexible and rigid multibody analytical dynamics and finite element method for dynamics. Emphasizes formulations that naturally lead to easy computer implementation and stability, linearization, and modern rotational kinematics. Prereqs., graduate standing and instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Aerospace Engineering   Structures, Mat, & Struc Dynam

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## ASEN-5417 (3) Numerical Methods for Differential Equations

Provides computational skills and basic knowledge of numerical methods for advanced courses in engineering/scientific computation using Fortran, C, or Matlab. Prereq., APPM 2360 and instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Computational & Analytic Meth

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## ASEN-5426 (3) Neural Systems and Physiological Control

Same as ASEN 4426 and ECEN 4821/5821. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-5436 (3) Brains, Minds, Computers

Prereq., graduate standing. Same as ASEN 4436, ECEN 4831/5831. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-5506 (1-2) Bioastronautics Seminar

Focuses on current topics related to space habitat systems design and research aimed at understanding the effects of spaceflight on living organisms ranging from humans down to microbes. Literature analysis and scientific presentations are expected. Emphasis is on biophysical mechanisms, comprehensive models, and related technology development. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Bioastronautics & Microgravity

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## ASEN-5519 (1-3) Selected Topics

Reflects upon specialized aspects of aerospace engineering sciences. Course content is indicated in the online Class Search. Prereq., varies. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-5849 (1-6) Independent Study

Study of special projects. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-5940 (3-6) Engineering Research Internship

Grants credit to foreign visiting graduate students for conducting research within the Aerospace Engineering Sciences department. Credits can be transferred to the student's home institution. CU-Boulder students may also receive credit for conducting research outside of the university, either overseas or in the US. Restricted to students in final year of undergraduate work and graduate students from CU-Boulder or foreign institutions. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-6008 (3) Interplanetary Mission Design

Exploration of principles and methods related to the design and construction of trajectories for interplanetary mission design. Some topics covered include: two-and three-body motion, gravity assists, maneuver computation, navigation, numerical integration, and construction of orbits. The main focus is on simple ballistic mission designs, such as Galileo or Cassini, however, libration point trajectories will also be covered. Prereq., ASEN 5050 or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-6009 (1-2) Special Topics Seminar

Presents research and developments in each department's focus areas. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-6010 (3) Advanced Spacecraft Dynamics and Control

Studies the dynamic modeling and control of spacecraft containing multiple momentum exchange devices, and/or flexible spacecraft components. Will develop nonlinear feedback control algorithms, explore singularity avoidance strategies. The second half of the course derives analytical methods (D'Alembert's equations, Lagrange's equations, Boltzmann Hamel equations) to model a hybrid rigid/flexible spacecraft system. Restricted to Engineering (ENGR) graduate students or Aerospace Engineering-Concurrent Degree (C-ASEN) students. Prereq., ASEN 5010 or equivalent or instructor consent. Repeatable for credit up to 6 total credit hours. Prerequisites: Restricted to Engineering (ENGR) graduate students or Aerospace Engineering-Concurrent Degree (C-ASEN) students.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-6013 (3) High Speed Propulsion

Covers air-breathing and rocket propulsion cycles, their relative performance trade-offs, and how they fit within the context of a vehicle system. Specific emphasis will be placed on fundamental cycle analyses, component level design, and propulsion/airframe integration for rockets, turbojets, ramjets, scramjets, combined cycles, and other advanced propulsion concepts. Prereq., ASEN 4013 or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Thermodynamics and Propulsion](#)

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## ASEN-6014 (3) Spacecraft Formation Flying

Studies the dynamic modeling and control of spacecraft formations orbiting about a planet. Investigate linear and nonlinear relative motion descriptions, rectilinear and curvilinear coordinates, orbit element difference based descriptions, J2-invariant relative orbits, as well as Lyapunov-based relative motion control strategies. Prereq., ASEN 5050 or equivalent, or instructor consent. May be repeated up to 6 total credit hours.

College of Engineering & Applied Science Aerospace Engineering Systems and Control

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## ASEN-6020 (3) Optimal Trajectories

Introduces the theory and practice of trajectory optimization. The general theory behind optimization and optimal control will be introduced with an emphasis on the properties of optimal trajectories. The main application will be to space trajectories, but other applications will also be considered. Prereq., ASEN 5050 or instructor consent. Recommended prereq., ASEN 5014. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Aerospace Engineering Astrodynamics & Orbital Mech

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## ASEN-6021 (3) Viscous Flow

Studies low Reynolds number flows, including incompressible and compressible laminar boundary layer theory; similarity theory; and separation, transition, and turbulent boundary layers. Prereq., ASEN 5051 or equivalent, or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Aerodynamics & Fluid Mechanics

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## ASEN-6024 (3) Nonlinear Control Systems

Introduces the analysis and control design methods for nonlinear systems, including Lyapunov and Describing Function methods. Prereq., ASEN 5014. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Systems and Control

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## ASEN-6028 (3) Graduate Projects II

Exposes MS and PhD students to leadership positions in project management and systems engineering while working a complex aerospace engineering project as part of a project team. The project team may perform some or all of the following project activities during this second semester of the two-semester course sequence: requirements definition, design and design review, build, test, and verification. Prereq., ASEN 5018. Recommended prereq., ASEN 4138, or 5148, or 5158. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Aerospace Design & System Engr

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## ASEN-6037 (3) Turbulent Flows

Studies turbulent closure methods and computational procedures used to solve practical turbulent flows. Emphasizes multi-equation models used with time-averaged equations to calculate free-turbulent shear-flows and turbulent boundary layers. Employs spectral methods in direct and large-eddy simulation of turbulence. Prereq., ASEN 5051 or equivalent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

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# Courses

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ASEN

## ASEN-6060 (3) Advanced Astrodynamics

Covers Lagrangian and Hamiltonian formalisms for astrodynamics problems, the computation and characterization of space trajectories in highly dynamic environments, computation of periodic orbits, stability analysis of orbital motion, and development of analytical theories for dynamics. Prereq., ASEN 5050 or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

## ASEN-6061 (3) Molecular Gas Dynamics and DSMC

Describes the composition and flow of gases on a microscopic level to examine the behavior of the molecules that make up a macroscopic flow system. Thermodynamic properties, transport phenomena, and the governing Boltzmann Equation are derived from molecular collision dynamics and the kinetic theory. The Direct Simulation Monte Carlo method is introduced with applications. Restricted to graduate students or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

## ASEN-6070 (3) Satellite Geodesy

Focuses on the measurement of the Earth's gravitational field, rotational characteristics, and shape using Earth and space-based tracking of artificial satellites. Particular emphasis on satellite altimetry and satellite gravity measurements. Prereq., ASEN 3200 or instructor consent. Credit not granted for this course and ASEN 5060. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

## ASEN-6080 (3) Introduction to Statistical Orbit Determination 2

Continuation of ASEN 5070. Emphasizes orthogonal transformation techniques such as Givens and Householder, square root filtering and smoothing, and considers covariance analysis. Also nonlinear filters and dynamic model compensation techniques. Requires term project that involves the application of many of the techniques required for precise orbit determination. Prereq., ASEN 5070. Formerly ASEN 5080. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Astrodynamics & Orbital Mech](#)

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## ASEN-6090 (3) Advanced Global Navigation Satellite Systems: Software and Applications

Focuses on high-precision applications of Global Navigation Satellite Systems (GNSS) and the software tools that are needed to achieve these precisions. Topics include precise orbital determination, reference frames, atmospheric delays, relativity, clock models, ambiguity resolution, and scientific applications. Prereq., ASEN 5090. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Global Positioning Systems](#)

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## ASEN-6091 (3) Global Navigation Satellite System (GNSS) Receiver Architecture

Investigates the overall architecture of satellite navigation receivers: including both the analog radio frequency conditioning (antenna to the analog-to-digital converter) and the various signal processing algorithms. Such treatment of the operation of the receiver will provide insight into the trade-offs that go into GNSS as well as the more broad generic spread spectrum receiver design. Recommended prereq., ASEN 5090. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Global Positioning Systems](#)

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## ASEN-6107 (3) Nonlinear Finite Element Methods

Continuation of ASEN 5007. Covers the formulation and numerical solution of nonlinear static structural problems by finite element methods. Emphasizes the treatment of geometric nonlinearities and structural stability. Prereq., ASEN 5007. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Specialized Courses](#)

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## ASEN-6210 (1-3) Remote Sensing Seminar

Covers subjects pertinent to remote sensing of the Earth, including oceanography, meteorology, vegetation monitoring, and geology. Emphasizes techniques for extracting geophysical information from satellite data. Course requirement for Remote Sensing Certificate. Restricted to graduate students. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Remote Sensing](#)

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## ASEN-6220 (3) Topics in Remote Sensing

Covers infrared and microwave techniques for remote sensing, emphasizing oceanographic applications, fundamentals of electromagnetic radiation, remote sensing instrumentation (radars and radiometers), and conversion of sensory data to geophysical parameters, including sea surface topography, temperature, and atmospheric moisture. Prereq., graduate standing and instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Remote Sensing](#)

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## ASEN-6327 (3) Computational Fluid Mechanics

Introduction to advanced computational methods for the solution of fluid mechanics problems on the computer with emphasis on nonlinear flow phenomena. Prereq., ASEN 5417 or instructor consent. Formerly ASEN 5327. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

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## ASEN-6337 (3) Remote Sensing Data Analysis

Reviews satellite remote sensing instrumentation and methods. Student teamwork involves real satellite data for applications in oceanography, atmospheric science, and terrestrial physics. Students develop problem-solving skills and use the internet to gather satellite and in situ data to address chosen problems. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Remote Sensing](#)

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## ASEN-6367 (3) Advanced Finite Element Methods for Plates, Shells, and Solids

Continues ASEN 5007. Covers more advanced FEM applications to linear static problems in structural and continuum mechanics. Focuses on modeling, formulation, and numerical solutions of problems modeled as plates, shells, and solids. Includes an overview of advanced variational formulations. Prereqs., introductory graduate level course in FEM and familiarity with linear algebra. Formerly ASEN 5367. Credit not granted for this course and ASEN 5367. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Structures, Mat, & Struc Dynam](#)

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## ASEN-6427 (3) Advanced Computational Fluid Dynamics

Introduces computational techniques particularly applicable to high-speed gas flows that contain shocks. Complicated numerical methods are developed from relatively simple numerical modules. Prereq., ASEN 5417 or instructor consent. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Aerospace Engineering](#) [Aerodynamics & Fluid Mechanics](#)

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## ASEN-6517 (3) Computational Methods In Dynamics

Covers modeling, computational algorithms and their computer implementation for both linear and nonlinear dynamical systems. Topics covered include transient analysis, wave propagation, multiphysics analysis, and their significant engineering applications. Prereq., ASEN 5022. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Structures, Mat, & Struc Dynam

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## ASEN-6519 (1-3) Special Topics

Reflects upon specialized aspects of aerospace engineering sciences. Course content is indicated in the online Schedule Planner. Prereq., varies. Prerequisites: Restricted to College of Engineering graduate students or Aerospace Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-6849 (1-6) Independent Study

Studies special projects agreed upon by student and instructor.

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-6950 (1-6) Master's Thesis

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## ASEN-8990 (1-10) Doctoral Thesis

College of Engineering & Applied Science Aerospace Engineering Specialized Courses

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## Courses

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ASIA

### ASIA-1000 (3) Introduction to South and Southeast Asian Civilizations

Interdisciplinary survey course, emphasizing cultural developments in the Indian subcontinent that influenced Indonesia and mainland Southeast Asia. Foundation course required for the Asian Studies major. Approved for arts and sciences core curriculum: human diversity or historical context.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

### ASIA-4300 (3) Open Topics in Asian Literature and Culture

Examines selected texts on a particular topic. Taught by regular or visiting faculty. Topics change each term. May be repeated up to 6 total credit hours. Prereq., instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

### ASIA-4830 (3) Senior Thesis or Project in Asian Studies

Studies an approved Asian topic, following guidelines established by the program director. Undertaken either as an independent study with an Asian studies faculty member. Required for an Asian Studies major. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Asian Studies (ASIA) majors only.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

### ASIA-4840 (1-3) Independent Study

Provides an independent study opportunity, by special arrangement with Asian Studies faculty, for students with particular Asian Studies

interests. May be repeated up to 6 total credit hours. Restricted to Asian Studies majors.

College of Arts & Sciences East Asian Languages & Civilizations

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## ASIA-4930 (1-2) Engage Asia: Internship in Asian Studies

Matches students with supervised internships in which they share academic learning of topics in Asian culture, history, or language with, for example, teachers and students in the Boulder Valley School District. Students work with Center for Asian Studies research and teaching faculty to, for example, research and prepare lessons they will present in BVSD K-12 classes on world cultures, world geography, world history, and Asian languages. May be repeated up to 6 total credit hours. Recommended prereq., Asian language and culture courses.

College of Arts & Sciences East Asian Languages & Civilizations

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# Courses

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ASTR

## ASTR-1000 (3) The Solar System

Examines principles of modern astronomy for nonscience majors, summarizing our present knowledge about the Earth, Sun, moon, planets, and the origin of life. Offers opportunities to attend nighttime observation sessions at Sommers-Bausch Observatory and Fiske Planetarium. Similar to ASTR 1010, without lab. Also similar to ASTR 1030. Formerly ASTR 1110. Students may receive credit for only one of ASTR 1000, 1110, 1010, or 1030. Meets MAPS requirement for natural science: nonlab. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Astrophysical & Planetary Sciences](#)

## ASTR-1010 (4) Introductory Astronomy 1

Introduces principles of modern astronomy for nonscience majors, summarizing our present knowledge about the Earth, Sun, moon, planets, and origin of life. Requires nighttime observation sessions at Sommers-Bausch Observatory. Similar to ASTR 1000, but with additional lab experience. Also similar to ASTR 1030. Students may receive credit for only one of ASTR 1010, 1000, 1110, or 1030. Meets MAPS requirement for natural science: lab or non-lab. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Astrophysical & Planetary Sciences](#)

## ASTR-1020 (4) Introductory Astronomy 2

Introduces principles of modern astronomy for nonscience majors, summarizing our present knowledge about the Sun, stars, birth and death of stars, neutron stars, black holes, galaxies, quasars, and the organization and origins of the universe. May require nighttime observation sessions at Sommers-Bausch Observatory. Similar to ASTR 1200, but with recitation and sequence link to ASTR 1010. Also similar to ASTR 1040. Students may receive credit for only one of ASTR 1020, 1200, 1120, or 1040. Prereq., ASTR 1010 or 1000. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Astrophysical & Planetary Sciences](#)

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## ASTR-1030 (4) Accelerated Introductory Astronomy 1

Covers principles of modern astronomy summarizing our present knowledge about the Earth, Sun, moon, planets, and origin of life. Requires nighttime observation sessions at Sommers-Bausch Observatory. Required in ASTR major/minor. Prereq. or coreq., Calculus I (MATH 1300 or APPM 1350). Students may receive credit for only one of ASTR 1030, 1010, 1000, or 1110. Similar to ASTR 1010 and 1000, but taught at a higher intellectual level, including a significant amount of quantitative analysis. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-1040 (4) Accelerated Introductory Astronomy 2

Covers principles of modern astronomy summarizing our present knowledge about the Sun, stars, birth and death of stars, neutron stars, black holes, galaxies, quasars, and the organization and origins of the universe. May require nighttime observing sessions at Sommers-Bausch Observatory. Required in ASTR major/minor. Prereq., ASTR 1030. Prereq. or coreq., Calculus I (MATH 1300 or APPM 1350). Students may receive credit for only one of ASTR 1020, 1040, 1200, or 1120. Similar to ASTR 1020 and 1200 but taught at a higher intellectual level including a significant amount of quantitative analysis. Includes a Recitation. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-1200 (3) Stars and Galaxies

Examines principles of modern astronomy for nonscience majors, summarizing our present knowledge about the Sun, stars, neutron stars, black holes, interstellar gas, galaxies, quasars, and the structure and origins of the universe. Offers opportunities to attend nighttime observation sessions at Sommers-Bausch Observatory. Formerly ASTR 1120. Similar to ASTR 1020, without sequence link to ASTR 1010 or recitation. Also similar to ASTR 1040. Students may receive credit for only one of ASTR 1200, 1120, 1020, or 1040. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-2000 (3) Ancient Astronomies of the World

Documents the numerous ways in which observational astronomy and cosmology have been features of ancient cultures. Includes naked eye astronomy, archaeoastronomy, ethnoastronomy, concepts of time, calendrics, cosmogony, and cosmology. Approved for arts and sciences core curriculum: natural science or human diversity.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-2010 (3) Modern Cosmology---Origin and Structure of the Universe

Introduces modern cosmology to nonscience majors. Covers the Big Bang; the age, size, and structure of the universe; and the origin of the elements and of stars, galaxies, the solar system, and life. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences [Astrophysical & Planetary Sciences](#)

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## ASTR-2020 (3) Introduction to Space Astronomy

Discusses reasons for making astronomical observations from space, scientific goals, practical requirements for placing instruments in space, politics of starting new programs, and selected missions. Prereq., ASTR 1010, 1020, 1000, or 1200. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences [Astrophysical & Planetary Sciences](#)

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## ASTR-2030 (3) Black Holes

Black holes are one of the most bizarre phenomena of nature. Students are introduced to the predicted properties of black holes, astronomical evidence for their existence and formation, and modern ideas about space, time, and gravity. Approved for the arts and sciences CORE curriculum: natural science.

College of Arts & Sciences [Astrophysical & Planetary Sciences](#)

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## ASTR-2500 (3) Gateway to Space

Introduces the basics of atmospheric and space sciences, space exploration, spacecraft design, rocketry, and orbits. Students design, build, and launch a miniature satellite on a high altitude balloon. Explores the current research in space through lectures from industry. Recommended prereqs., APPM 1360 or MATH 2300 and PHYS 1120 or ASTR 1040. Same as ASEN 1400. Similar to ASEN 4500. Prerequisites: Restricted to Astronomy or Physics majors only.

College of Arts & Sciences [Astrophysical & Planetary Sciences](#)

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## ASTR-2600 (3) Computational Techniques

Introduces practical research skills and provides orientation to computational tools commonly used in research by astrophysicists and planetary scientists, including Unix and IDL.

College of Arts & Sciences [Astrophysical & Planetary Sciences](#)

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## ASTR-2840 (1-3) Independent Study

May be repeated up to 6 total credit hours. Prereq., instructor consent.

## ASTR-3300 (3) Extraterrestrial Life

Discusses the scientific basis for the possible existence of extraterrestrial life. Includes origin and evolution of life on Earth; possibility of life elsewhere in the solar system, including Mars; and the possibility of life on planets around other stars. Prereq., one-year sequence in a natural science. Same as GEOL 3300.

## ASTR-3510 (4) Observations and Instrumentation 1

Lab course in astronomical observation and instrumentation. Hands-on exercises include obtaining and analyzing multi-wavelength data, basic optical design and instrumentation, and statistical analysis of data, with emphasis on imaging applications. A significant number of night time observation sessions are required. Prereq. or coreq., Calculus 2 (MATH 2300 or APPM 1360), one year of college physics, and one year of college astronomy. Restricted to Astrophysics majors only. Elective for APS major and minor. Prerequisites: Restricted to Astrophysics majors only.

## ASTR-3520 (4) Observations and Instrumentation 2

Lab course in observation and instrumentation. Hands-on exercises include obtaining and analyzing multi-wavelength data, optical design and instrumentation, and statistical analysis, with emphasis on spectroscopy. A significant number of night time observation sessions are required. Prereq., ASTR 3510 or instructor consent. Restricted to Astrophysics majors only. Elective for APS major and minor. Prerequisites: Restricted to Astrophysics majors only.

## ASTR-3710 (3) Formation & Dynamics of Planetary Systems

Covers the origin of planetary systems and their dynamical evolution. Topics include the physics and chemistry of planetary formation, orbital mechanics, and extrasolar planets. ASTR 3710, 3720, and 3750 may be taken in any order. Prereqs., PHYS 1110 and 1120, and calculus (MATH 1300 and 2300, or APPM 1350 and 1360). Elective for APS major and minor.

## ASTR-3720 (3) Planets and Their Atmospheres

Explores the physics and chemistry of the atmospheres of Mars, Venus, Jupiter, Saturn, and Titan. Examines evolution of the atmospheres of Earth, Venus, and Mars; and the escape of gases from the Galilean satellites, Titan and Mars; the orbital characteristics

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of moons, planets, and comets. Uses recent results of space exploration. Elective for APS major and minor. Prereqs., PHYS 1110 and 1120, and either MATH 1300 and 2300, or APPM 1350 and 1360. Same as ATOC 3720.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-3730 (3) Astrophysics 1---Stellar and Interstellar

ASTR 3730 and 3830 provide a year-long introduction to physical processes, observations, and current research methods in stellar, interstellar, galactic, and extra-galactic astrophysics, with astronomical applications of gravity, radiation processes, spectroscopy, gas dynamics, and plasma physics. Prereqs. or coreqs., PHYS 2130 or 2170, and MATH 2400 or APPM 2350. Elective for APS major and minor.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-3740 (3) Cosmology and Relativity

Special and general relativity as applied to astrophysics, cosmological models, observational cosmology, experimental relativity, and the early universe. Prereqs. or coreqs., PHYS 2130 or 2170, and MATH 2400 or APPM 2350. Elective for APS major and minor.

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## ASTR-3750 (3) Planets, Moons, and Rings

Approaches the physics of planets, emphasizing their surfaces, satellites, and rings. Topics include formation and evolution of planetary surfaces, history of the terrestrial planets, and dynamics of planetary rings. Both ASTR 3720 and ASTR 3750 may be taken for credit in any order. Prereqs., PHYS 1110 and 1120, and calculus (MATH 1300 and 2300, or APPM 1350 and 1360). Elective for APS major and minor.

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## ASTR-3760 (3) Solar and Space Physics

Explores the physical processes linking the Sun and planets, emphasizing solar radiative and particulate variability and the response of planetary atmospheres and magnetospheres. Topics include the solar dynamo, solar wind, coronal mass ejections, cosmic ray modulation, magnetospheres, aurora, the space environment, and climate variability. Prereqs./coreqs., PHYS 2130 or 2170 and MATH 2400 or APPM 2350. Recommended prereq., PHYS 3310. Elective for APS major and minor.

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## ASTR-3800 (3) Introduction to Scientific Data Analysis and Computing

Covers analytical and numerical techniques used in scientific data analysis, including statistical analysis, error analysis, functional fitting, spectral analysis, image processing, and testing theoretical compliance. Examples are from space-based and ground-based astronomy. The computer laboratories are based on IDL which is introduced in the course. Prereqs. or coreqs., ASTR 1040 or equivalent, PHYS 1120 or equivalent, and MATH 2400 or APPM 2350.

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## ASTR-3830 (3) Astrophysics 2---Galactic and Extragalactic

ASTR 3730 and 3830 provide a year-long introduction to physical processes, observations, and current research methods in stellar, interstellar, galactic, and extragalactic astrophysics, with astronomical applications of gravity, radiation processes, spectroscopy, gas dynamics, and plasma physics. Prereqs. or coreqs., ASTR 3730, and PHYS 2130 or 2170, and MATH 2400 or APPM 2350. Elective for APS major and minor.

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## ASTR-4330 (3) Cosmochemistry

Investigates chemical and isotopic data to understand the composition of the solar system: emphasis on the physical conditions in various objects, time scales for change, chemical and nuclear processes leading to change, observational constraints, and various models that attempt to describe the chemical state and history of cosmological objects in general and the early solar system in particular. Prereq., upper-div undergrad or grad standing in physical science. Recommended prereq., upper-div undergrad CHEM, PHYS, or MATH. Same as ASTR 5330 and GEOL 4330.

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ASTR

### [ASTR-4800 \(3\) Space Science: Practice and Policy](#)

Exposes students to current controversies in science that illustrate the scientific method and the interplay of observation, theory, and science policy. Students research and debate both sides of the issues, which include strategies and spin-offs of space exploration, funding of science, big vs. small science, and scientific heresy and fraud. Prereqs., ASTR 1200, or equivalent, or PHYS 1110 and 1120, or PHYS 2010 and 2020.

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### [ASTR-4840 \(1-3\) Independent Study](#)

May be repeated up to 6 total credit hours. Prereq., instructor consent.

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### [ASTR-4841 \(1-3\) Independent Study](#)

May be repeated up to 7 total credit hours.

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### [ASTR-5110 \(4\) Atomic and Molecular Processes](#)

Explores the application of quantum physics and statistical mechanics to problems in astrophysics, space physics and planetary science, with an emphasis on radiative processes and spectroscopy of atoms and molecules. Prereq., graduate standing or instructor consent.

Prerequisites: Restricted to Graduate Students only.

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## ASTR-5120 (4) Radiative and Dynamical Processes

An introduction to radiative and dynamical processes aimed at graduate students in astrophysics, space physics and planetary science. Covers transport phenomena, the macroscopic treatment of radiation fields, magnetohydrodynamics and dynamical processes associated with planetary orbits and N-body systems. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5140 (3) Astrophysical and Space Plasmas

Teaches magnetohydrodynamics and a few related areas of plasma physics applied to space and astrophysical systems, including planetary magnetospheres and ionospheres, stars, and interstellar gas in galaxies. Prereq., graduate standing in APS or physics. Same as PHYS 5141. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5150 (3) Introductory Plasma Physics

Includes basic phenomena of ionized gases, static and dynamic shielding, linear waves, instabilities, particles in fields, collisional phenomena, fluid equations, collisionless Boltzman equations, Landau damping, scattering and absorption of radiation in plasmas, elementary nonlinear processes, WKB wave theory, controlled thermonuclear fusion concepts, astrophysical applications, and experimental plasma physics (laboratory). Same as PHYS 5150. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5300 (3) Introduction to Magnetospheres

Introduces solar and stellar winds, and planetary and stellar magnetospheres. Acquaints students with the guiding center theory for particle motion, magnetospheric topology, convection, radiation belts, magnetic storms and substorms, and auroras.

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## ASTR-5330 (3) Cosmochemistry

Same as ASTR 4330 and GEOL 5330.

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## ASTR-5400 (3) Introduction to Fluid Dynamics

Covers equations of fluid motion relevant to planetary atmospheres and oceans, as well as stellar atmospheres; effects of rotation and viscosity; and vorticity dynamics, boundary layers, and wave motions. Introduces instability theory, nonlinear equilibration, and computational methods in fluid dynamics. Same as ATOC 5400. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences   Astrophysical & Planetary Sciences

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## ASTR-5410 (3) Fluid Instabilities, Waves, and Turbulence

Involves linear and nonlinear analyses of small-scale waves and instabilities in stratified fluids, with effects of rotation. Studies internal gravity and acoustic waves with terrestrial, planetary, and astrophysical applications. Also studies thermal and double-diffusive convection, homogeneous and stratified shear flow instabilities. Examines these topics from the onset of small amplitude disturbances to their nonlinear development and equilibration. Prereq., ASTR 5400 or ATOC 5060. Same as ATOC 5410.

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## ASTR-5540 (3) Mathematical Methods

Presents an applied mathematics course designed to provide the necessary analytical and numerical background for courses in astrophysics, plasma physics, fluid dynamics, electromagnetism, and radiation transfer. Topics include integration techniques, linear and nonlinear differential equations, WKB and Fourier transform methods, adiabatic invariants, partial differential equations, integral equations, and integrodifferential equations. Draws illustrative examples from the areas of physics listed above. Same as ATOC 5540. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5550 (3) Observations, Data Analysis and Statistics

Introduces multi-wavelength observational techniques, their limitations and effects of various noise sources. Describes basic data handling, error analysis, and statistical tests relevant to modeling. Topics include probability distributions, model-fitting algorithms, confidence intervals, correlations, sampling and convolution. Students derive physical measurements and uncertainties with hands-on analysis of real datasets. Prereq., senior level undergraduate physics or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5560 (3) Radiative Processes in Planetary Atmospheres

Applies radiative transfer theory to problems in planetary atmospheres, with primary emphasis on the Earth's atmosphere; principles of atomic and molecular spectroscopy; infrared band representation; absorption and emission of atmospheric gases; radiation flux and flux divergence computations; radiative transfer and fluid motions; additional applications such as the greenhouse effect; and inversion methods and climate models. Prereq. or coreq., ASTR 5110. Recommended prereq., ATOC 5235. Same as ATOC 5560. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences   Astrophysical & Planetary Sciences

## ASTR-5700 (3) Stellar Structure and Evolution

Examines basic stellar astronomy: stellar classifications, kinematics, populations and distributions, and H-R diagrams. Covers principles of stellar structure, including energy generation and energy transport by radiation and convection. Includes stellar evolution theory, including compact objects. Prereq., Senior Level undergraduate physics. Prerequisites: Restricted to Graduate Students only.

## ASTR-5710 (3) High-Energy Astrophysics

Studies astrophysics of UV, x-ray, gamma-ray, and cosmic-ray sources, including fundamentals of radiative and particle processes, neutron stars, black holes, pulsars, quasars, supernovas and their remnants; stellar flares; accretion disks; binary x-ray sources; and other cosmic x-ray sources. Prereq., senior-level undergraduate physics.

## ASTR-5720 (3) Galaxies

Highlights the classification, structure, content, dynamics, and other observational properties of galaxies, active galaxies, and clusters of galaxies. Discusses Hubble's Law, the cosmic distance scale, and the intergalactic medium. Prereq., senior-level undergraduate physics. Prerequisites: Restricted to Graduate Students only.

## ASTR-5730 (3) Stellar Atmospheres and Radiative Transfer

Explores stellar atmospheres: basic stellar atmospheres, spectral line formation, interpretation of stellar spectra, and model atmospheres. Examines solar physics: the Sun as a star, solar cycle, chromospheric and coronal structure, energy balance, magnetic field, and solar wind. Prereqs., ASTR 5110 and undergraduate physics.

## ASTR-5740 (3) Interstellar Astrophysics

Highlights structure, dynamics, and ecology of the interstellar medium, stressing the physical mechanisms that govern the thermal, ionization, and dynamic state of the gas and dust; observations at all wavelengths; star formation; and relation to external galaxies. Prereq., ASTR 5110 or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5760 (3) Astrophysical Instrumentation

Covers the fundamentals underlying the design, construction, and use of instrumentation used for astrophysical research ranging from radio-wavelengths to gamma rays. Topics include Fourier transforms and their applications, optical design concepts, incoherent and coherent signal detection, electronics and applications, and signal acquisition and processing. Prereq., Senior Level undergraduate physics. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5770 (3) Cosmology

Studies the smooth universe, including Friedmann-Robertson-Walker metric, Friedmann equations, cosmological parameters, inflation, primordial nucleosynthesis, recombination, and cosmic microwave background. Also studies the lumpy universe, including linear growth of fluctuations, power spectra of CMB and galaxies, dark matter, and large scale flows. Covers galaxy formation and intergalactic medium. Prereq., Senior Level undergraduate physics, graduate standing, or instructor consent.

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## ASTR-5800 (3) Planetary Surfaces and Interiors

Examines processes operating on the surfaces of solid planets and in their interiors. Emphasizes spacecraft observations, their interpretation, the relationship to similar processes on Earth, the relationship between planetary surfaces and interiors, and the integrated geologic histories of the terrestrial planets and satellites. Prereq., graduate standing in physical sciences or instructor consent. Same as GEOL 5800. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5810 (3) Planetary Atmospheres

Covers the structure, composition, and dynamics of planetary atmospheres. Includes the origin of planetary atmospheres, chemistry and cloud physics, greenhouse effects, climate, and the evolution of planetary atmospheres---past and future. Prereq., graduate standing in physical sciences or instructor consent. Same as ATOC 5810 and GEOL 5810.

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## ASTR-5820 (3) Origin and Evolution of Planetary Systems

Considers the origin and evolution of planetary systems, including proto-planetary disks, condensation in the solar nebula, composition of meteorites, planetary accretion, comets, asteroids, planetary rings, and extrasolar planets. Applies celestial mechanics to the dynamical evolution of solar system bodies. Prereq., graduate standing in physical sciences or instructor consent. Same as GEOL/ATOC 5820. Prerequisites: Restricted to Graduate Students only.

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## ASTR-5830 (3) Topics in Planetary Science

Examines current topics in planetary science, based on recent discoveries, spacecraft observations, and other developments. Focuses on a specific topic each time the course is offered, such as Mars, Venus, Galilean satellites, exobiology, comets, or extrasolar planets. May be taken twice for credit. Prereq., graduate standing in physical sciences or instructor consent. Same as ATOC 5830 and GEOL 5830.

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ASTR

### [ASTR-5835 \(1\) Seminar in Planetary Science](#)

May be repeated up to 4 total credit hours to meet candidacy requirements. Prereq., graduate standing or instructor consent; Senior Level undergraduate physics. Same as ATOC/GEOL 5835. Prerequisites: Restricted to Graduate Students only.

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### [ASTR-5920 \(1-6\) Reading and Research in Astrophysical and Planetary Sciences](#)

May be repeated up to 6 total credit hours. Prereq., instructor consent.

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### [ASTR-6000 \(1\) Seminar in Astrophysics](#)

Studies current research and research literature on an astrophysical topic. Students and faculty give presentations. Subjects vary each semester. May be repeated for a total of 4 credit hours to meet candidacy requirements. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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### [ASTR-6610 \(3\) Earth and Planetary Physics 1](#)

Examines mechanics of deformable materials, with applications to earthquake processes. Introduces seismic wave theory. Other topics include inversion of seismic data for the structure, composition, and state of the interior of the Earth. Same as GEOL 6610 and PHYS 6610.

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## ASTR-6620 (3) Earth and Planetary Physics 2

Covers space and surface geodetic techniques as well as potential theory. Other topics are the definition and geophysical interpretation of the geoid and of surface gravity anomalies; isostasy; post-glacial rebound; and tides and the rotation of the Earth. Same as GEOL 6620 and PHYS 6620. Prerequisites: Restricted to Graduate Students only.

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## ASTR-6630 (3) Earth and Planetary Physics 3

Examines the solar system, emphasizing theories of its origin and meteorites. Highlights distribution of radioactive materials, age dating, heat flow through continents and the ocean floor, internal temperature distribution in the Earth, and mantle convection. Also covers the origin of the oceans and atmosphere. Same as GEOL 6630 and PHYS 6630.

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## ASTR-6650 (1-3) Seminar in Geophysics

Advanced seminar studies in geophysical subjects for graduate students. Same as GEOL 6650 and PHYS 6650. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-6940 (1) Master's Degree Candidate

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-6950 (1-6) Master's Thesis

College of Arts & Sciences Astrophysical & Planetary Sciences

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## ASTR-7500 (1-3) Special Topics in Astrophysical and Planetary Sciences

Acquaints students with current research in astrophysical and planetary sciences. (Topics vary each semester.) May be repeated up to 9 total credit hours.

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## ASTR-7920 (1-6) Reading and Research in Astrophysical and Planetary Sciences

May be repeated up to 6 total credit hours. Prereq., instructor consent.

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## ASTR-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

ATLS

## [ATLS-1220 \(4\) Virtual Worlds: An Introduction to Computer Science](#)

Introduces the fundamental principles of computer science using an on-line virtual world called Second Life as the "Laboratory" for the course. Students will learn how to program by creating objects of interest in Second Life. In-class and in-world discussions and readings will introduce the student to important ideas and concepts that shape the field of computer science. Same as CSCI 1220.

[College of Arts & Sciences](#) [Alliance for Technology, Learning, and Society \(ATLAS\)](#)

## [ATLS-1240 \(3\) The Computational World](#)

Introduces and explores the "Computational style of thinking" and its influence in science, mathematics, engineering and the arts. The course does not focus on the nuts and bolts of any particular programming language, but rather on the way in which computing has affected human culture and thought in the past half century. Same as CSCI 1240.

[College of Arts & Sciences](#) [Alliance for Technology, Learning, and Society \(ATLAS\)](#)

## [ATLS-1710 \(3\) Tools and Methods for Engineering Computing](#)

Designed for students with little or no programming background. Students learn procedural and object-oriented programming through development of games, simulations, and animations using Flash/Actionscript, VB/Excel, Java, MATLAB, and real-world applications. Activities are oriented toward smaller projects that address topics in beginning science, engineering, and mathematics courses. Students gain practical, applicable skills. Same as APPM 1710.

[College of Arts & Sciences](#) [Alliance for Technology, Learning, and Society \(ATLAS\)](#)

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## ATLS-1720 (3) Programming and Simulation Development

Students learn to plan, develop, and test applications (games, simulations, and animations) that embody mathematical formulations of problems in areas such as transportation, nutrition, and alternative energy. Prereq., ATLS 1710 or knowledge of an object-oriented programming language. Same as APPM 1720.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-2000 (3) The Meaning of Information Technology

Surveys the history of information technologies and modern techniques of information production, storage, transmission, and retrieval. Equips students with an understanding of technological transformations in interpersonal, organizational, and mass communication. Emphasis is on the technological, social and political changes that underlie the movement toward a digital society. HUEN 2020 is restricted to ENGR majors only. ATLS 2000 is restricted to TAM students. ATLS 2000 and HUEN 2020 are the same course.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-2036 (3) Introduction to Digital Media in the Humanities

Serves as a humanities-based introduction to digital media structures such as digital archive and reading/writing software; studies theories and methodologies for undertaking digital media scholarship in the humanities; and explores digital textualities ranging from text messaging, blogging, and game to digital fiction and poetry. Same as ENGL 2036.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3010 (3) Digital Media 1

Introduces techniques, software, and related concepts of digital design and image making through individual and group projects. Emphasizes digital animation, digital audio, digital video and website design and development as a means to formal and expressive ends. Introduces students to critical readings and theories related to digital media practice. May be repeated up to 6 total credit hours. Prereq., ATLS 2000. Restricted to TAM students.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3020 (3) Digital Media 2

A continuation of Digital Media 1 (ATLS 3010), this course introduces students to advanced digital media development including interactive programming, scripting, and database functionality. Emphasizes a historical and conceptual understanding of programming and computational theories. May be repeated for a total of 6 credit hours. Prereq., ATLS 2000 and ATLS 3010. Restricted to students with minor in Technology, Arts & Media (MTAM). Prerequisites: Restricted to students with minor in Technology, Arts, and Media (MTAM).

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3030 (3) Fundamentals of Digital Design

The fundamental goal of this course is to teach students how to use digital design tools effectively and compellingly. Through lectures, class discussions, projects and critiques, this course will cover the critical, theoretical, and technical skill sets necessary to become a more engaging, thoughtful, and articulate designer. Prereqs., ATLS 2000 and 3010. Restricted to students with minor in Technology, Arts & Media (MTAM). Prerequisites: Restricted to students with minor in Technology, Arts, and Media (MTAM).

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3110 (3) Motion Design

An animation-based projects course that advances student understanding of motion design in today's culture. Through active production and critical analysis, students will create new media projects and critically examine the history, social implications, and impacts of these forms of mass media. Prereq., ATLS 2000. Recommended prereq., ATLS 3010.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3112 (1-3) Digital and Social Systems Professional Development

Supports students in developing professional skills and practices in human computer interaction, design of interactive systems, computer supported cooperative work, computer supported collaborative learning, educational technology, tools that support creativity, user-developed knowledge collections, and gaming. May be repeated up to 10 total credit hours. Same as CSCI 3112.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3120 (3) Net Presence

An Internet-based projects course that advances student understanding of Internet culture. Through active production and critical analysis, students will explore their individual roles in the digital landscape and critically examine the social implications and impacts of digital communities. Prereqs., ATLS 2000 and 3010. Recommended prereq., ATLS 3020.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3500 (1-3) Client Projects in Technology, Arts and Media

Allows undergraduate students to work on collaborative projects with faculty and with external organizations under faculty supervision. The course will focus on teamwork, conceptual planning, technical design and development, and working within real-world client environments. Critical skills include project research, planning, design, development, trouble-shooting, and presentation. Prereqs., ATLS 2000, 3010, or instructor consent. Recommended prereq., ATLS 3020. May be repeated up to 6 total credit hours.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-3519 (1-3) Special Topics in Technology, Arts, and Media

Analyzes special interest areas of multidisciplinary technology, arts and media research and practice. May be repeated up to 12 total credit hours for different topics. Prereq., ATLS 2000. Recommended prereq., ATLS 3010. Same as ATLS 3519, 5519 and 6519.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-4010 (3) Capstone Projects

The focus of this advanced practicum course is the development of an individual thesis project. Specific class sessions will feature a combination of lectures, demonstrations, guest speakers, lab sessions, and critiques. This course also entails group work, portfolio development, critical theoretical readings, and a significant written component. May be repeated up to 6 total credit hours. Prereqs., ATLS 2000, 3010, and 3020. Restricted to students with minor in Technology, Arts & Media (MTAM). Prerequisites: Restricted to students with minor in Technology, Arts, and Media (MTAM).

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-4519 (1-3) Advanced Special Topics in Technology, Arts, and Media

Analyzes special interest areas of multidisciplinary technology, arts and media research and practice. May be repeated up to 9 total credit hours. Prereq., instructor consent. Recommended prereqs., ATLS 2000, ATLS 3010, and ATLS 3020. Same as ATLS 3519, 5519 and 6519.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-4809 (3) Computer Animation

Develops a firm understanding of the general principles of computer animation. Lectures cover the creation of models, materials, textures, surfaces, and lighting. Path and key frame animation, particle dynamics, and rendering are introduced. Students are assigned a number of animation tutorials to carry out. CSCI 4809/5809 and ATLS 4809/5809 are all the same course.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-4900 (1-6) Undergraduate Independent Study

Provides opportunities for independent study at the upper-division undergraduate level. Students work on research or a creative project guided by faculty. May be repeated up to 9 total credit hours. Prereqs., ATLS 3010, 3020, and consent of instructor.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-5150 (1) Managing Effectively in a Changing Telecommunications Environment

Provides students with an opportunity to join international managers and policy makers from around the world in an intensive seminar focused on the challenges of managing in a telecommunications environment in an era of technological change. Guest lecturers provide an effective overview of the cutting-edge issues managers face in telecom and technology companies around the world. TLEN 5150 and ATLS 5150 are the same course.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-5210 (3) Global Development I

Introduces students to the theories and policy of international development. The course will examine the role of multilateral agencies, foundations, aid organizations, corporate entities and academia in development as both an industry and a research field. The course will focus on development movements and their outcomes, the inter-related nature of development and its effect on policies and programs, and critiques. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-5220 (3) Global Development II

Explores the impact of economic, geographical and social/cultural conditions on development outcomes through standalone course components taught by subject matter experts in region and in residency at ATLAS. Components may include, but are not limited to, development economics, environmental sustainability, public health, climate change, globalization and migration, religion, and gender as these broad themes relate to development. Prereq., ATLS 5210. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-5230 (3) Case Studies in Information and Communication Technology for Development

Serves as foundation course for MS-ICTD program. Students will evaluate case studies across a range of technologies and applications. Students will learn how to match available technologies to human and environmental needs and resources, be introduced to the seminal work and leaders in the field, and discuss the future of ICTD as an emerging area of academic focus. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Alliance for Technology, Learning, and Society (ATLAS)

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## ATLS-5240 (3) Information and Communication Technology for Development Laboratory

Prepares students for the semester-long practicum. Students work in teams to design ICTD interventions that address unique socio-economic and environmental development issues. Teams will design a variety of ICTD interventions, including telehealth and distance education programs, communication networks, and pro-development ICTD policies. Topics will be chosen by teams and guided by program faculty and external domain experts. Prereq., ATLS 5230. Prerequisites: Restricted to Graduate Students only.

## ATLS-5250 (3) Fieldwork Methods for ICTD Practitioners

Introduces methods and models that can be employed in ICTD program development and deployment. Examines the applications of participatory research, value-centric design, program scale, cross-disciplinary work, and appropriate monitoring and evaluation. The goal of this course is to build student confidence around existing evaluation toolkits and methods, while advancing multi-method approaches to designing and analyzing ICTD initiatives. Prerequisites: Restricted to Graduate Students only.

## ATLS-5380 (3) Future of Video: Technology, Policy, and Economics

Examines the issues that have been created by the shift from analog to digital technologies, the shift from narrowband/wideband systems to broadband systems, and the shift to converged networks (i.e. networks able to convey voice, data, image and video traffic on a common platform) based upon packet switching and Internet Protocol (IP) suite. Prereq., TLEN 5210. TLEN 5380 and ATLS 5380 are the same course. Prerequisites: Restricted to Graduate Students only.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

ATOC

## ATOC-1050 (3) Weather and the Atmosphere

Introduces principles of modern meteorology for nonscience majors, with emphasis on scientific and human issues associated with severe weather events. Includes description, methods of prediction, and impacts of blizzards, hurricanes, thunderstorms, tornadoes, lightning, floods, and firestorms. Meets MAPS requirement for natural science: non-lab. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#)
[Atmospheric & Oceanic Sciences](#)

## ATOC-1060 (3) Our Changing Environment: El Nino, Ozone, and Climate

Discusses the Earth's climate for nonscience majors, focusing on the role of the atmosphere, oceans, and land surface. Describes the water cycle, atmospheric circulations, and ocean currents, and how they influence global climate, El Nino, and the ozone hole. Discusses human impacts from climate change. Prereq., ATOC 1050. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#)
[Atmospheric & Oceanic Sciences](#)

## ATOC-1070 (1) Weather and the Atmosphere Laboratory

Optional laboratory for ATOC 1050. Laboratory experiments illustrate fundamentals of meteorology. Covers collection, analysis, and discussion of data related to local weather. Uses computers for retrieval and interpretation of weather data from Colorado and across the U.S. Prereq. or coreq., ATOC 1050 or instructor consent. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#)
[Atmospheric & Oceanic Sciences](#)

## ATOC-3070 (3) Introduction to Oceanography

Investigates the broad-scale features and dynamics of the Earth's oceans. The course is roughly divided amongst the four major, interrelated disciplines of oceanography: marine geology, marine chemistry, physical oceanography (i.e. circulation), and marine biology. Specific topics include sea floor spreading, marine sediments, salinity, biogeochemical cycles, currents, waves, tides, primary production, marine ecology, marine resources, global warming, and much more. Prereq., any two-course sequence of natural science courses. Same as GEOL 3070. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-3300 (3) Analysis of Climate and Weather Observations

Discusses instruments, techniques, and statistical methods used in atmospheric observations. Covers issues of data accuracy and analysis of weather maps. Provides application to temperature and precipitation records, weather forecasting, and climate change trends. Uses computers to access data sets and process data. Prereqs., ATOC 1050 and 1060, or ATOC 3600/GEOG 3601/ENVS 3600, or GEOG 1001 and 1-semester calculus. Same as GEOG 3301. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-3500 (3) Air Chemistry and Pollution

Examines the composition of the atmosphere, and sources of gaseous and particulate pollutants: their chemistry, transport, and removal from the atmosphere. Applies general principles to acid rain, smog, and stratospheric ozone depletion. Prereqs., two semesters of chemistry. ATOC 3500 and CHEM 3151 are the same course. CHEM 3151 was formerly CHEM 3500. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-3600 (3) Principles of Climate

Describes the basic components of the climate system: the atmosphere, ocean, cryosphere, and lithosphere. Investigates the basic physical processes that determine climate and link the components of the climate system. Covers the hydrological cycle and its role in climate, climate stability, and global change. Includes forecasting climate and its application and human dimensions. Prereqs., ATOC 1050 and 1060, or ATOC 3300/GEOG 3301, or GEOG 1001 and 1-semester calculus. Same as GEOG 3601/ENVS 3600. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-3720 (3) Planets and Their Atmospheres

Explores the physics and chemistry of the atmospheres of Mars, Venus, Jupiter, Saturn, and Titan. Examines evolution of the atmospheres of Earth, Venus, and Mars; and the escape of gases from the Galilean satellites, Titan and Mars; the orbital characteristics of moons, planets, and comets. Uses recent results of space exploration. Elective for APS major and minor. Prereq., PHYS 1110--1120, and either MATH 1300--2300, or APPM 1350--1360, or instructor consent. Same as ASTR 3720. Prerequisites: Restricted to students

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with 57-180 credits (Junior or Senior) Astronomy (ASTR) or Atmospheric & Oceanic Sciences (ATOC) majors only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4215 (3) Descriptive Physical Oceanography

Introduces descriptive and dynamical physical oceanography, focusing on the nature and dynamics of ocean currents and their role in the distribution of heat and other aspects of ocean physics related to the Earth's climate. Dynamical material limited to mathematical descriptions of oceanic physical systems. Restricted to seniors. Same as ATOC 5215 and ASEN 4215. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4500 (1-3) Special Topics in Atmospheric and Oceanic Sciences

Acquaints students with current research in atmospheres, oceans, and climate. Topics may vary each semester. May be repeated for a total of 9 total credit hours within the degree. Students may register for more than one section of this course in the same semester.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4700 (3) Weather Analysis & Forecasting

Utilizing a range of operational weather observations to analyze current weather conditions, providing hands-on experience interpreting observations and relating those observations to the physical principles that govern atmospheric behavior is the course emphasis. It focuses on how to read weather reports, analyze observations, and how to prepare weather maps to analyze current conditions and how to interpret numerical weather forecasts. Prereqs., ATOC 1050 or 1060. Recommended prereq., ATOC 4720. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4720 (3) Introduction to Atmospheric Physics and Dynamics

Introduces the fundamental physical principles that govern the atmosphere, and provides an elementary description and interpretation of a wide range of atmospheric phenomena. Topics include atmospheric structure and composition, electromagnetic radiation, clouds, precipitation, energy balance, atmospheric motion, and climate. Prereqs., one year of calculus and one year of physics with calculus.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4750 (3) Desert Meteorology and Climate

Introduces students to the dynamic causes of deserts in the context of atmospheric processes and land-surface physics. Discusses desert severe weather, desert microclimates, human impacts and desertification, inter-annual variability in aridity (drought), the effects of

deserts on global climate, and the impact of desert climate on humans. Prereq., ATOC 1050 or equivalent. Same as ATOC 5750. Approved for arts and sciences CORE curriculum: natural sciences.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4800 (3) Policy Implications of Climate Controversies

Examines controversial issues related to the environment, including climate change. Covers scientific theories and the intersection between science and governmental policy. Includes discussion, debate, and critical reading of textual materials. Prereqs., ATOC 1060 or 3600. Credit not granted for this course and ATOC 5000.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4900 (1-3) Independent Study

May be repeated up to 6 total credit hours. Prereq., instructor consent.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-4950 (1-3) Honors Thesis

Students work independently on a research topic under the guidance of a faculty member. A written thesis and an oral presentation of the work are required. Registration by arrangement and with consent of faculty mentor. Prereq., junior or senior standing, and minimum 3.00 GPA. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5000 (3) Critical Issues in Climate and the Environment

Discusses current issues such as ozone depletion, global warming, and air quality for graduate students in nonscientific fields. Provides the scientific background necessary to understand, follow scientific developments, and critically evaluate these issues. Same as ENVS 5830. Credit not granted for this course and ATOC 4800.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5050 (3) Introduction to Atmospheric Dynamics

Covers atmospheric motion and its underlying mathematical and physical principles. Explores the dynamics of the atmosphere and the mathematical laws governing atmospheric motion. Topics include atmospheric composition and thermodynamics, conservation laws, geostrophic balance, vorticity dynamics, boundary layers, and baroclinic instability. ATOC graduate CORE course. Prerequisites: Restricted to Graduate Students only.

## ATOC-5051 (3) Introduction to Physical and Chemical Oceanography

Provides fundamental knowledge of the basic dynamics and chemical composition of the ocean. Prereq., calculus. ATOC graduate core course. Prerequisites: Restricted to Graduate Students only.

## ATOC-5060 (3) Dynamics of the Atmosphere

Examines large-scale motions in a stratified rotating atmosphere, and quasi-geostrophic flow, barotropic and baroclinic instabilities, cyclogenesis, global circulations, and boundary layer processes. Ageostrophic motions, including Kelvin waves, internal gravity waves, and the theory of frontogenesis are also considered. Prereq., ATOC 5050 or equivalent. ATOC graduate CORE course.

## ATOC-5061 (3) Dynamics of Oceans

Explores theories of the large-scale ocean, including quasigeostrophic, planetary geostrophic, and shallow water equations. Topics may vary to focus on ocean climate (e.g. thermocline, westward intensification), ocean waves (e.g. gravity, Rossby, and Kelvin), or ocean models (toy, analytic, and numerical). Maybe repeated up to 9 total credit hours. Prereqs., ATOC 5400 and ATOC 5051 or 5060 or equivalent. Prerequisites: Restricted to Graduate Students only.

## ATOC-5151 (3) Atmospheric Chemistry

Reviews basic kinetics and photochemistry of atmospheric species and stratospheric chemistry with emphasis on processes controlling ozone abundance. Tropospheric chemistry focusing on photochemical smog, acid deposition, oxidation capacity of the atmosphere, and global climate change. Prereq., graduate standing or instructor consent. ATOC graduate CORE course. Same as CHEM 5151.

## ATOC-5215 (3) Descriptive Physical Oceanography

Same as ATOC 4215 and ASEN 5215. Prerequisites: Restricted to Graduate Students only.

## ATOC-5235 (3) Introduction to Atmospheric Radiative Transfer and Remote Sensing

Examines fundamentals of radiative transfer and remote sensing with primary emphasis on the Earth's atmosphere; emission, absorption and scattering by molecules and particles; multiple scattering; polarization; radiometry and photometry; principles of inversion theory; extinction- and emission-based passive remote sensing; principles of active remote sensing; lidar and radar; additional applications such as the greenhouse effect and Earth's radiative energy budget. ATOC graduate CORE course. Same as ASEN 5235. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Atmospheric & Oceanic Sciences](#)

## ATOC-5300 (3) The Global Carbon Cycle

Covers the role of the ocean, terrestrial biosphere, and atmosphere in the global carbon cycle. Specific topics include marine carbonate chemistry, biological production, terrestrial fluxes, anthropogenic emissions, and the evolution of the global carbon cycle in a changing climate. Prereq., graduate standing in a physical science or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Atmospheric & Oceanic Sciences](#)

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# Courses

Search by College, Department & Category

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All

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ATOC

## ATOC-5400 (3) Introduction to Fluid Dynamics

Covers equations of fluid motion relevant to planetary atmospheres and oceans, and stellar atmospheres; effects of rotation and viscosity; and vorticity dynamics, boundary layers, and wave motions. Introduces instability theory, nonlinear equilibration, and computational methods in fluid dynamics. Prereq., partial differential equations or equivalent. Same as ASTR 5400. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Atmospheric & Oceanic Sciences](#)

## ATOC-5410 (3) Fluid Instabilities, Waves, and Turbulence

Nonlinear waves and instabilities; wave-mean and wave-wave interactions, resonant triads; secondary instability and transition to turbulence; diagnosis, modeling, and parameterization of turbulent flows in geophysics and astrophysics. Prereq., ASTR 5120, ATOC 5060, or 5400. Same as ASTR 5410.

[College of Arts & Sciences](#) [Atmospheric & Oceanic Sciences](#)

## ATOC-5540 (3) Mathematical Methods

Applied mathematics course; provides necessary analytical background for courses in plasma physics, fluid dynamics, electromagnetism, and radiative transfer. Covers integration techniques, linear and nonlinear differential equations, WKB and Fourier transform methods, adiabatic invariants, partial differential equations, integral equations, and integrodifferential equations. Same as ASTR 5540. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Atmospheric & Oceanic Sciences](#)

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## ATOC-5560 (3) Radiative Processes in Planetary Atmospheres

Application of radiative transfer theory to problems in planetary atmospheres, with primary emphasis on the Earth's atmosphere; principles of atomic and molecular spectroscopy; infrared band representation; absorption and emission of atmospheric gases; radiation flux and flux divergence computations; radiative transfer and fluid motions; additional applications such as the greenhouse effect, inversion methods and climate models. Recommended prereq., ATOC 5235. Same as ASTR 5560.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5600 (3) Physics and Chemistry of Clouds and Aerosols

Clouds and aerosols are ubiquitous in planetary atmospheres, where they impact climate, atmospheric chemistry, remote sensing, and weather. Applies basic microphysical, radiative, and chemical processes affecting particles to issues in current literature. ATOC graduate CORE course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5750 (3) Desert Meteorology and Climate

Same as ATOC 4750.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5760 (3) Astrophysical Instrumentation

Covers the fundamentals underlying the design, construction, and use of instrumentation used for astrophysical research ranging from radio-wavelengths to gamma rays. Topics include: Fourier transforms and their applications; optical design concepts; incoherent and coherent signal detection; electronics and applications; signal acquisition and processing. Prereq., graduate standing.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5810 (3) Planetary Atmospheres

Covers the structure, composition, and dynamics of planetary atmospheres. Also includes origin of planetary atmospheres, chemistry and cloud physics, greenhouse effects, climate, and the evolution of planetary atmospheres past and future. Prereq., graduate standing in a physical science, or instructor consent. Same as ASTR/GEOL 5810. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5820 (3) Origin and Evolution of Planetary Systems

Reviews protoplanetary disks, condensation in the solar nebula, composition of meteorites, planetary accretion, comets and asteroids, planetary rings, and extrasolar planets. Applies celestial mechanics to the orbital evolution of solar system bodies. Prereq., graduate

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standing in a physical science, or instructor consent. Same as ASTR 5820 and GEOL 5820. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5830 (3) Topics in Planetary Science

Covers current topics in planetary science based on recent discoveries, spacecraft observations, or other developments. Focuses on a specific topic such as Mars, Venus, Galilean satellites, exobiology, comets, or extrasolar planets. May be repeated up to 6 total credit hours, provided the topics vary. Prereq., graduate standing in physical sciences, or instructor consent. Same as ASTR 5830 and GEOL 5830.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5835 (1) Seminar in Planetary Science

Studies current research on a topic in planetary science. Subjects may vary each semester. May be repeated up to 4 total credit hours to meet candidacy requirements. Prereq., graduate standing or instructor consent. Same as ASTR 5835 and GEOL 5835. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-5900 (1-6) Independent Study

May be repeated up to 6 total credit hours. Students may register for more than one section of this course in the same semester. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-6020 (1) Seminar in Atmospheric and Oceanic Sciences

Studies an area of current research in the atmospheric and oceanic sciences. Students read selected papers from the literature. Students and faculty give presentations and participate in discussions. May be repeated for a total of 6 credit hours within the degree. May be repeated for a total of 3 credit hours within a semester. Prereq., graduate standing and instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Atmospheric & Oceanic Sciences

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## ATOC-6100 (3) Predicting Weather and Climate

Discusses background theory and procedures used in weather and climate prediction on a variety of space and time scales. Includes the forecasting of weather on time scales of days; error growth in numerical models; prediction of El Nino and monsoon variability; and prediction of the impact of anthropogenic influences on climate. Consists of lectures and a weekly laboratory. Prereq., ATOC 5060, 5061, or instructor consent.

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## ATOC-6950 (1-6) Master's Thesis

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## ATOC-7500 (1-3) Special Topics in Atmospheric and Oceanic Sciences

Acquaints students with current research in atmospheres, oceans, and climate. Topics may vary each semester. May be repeated up to 9 total credit hours. Students may register for more than one section of this course in the same semester. Prerequisites: Restricted to Graduate Students only.

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## ATOC-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.



## Courses

Search by College, Department & Category

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Subject Number

BADM

### BADM-1250 (1) First Year Seminar

[Leeds School of Business](#) [Business Administration](#)

### BADM-2050 (3) Honors/Special Topics

Variable topics in business, drawing from a variety of disciplines. Prereq., 3.50 minimum cumulative GPA.

[Leeds School of Business](#) [Business Administration](#)

### BADM-2880 (3) Special Topics

Explores historical developments, contemporary issues, industry trends, and best practices pertinent to the business of sports. The course examines how sports enterprises are managed, and the impacts that such enterprises have on the economic and social fabric of communities. The course is designed to provide sufficient background for educated consumption of this literature and pursuit of further study if desired. Restricted to sophomores/juniors/seniors.

[Leeds School of Business](#) [Business Administration](#)

### BADM-3100 (1) Professional Development

Designed to provide opportunities to understand and develop professional competencies for successful careers in business. Designed to increase knowledge of job search strategies and formulate a career management plan for transitioning to the workplace. Topics such as resumes, cover letters, personal branding, job search strategies, internships, career choices, networking and social media will be covered. A Self-Marketing Plan will be developed to help focus on long-term career goals. Restricted to juniors and seniors.

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Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[Leeds School of Business](#) [Business Administration](#)

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## BADM-3880 (3) Special Topics

Introduces students to the many facets of the marketing of sport and marketing through sport. Theoretical and practical applications of marketing sport are examined. The course will provide students with an understanding of current marketing concepts, and best business practices, related to sports enterprises and a foundation for pursuit of further study and work in sports and event marketing. Restricted to juniors/seniors.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-3930 (1-6) Internship

Student training and participation in government or industry environment under faculty supervision. Prereqs., BCOR 1000, 2000, 2010, 2050, GPA 2.50, junior standing and instructor consent.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-4820 (1-6) Special Topics

Variable topics in business drawing from a variety of business disciplines. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Business Administration. Restricted to juniors/seniors.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-4830 (1-3) Special Topics

Various topics in business and society drawing from a variety of business disciplines. Restricted to junior/senior BU majors. Prerequisites: Restricted to College of Business majors only.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-4910 (2) VITA-Volunteer Tax Assistance

Offers students the opportunity to gain professional work experience in an accounting position while still in school. Provides academically relevant work experience that complements students' studies and enhances their career potential. Prereqs., BCOR 2000 and department consent. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-6820 (1-3) Topics in Business Administration

Offered irregularly to provide opportunity to investigate new topics in business administration.

[Leeds School of Business](#) [Business Administration](#)

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## BADM-6930 (3) Commercializing Sustainable Energy Technologies

Addresses the opportunities and problems of commercializing new renewable energy technologies. Focuses on energy markets, opportunity identification, life cycle analysis, policy economics, project financing, and economic analysis as they relate to bringing renewable energy technologies to market.

[Leeds School of Business](#) [Business Administration](#)

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# Courses

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BAKR

## BAKR-1500 (3) Colorado: History, Ecology, and Environment

Studies the Colorado environment from multiple aspects of history and ecology. Presents historical events in their environmental context and examines lingering environmental consequences. Presents major habitats within Colorado and relates their historical and present uses. Lecture and field trips. Approved for arts and sciences CORE curriculum: United States context.

[College of Arts & Sciences](#) [Baker Residential Academic Program](#)

## BAKR-1600 (3) Creating a Sustainable Future

Explores opportunities for moving toward a sustainable 21st century U.S. society. Evaluates socio-economic institutions, values and forces in late 20th century U.S. society that are unsustainable, given 21st century environmental, economic and social challenges. Contemplates societal progress from reflective perspectives and leading visionaries, including CU-generated documents. Explores actions you can adopt now that empower you to live a more sustainable lifestyle. Approved for arts and sciences CORE curriculum: contemporary societies.

[College of Arts & Sciences](#) [Baker Residential Academic Program](#)

## BAKR-1800 (3) Exploring Opportunities in the Natural and Environmental Sciences

Engaging students to explore and discover exciting internships, careers, and research opportunities in fields associated with natural science and environmental studies. The class will include seminars, lectures, student presentations, and the exploration of places like the Denver Zoo, natural science museums (Denver and CU campus), Mountain Research Station, Campus Greenhouse, Butterfly Pavillion and Rocky Mountain National Park.

[College of Arts & Sciences](#) [Baker Residential Academic Program](#)



# Courses

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BCOR

## BCOR-1010 (3) Introduction to Business

Provides an overview of how business works through the application and integration of the fundamental business functions of accounting, finance, management, marketing, and systems. Weekly discussion of current events will focus on entrepreneurship, international business, business and society, and career topics. Restricted to freshmen business majors. Prerequisites: Restricted to Business majors with less than 53 units.

[Leeds School of Business](#) [Business Core](#)

## BCOR-1020 (3) Business Statistics

Covers descriptive statistics, basic probability theory, statistical inference and hypothesis testing, correlation and simple linear regression analysis. Students learn decision making and solving business problems by using data. Uses statistical features of commonly used business spreadsheet software. Prereq., MATH 1071. Formerly BCOR 2010. Credit not granted for this course and MATH 2510. Prerequisites: Restricted to Business, ADVT or IAFS Majors only. Requires pre-requisite course of ECON 1078 or MATH 1071 or MATH 1001 or MATH 1011 or MATH 1150 or MATH 3130, or APPM 3310, or APPM 2360 or APPM 2380

[Leeds School of Business](#) [Business Core](#)

## BCOR-2000 (4) Accounting and Financial Analysis

Builds a basic understanding of how information regarding a firm's resources and obligations is conveyed to decision makers both outside and within the firm. Prereq., BCOR 1020 or MATH 2510 or ECON 3818. Restricted to Business, SPPR-PRO, IAFS majors, or students with a subplan of WBE only. Prerequisites: Requires pre-requisite course of BCOR 1020 or MATH 2510 or ECON 3818. Restricted to BU, SPPR-PRO, IAFS Majors, or students with a subplan of WBE only.

[Leeds School of Business](#) [Business Core](#)

## BCOR-2200 (3) Introductory Finance

Emphasizes the concepts and skills needed to make sound financial decisions. Topics include financial statement analysis, time value of money, interest rates, bond valuation and bond markets, stock valuation and stock markets, cost of capital and capital structure, capital budgeting, financial forecasting, and working capital management. Prereqs., BCOR 1020 or MATH 2510 or ECON 3818 and BCOR 2000. Restricted to Business or IAFS majors or students with a sub plan of WBE and 26-180 units completed. Formerly BCOR 2100. Prerequisites: Requires prerequisite courses of BCOR 1020 or MATH 2510 or ECON 3818 & BCOR 2000. Restricted to Business or International Affairs majors or students with a subplan of WBE and 26-180 units completed.

Leeds School of Business Business Core

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## BCOR-2300 (3) Adding Value with Management

Focuses on how modern business firms compete in the global marketplace by adding value. Examines the value-chain of a firm and how firms use people, organizations, operations, and information systems to compete and win in world markets. Also covers contemporary issues such as total quality management, process reengineering, teams and team building, employee empowerment, and horizontal organizations. Restricted to Business, SPPR-PRO majors, or students with a subplan of WBE only and 26-180 units completed. Formerly BCOR 2150. Prerequisites: Restricted to Business, SPPR-PRO majors, or students with a subplan of WBE only and 26-180 units completed.

Leeds School of Business Business Core

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## BCOR-2400 (3) Fundamentals of Marketing

Examines how activities in organizations provide value to the purchasers of its products and services. Includes gathering information about consumers and competitors through research and information systems, applying knowledge and technology to the design of products and services, communicating information to consumers and organizational units, and pricing and distributing products and services. Also includes issues in global marketing, ethics and diversity, relationship marketing, and integrating marketing with financial analyses. Prereq., BCOR 1020 or MATH 2510 or ECON 3818. Restricted to Business, SPPR-PRO, Advertising, IAFS majors, or students with a subplan of WBE only and 26-180 units completed. Prerequisites: Requires prerequisite course of BCOR 1020 or MATH 2510 or ECON 3818. Restricted to Business, SPPR-PRO, Advertising, International Affairs majors, or students with a subplan of WBE only and 26-180 units completed.

Leeds School of Business Business Core

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## BCOR-2500 (3) Introduction to Operations and Information Management

Takes a systems perspective in exploring the use of information, processes, and models used by businesses to produce goods and services and to effectively manage accounting, finance, human resources, strategy, supply chains/inventory, and other activities in a business. Focuses on making better business decisions faster through better business intelligence by using the right information, at the right time, provided to the right managers. Prereq., BCOR 1020 or MATH 2510 or ECON 3818. Restricted to Business majors with 13-180 units completed. Prerequisites: Requires pre-requisite course of BCOR 1020 or MATH 2510 or ECON 3818. Restricted to Business majors with 13-180 units completed.

Leeds School of Business Business Core

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## BCOR-3000 (3) Business Law, Ethics, and Public Policy

Surveys major topics and case studies in business law, business ethics, and government policy. Business law topics include the American legal system, constitutional law, common law, contract principles, criminal and tort law, intellectual property, employment law, and personal and real property law. Ethics topics include the philosophy of law, legal versus moral issues, and professional responsibility. Public policy topics include the roles of business and government, types of government intervention, and the nature and theory of governmental policy formulation. Restricted to Business, Spanish (SPPR), students with a subplan of WBE, or Concurrent Degree majors only and 52-180 units completed. Prerequisites: Restricted to Business, Spanish (SPPR), students with a subplan of WBE, or Concurrent Degree majors only and 52-180 units completed.

[Leeds School of Business](#) [Business Core](#)

## BCOR-3010 (3) Business Applications of Social Responsibility

Explores alternative views of the role of business in our global society through detailed case analyses, beginning with the free market view. This is a cross-functional area course that helps students to isolate and articulate their personal values that will shape business conduct. Emphasizes individual and organizational responsibility for business behavior in the broader social context. Prereq., BCOR 1010, 1020, 2000, 2200, 2300, 2400, 2500 and 59 hours completed. Prerequisites: Restricted to Business majors with 60-180 units completed.

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BPOL

## BPOL-6940 (1) Master's Candidate for Degree

[Leeds School of Business](#) [Business Policy and Strategy Management](#)

## BPOL-6950 (1-6) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) [Business Policy and Strategy Management](#)

## BPOL-7500 (3) Doctoral Seminar: Strategic Management 1

Provides an overview of the literature, including classic articles and books, in business strategy and policy (strategic management). Brings the student up to date on schools of thought, research issues, and practical applications in strategic management.

[Leeds School of Business](#) [Business Policy and Strategy Management](#)

## BPOL-7530 (3) Doctoral Seminar: Strategic Management 2

Continuation of BPOL 7500. Prereq., BPOL 7500. Prerequisites: Restricted to Business Administration graduate students only.

[Leeds School of Business](#) [Business Policy and Strategy Management](#)

## BPOL-7560 (3) Entrepreneurship, International Business and Technology Management

Provides doctoral students with an understanding of strategic management and entrepreneurship theory, as applied to international business and technology management literatures. Additionally, students are exposed to research methods in the strategy and entrepreneurship arenas. Prereqs., BPOL 7500 and 7530.

Leeds School of Business | Business Policy and Strategy Management

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## BPOL-8900 (1-3) Independent Study

Requires consent of instructor under whose direction study is taken. Departmental form required.

Leeds School of Business | Business Policy and Strategy Management

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## BPOL-8990 (1-10) Doctoral Thesis

Leeds School of Business | Business Policy and Strategy Management

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BSLW

## BSLW-4120 (3) Advanced Business Law

Continuation of BCORr 3000. Covers sales and lease transactions, negotiable instruments, creditor rights and bankruptcy, secured transactions, agency, business organizations, protection of property, and other advanced topics in legal and regulatory environments. BCOR 3000 and BSLW 4120/5120 together cover the business law topics tested on the CPA exam. Prereqs., BCOR 3000 and junior standing. Same as BSLW 5120. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Business Law](#)

## BSLW-4820 (1-3) Topics in Business Law

Experimental course offered irregularly for purpose of presenting new subject matter in business law.

[Leeds School of Business](#) | [Business Law](#)

## BSLW-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Business Law. Restricted to juniors/seniors.

[Leeds School of Business](#) | [Business Law](#)

## BSLW-4900 (1-3) Independent Study

[Leeds School of Business](#) | [Business Law](#)

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## BSLW-5120 (3) Advanced Business Law

Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting-Taxation or Business Administration graduate students only. Same as BSLW 4120. Prerequisites: Restricted to Accounting, Finance/Accounting, Information Systems/Accounting, Systems/Accounting Concurrent Degree students or Accounting, Accounting/Taxation or Business Administration graduate students only.

[Leeds School of Business](#) [Business Law](#)

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## BSLW-6900 (1-6) Independent Study

Prerequisites: Restricted to Business graduate students only.

[Leeds School of Business](#) [Business Law](#)

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CAMW

### CAMW-2001 (3) The American West

Students tour the cultural, social, and natural features of the American West, based on readings and presentations by guest faculty from across disciplines. Designed as the foundation course in the Western American Studies certificate program. Restricted to students with 0-56 units (freshmen and sophomores) completed. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomores).

[College of Arts & Sciences](#) [Center for the American West](#)

### CAMW-3939 (1-3) Center of the American West Internship

Work for public and private organizations on projects that enhance the understanding of various Western American topics and issues (environmental, cultural, public policy, etc.), and which foster students' development as community leaders working for a sustainable West. May be repeated up to 6 total credit hours. Recommended prereq., CAMW 2001. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Center for the American West](#)

### CAMW-4001 (3) Seminar on the American West

Interdisciplinary capstone seminar for the Western American Studies certificate program. Applies a selected natural science, social science, or humanities topic to the American West and addresses how westerners can make and sustain viable landscapes and communities. Recommended prereqs., CAMW 2001 and completion of Western American Studies certificate electives. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Center for the American West](#)

# CAMW-4840 (1-4) Independent Study: The American West

Recommended prereq., CAMW 2001, junior or senior standing.

[College of Arts & Sciences](#) | [Center for the American West](#)

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CEES

## CEES-2002 (3) Introduction to Central and East European Studies

Examines major themes in the history of Russia and East-Central Europe since the early modern era, introduces the literature and arts of the region, and presents current political, social, and economic issues. Same as HIST 2002. Approved for arts and sciences CORE curriculum: historical context.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#)

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CESR

## CESR-4000 (1) Leadership Challenges I: Exercises in Moral Courage

Part one of a year-long course that focuses on values and leadership at the top level of organizations. The course is based on an interactive model that brings in six high-level executives to share their experiences and present critical business dilemmas, to which students prepare solutions for the executives to evaluate. Recommended prereq., BCOR 3010. Restricted to juniors/seniors.

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[Leeds School of Business](#) | [Curriculum Emphasis on Social Responsibility](#)

## CESR-4001 (2) Leadership Challenges II: Exercises in Moral Courage

Continuation of a year-long course that focuses on values and leadership at the top level of organizations. The course is based on an interactive model that brings in six high-level executives to share their experiences and present critical business dilemmas, to which students prepare solutions for the executives to evaluate. Prereq., CESR 4000. Recommended prereq., BCOR 3010. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[Leeds School of Business](#) | [Curriculum Emphasis on Social Responsibility](#)

## CESR-4005 (3) Business Solutions for the Developing World: Learning through Service

Provides students with practical knowledge and hands-on experience in developing sustainable business strategies to meet the real-world needs of small business entrepreneurs in developing countries. Student teams work with Peace Corps volunteers and other social entrepreneurs who are addressing social and environmental issues. Restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 3010. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

[Leeds School of Business](#) | [Curriculum Emphasis on Social Responsibility](#)

## CESR-4010 (3) Microfinance

In the last two decades, microfinance initiatives have provided the primary worldwide impetus to promote economic independence for the poor (1.4 billion). Microfinance seminar links the financial markets with entrepreneurship to create a platform for building a microfinance institution that facilitates financial inclusion to the poor. The students in a semester long project build a hypothetical financial institution that provides access to credit, saving, insurance and more to a segmented poor population, somewhere in the world including the U.S. Restricted to Business majors with 52-180 units completed. CESR 4010 and FNCE 4832 are the same course. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Curriculum Emphasis on Social Responsibility

## CESR-4130 (3) Sustainable Operations

Operational sustainability is not just an obligation, as set of strategies or a niche market to explore, but a critical shift in mindset of how businesses function. Sustainable operations examines business strategies in response to environmental and social challenges. The course takes a pragmatic business perspective on improving operations across the supply chain. Grounded in resource efficiency, life-cycle thinking and a dose of investigative skepticism, the course assists students to thoroughly understand the scope of costs, benefits and risks associated with driving businesses toward sustainable operations. Prereqs., BCOR 2500, 3010 and 60 hours completed. MGMT 4130 and CESR 4130 are the same course. Prerequisites: Restricted to students with 60-180 units completed.

Leeds School of Business | Curriculum Emphasis on Social Responsibility

## CESR-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Social Responsibility. Prereq., BCOR 3010. Restricted to BUSN majors with minimum 52 units completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Curriculum Emphasis on Social Responsibility

## CESR-4826 (3) Exp. Sem-Social Entrepreneurship: Designing a Better World

See the future through the eyes of entrepreneurs who are addressing global and social environmental problems such as poverty and deforestation. Can the social ventures they create to solve these problems survive over time and will they achieve the impact they seek? We will meet some of these social entrepreneurs and, in teams, write case studies to tell their stories. Restricted to non-Business majors with 60-180 units completed. CESR 4826 and ESBM 4826 are the same course. Prerequisites: Restricted to non-Business majors with 60-180 units completed.

Leeds School of Business | Curriculum Emphasis on Social Responsibility



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CHEM

### CHEM-1011 (3) Environmental Chemistry 1

Lect. Introduces basic principles of chemistry with applications to current environmental issues including toxic chemicals, air and water pollution, energy sources and their environmental impact, and climate change resulting from the greenhouse effect. No credit given to chemistry or biochemistry majors for CHEM 1011 if students already have credit in any college-level chemistry course numbered 1113/1114 (formerly 1111) or higher. Meets MAPS requirements for natural sciences: chemistry or physics. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-1021 (4) Introductory Chemistry

Lect. and lab. For students with no high school chemistry or a very weak chemistry background. Remedies a deficiency in natural science MAPS requirements and prepares students for CHEM 1113/1114. No credit given to chemistry or biochemistry majors for CHEM 1021 if students already have credit in any college-level chemistry course numbered 1113/1114 (formerly 1111) or higher. Prereq., one year high school algebra or concurrent enrollment in MATH 1011. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-1031 (4) Environmental Chemistry 2

Lect. and lab. Applications of chemical principles to current environmental issues including acid rain, stratospheric ozone depletion, the Antarctic ozone hole, solar energy conversion and fuel cells, and the environmental consequences of nuclear war. Laboratory experience is included. No credit given to chemistry or biochemistry majors for 1031 if students already have credit in any college-level chemistry course numbered 1113/1114 (formerly 1111) or higher. Prereq., CHEM 1011 with a grade of C- or higher. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Chemistry](#)

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## CHEM-1113 (4) General Chemistry 1

Lect., rec. Intended for first-semester students whose academic plans require advanced work in chemistry. Subjects: components of matter, stoichiometry, classes of reactions, gases, thermochemistry, atomic structure, electron configuration, chemical bonding, molecular shapes, covalent bonding, organic compounds, intermolecular forces, equilibrium. Prereqs., one year high school chemistry or CHEM 1021 (min grade C-); high school math through pre-calculus. Not recommended for students with grades below B- in CHEM 1021. Coreq., CHEM 1114. Not open to engineering students with exception of EPEN majors. Credit not granted for this course and CHEM 1111, 1251, 1351, or CHEM 1221/CHEN 1211. Approved for arts and sciences core curriculum: natural science. Prerequisites: AMEN, AREN, ASEN, CHEN, CSEN, CVEN, ECEN, EEEN, EVEN, MCEN, OPEN or CBEN majors are not allowed to take this class.

College of Arts & Sciences Chemistry

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## CHEM-1114 (1) Laboratory in General Chemistry 1

Lab. Intended for first-semester students whose academic plans require advanced work in chemistry. Instruction in experimental techniques which coordinate with lecture topics in CHEM 1113. Prereqs., one year high school chemistry or CHEM 1021 (min grade C-); high school math through pre-calculus. Not recommended for students with grades below B- in CHEM 1021. Coreq., CHEM 1113. Not open to engineering students with exception of EPEN majors. Credit not granted for this course and CHEM 1111, 1251, 1351, or CHEM 1221/CHEN 1211. Approved for arts and sciences core curriculum: natural science. Prerequisites: AMEN, AREN, ASEN, CHEN, CSEN, CVEN, ECEN, EEEN, EVEN, MCEN, OPEN or CBEN majors are not allowed to take this class.

College of Arts & Sciences Chemistry

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## CHEM-1133 (4) General Chemistry 2

Lect., rec. Intended for second-semester students whose academic plans require advanced work in chemistry. Subjects: acid-base equilibria, buffers and titrations, thermodynamics, redox reactions, electrochemistry, transition elements and their coordination compounds, solubility/solubility equilibria, crystal field theory, kinetics, nuclear chemistry. Prereq., CHEM 1113/1114 or equivalent (min grade C-). Coreq., CHEM 1134. Credit not granted for this course and CHEM 1131, 1271 or 1371. Approved for arts and sciences core curriculum: natural science. Prerequisites: Requires pre-requisite courses of CHEM 1111 or CHEM 1113/1114 or CHEM 1251 or CHEM 1351 or CHEN 1211/CHEM1221.

College of Arts & Sciences Chemistry

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## CHEM-1134 (1) Laboratory in General Chemistry 2

Lab. Intended for second-semester students whose academic plans require advanced work in chemistry. Instruction in experimental techniques which coordinate with lecture topics in CHEM 1133. Prereq., CHEM 1113/1114 or equivalent (min grade C-). Coreq., CHEM 1133. Credit not granted for this course and CHEM 1131, 1271, or 1371. Approved for arts and sciences core curriculum: natural science. Prerequisites: Requires pre-requisite courses of CHEM 1111 or CHEM 1113/1114 or CHEM 1251 or CHEM 1351 or CHEN 1211/CHEM1221.

College of Arts & Sciences Chemistry

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## CHEM-1221 (2) Engineering General Chemistry Lab

Coreq., CHEN 1211. One hour recitation in which concepts and problems are re-emphasized, homework is collected, and quizzes are given. Three hour lab in which students perform experiments designed to illustrate chemical concepts discussed in CHEN 1211. Also introduction to basic techniques in chemical measurements and synthesis. Prereq., one year high school chemistry or CHEM 1001 or 1021 (min grade C-); high school algebra. Coreq., CHEN 1211. Credit not granted for this course and CHEM 1111, 1113/1114, 1251 or 1351. Restricted to engineering students only. Prerequisites: Requires pre-requisite of course CHEM 1001 or 1021 (minimum grade C-). Requires co-requisite of course CHEN 1211. Restricted to Engineering students only.

College of Arts & Sciences Chemistry

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## CHEM-1251 (5) General Chemistry 1 for Chemistry and Biochemistry Majors

Lect. and lab. Intended for first-semester CHEM/BCHM majors. Subjects: components of matter, stoichiometry, classes of reactions, gases, thermochemistry, atomic structure, electron configuration, chemical bonding, molecular shapes, covalent bonding, organic compounds, intermolecular forces, equilibrium. Prereqs., one year high school chemistry or CHEM 1021 (minimum grade C-); high school math through pre-calculus. Not recommended for students with grade below B- in CHEM 1021. Restricted to CHEM/BCHM majors. Credit not granted for this course and CHEM 1113/1114, CHEM 1351, or CHEN 1211/CHEM 1221. Approved for arts and sciences core curriculum: natural science. Prerequisites: Restricted to Chemistry and Biochemistry majors only.

College of Arts & Sciences Chemistry

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## CHEM-1271 (5) General Chemistry 2 for Chemistry and Biochemistry Majors

Lect. and lab. Intended for second-semester CHEM/BCHM majors. Subjects: acid-base equilibria, buffers and titrations, thermodynamics, redox reactions, electrochemistry, transition elements and their coordination compounds, solubility/solubility equilibria, crystal field theory, kinetics, nuclear chemistry. Prereq., CHEM 1251 or equivalent (minimum grade C-). Restricted to CHEM/BCHM majors. Credit not granted for this course and CHEM 1131, 1133/1134 or 1371. Approved for arts and sciences core curriculum: natural science. Prerequisites: Requires pre-requisite course of CHEM 1251 (minimum grade C-). Restricted to Chemistry and Biochemistry majors only.

College of Arts & Sciences Chemistry

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## CHEM-1351 (5) Honors General Chemistry 1

Lect. and lab. Principles of chemistry and their applications are covered in a comprehensive manner (honors level) in this low-enrollment freshman course. Lectures include topics not covered in CHEM 1113/1114-1133/1134. The laboratory experience is more extensive; therefore, the CHEM 1351-371 sequence is highly recommended for well-prepared students who intend to major in chemistry, chemical engineering, physics, molecular biology, or related areas. Prereqs., one year high school chemistry; four years of high school math and/or a high score on the SAT or ACT math exam and one year of high school physics. Credit not granted for this course and CHEM 1113/1114, 1221, 1251, and CHEN 1211. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Chemistry

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## CHEM-1371 (5) Honors General Chemistry 2

Lect. and lab. Continuation of CHEM 1351. Prereq., CHEM 1351 (min grade C-). Credit not granted for this course and CHEM 1131, 1133/1134 or 1271. Approved for arts and sciences core curriculum: natural science. Prerequisites: Requires pre-requisite course of CHEM 1351 (minimum grade C-).

College of Arts & Sciences Chemistry

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## CHEM-3151 (3) Air Chemistry and Pollution

Examines the composition of the atmosphere, and sources of gaseous and particulate pollutants: their chemistry, transport, and removal from the atmosphere. Applies general principles to acid rain, smog, and stratospheric ozone depletion. Prereqs., two semesters of chemistry. ATOC 3500 and CHEM 3151 are the same course. CHEM 3151 was formerly CHEM 3500. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Chemistry

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## CHEM-3251 (3) Sustainable Energy from a Chemistry Perspective

Explores qualitative and quantitative chemical aspects of energy systems (production, transmission, storage, utilization) including fossil, wind, solar, nuclear and biomass energy. Applies chemical principles including composition, structure, bonding, physical properties, thermodynamics, equilibrium and kinetics to energy systems and sustainability, especially environmental implications. Describes the importance of energy to the chemical industries and society as a whole. Prereqs., CHEM 1133/1134, CHEM 1271, CHEM 1371, or CHEN 1211/CHEM 1221 (min. grade C-).

College of Arts & Sciences Chemistry

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## CHEM-3311 (4) Organic Chemistry 1

Lect. and rec. Intended primarily for nonmajors. Topics include structure and reactions of alkanes, alkenes, alkynes, alkyl halides, and aromatic molecules; nomenclature of organic compounds; stereochemistry; reaction mechanisms and dynamics. Students may receive credit for only one of CHEM 3311 and 3351. Prereq., CHEM 1133/1134 (formerly 1131), 1271, or 1371 (min grade C-); for engineering students only: CHEN 1211/CHEM 1221 (min grade C-) or equivalent; coreq., CHEM 3321 or 3361. Prerequisites: Requires pre-requisite course of CHEM 1131 or CHEM 1133/1134 or CHEM 1271 or CHEM 1371 or CHEN 1211/CHEM 1221.

College of Arts & Sciences Chemistry

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## CHEM-3321 (1) Laboratory in Organic Chemistry 1

Lab. Instruction in experimental techniques of modern organic chemistry emphasizing chemical separations and reactions of alkanes, alkenes, and aromatic compounds. Stereochemical modeling and the identification of organic unknowns by spectroscopic and chemical methods are also introduced. Prereqs., CHEM 1133/1134 (formerly 1131), 1271, 1371, or CHEN 1211/CHEM 1221 (min grade C-) or equivalent. Coreq., CHEM 3311 or 3351. For biochemistry and nonchemistry majors. Credit not granted for this course and CHEM 3361. Prerequisites: Requires pre-requisite course of CHEM 1131 or CHEM 1133/1134 or CHEM 1271 or CHEM 1371 or CHEN 1211/CHEM 1221.

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## CHEM-3331 (4) Organic Chemistry 2

Lect. and rec. Intended primarily for nonmajors. Topics include structure and reactions of alkyl halides, alcohols, ethers, carboxylic acids, aldehydes, ketones, and amines; introduction to the chemistry of heterocycles, carbohydrates, and amino acids; nomenclature of organic compounds; synthesis; and reaction techniques. Prereq., CHEM 3311 or 3351 and CHEM 3321 or 3361 (all min grade C-). Coreq., CHEM 3341 or 3381. Credit not granted for this course and CHEM 3371. Prerequisites: Requires pre-requisite courses of CHEM 3311 or 3351, and CHEM 3321 or 3361 (minimum grade C- for all).

## CHEM-3341 (1) Laboratory in Organic Chemistry 2

Lab. For biochemistry and nonchemistry majors. Instruction in experimental techniques of modern organic chemistry emphasizing reactions involving alcohols, ketones, carboxylic acids, and their derivatives. Multistep syntheses are also introduced. Prereq., CHEM 3321 or 3361 (min grade C-). Coreq., CHEM 3331 or 3371. Prerequisites: Requires pre-requisite courses of CHEM 3311 or 3351, and CHEM 3321 or 3361 (minimum grade C- for all).

## CHEM-3351 (4) Organic Chemistry 1 for Chemistry and Biochemistry Majors

Lect. and rec. Topics include structure and reactions of alkanes, alkenes, alkynes, alcohols, ethers, aldehydes, ketones, and alkyl halides; nomenclature of organic compounds; stereochemistry; reaction mechanisms. Students may receive credit for only one of CHEM 3311 and 3351. Prereq., CHEM 1133/1134 (formerly 1131), 1271, or 1371 (min grade C-); coreq., CHEM 3361 or 3321. Prerequisites: Restricted to CHEM and BCHM majors. Requires pre-requisite course of CHEM 1131 or CHEM 1133/1134 or CHEM 1271 or CHEM 1371 or CHEN 1211/CHEM 1221.

## CHEM-3361 (2) Laboratory in Organic Chemistry 1 for Chemistry Majors

Lab. Required course for chemistry majors. Instruction in experimental techniques of modern organic chemistry emphasizing chemical separations and reactions of alkanes, alkenes, alcohols, ketones, and alkyl halides. Explores stereochemical modeling and the identification of organic unknowns. Prereq., CHEM 1133/1134 (formerly 1131), 1271, or 1371 (min grade C-); coreq., CHEM 3351 or 3311. Credit not granted for this course and CHEM 3321. Prerequisites: Requires pre-requisite course of CHEM 1131 or CHEM 1133/1134 or CHEM 1271 or CHEM 1371 or CHEN 1211/CHEM 1221. Restricted to Chemistry and Biochemistry majors.

## CHEM-3371 (4) Organic Chemistry 2 for Chemistry and Biochemistry

## Majors

Lect. and rec. Topics include structure and reactions of carboxylic acids and derivatives, aromatic compounds, and amines; introduction to the chemistry of heterocycles, carbohydrates, and amino acids; nomenclature of organic compounds; reaction mechanisms. Prereqs., CHEM 3351 or 3311 and CHEM 3361 or 3321 (min grade C-). Prereq. or coreq., CHEM 3381 or 3341. Credit not granted for this course and CHEM 3331. Prerequisites: Restricted to Chemistry and Biochemistry majors only.

College of Arts & Sciences Chemistry

## CHEM-3381 (2) Laboratory in Organic Chemistry 2 for Chemistry Majors

Lab. Required course for chemistry majors. Instruction in experimental techniques of modern chemistry, emphasizing reactions involving alcohols, ketones, carboxylic acids, aromatic compounds, and their derivatives. Multistep syntheses are also introduced. Prereqs., CHEM 3321 or 3361 and CHEM 3341 (min grade C-). Prereq. or coreq., CHEM 3331 or 3371. Prerequisites: Requires pre-requisite courses of CHEM 3311 or 3351, and CHEM 3321 or 3361 (minimum grade C- for all). Restricted to Chemistry and Biochemistry majors only.

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## CHEM-4011 (3) Modern Inorganic Chemistry

Lect. Required course for chemistry majors. Introduces modern inorganic chemistry for undergraduates. Includes atomic structure, chemical periodicity, structure and bonding in molecules and crystals, reaction mechanisms, chemistry of selected main group and transition elements, and emphasis on catalyst, materials, bioinorganic, and organometallic systems. Prereq. or coreq., CHEM 4431, 4521, or 4531 (min grade C-).

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## CHEM-4021 (3) Inorganic Laboratory

One lect. and two 3-hour labs per week. Instruction in experimental techniques of modern inorganic chemistry. Includes syntheses and spectroscopic characterizations of transition metal and main group compounds, experience in manipulation of air sensitive compounds, and techniques involving unusual conditions of pressure or temperature. Prereq., CHEM 4011 (min grade C-). Prerequisites: Requires prerequisite course of CHEM 4011 (minimum grade C-). Restricted to Chemistry and Biochemistry majors only.

College of Arts & Sciences Chemistry

## CHEM-4171 (3) Instrumental Analysis

Lect. Theory and practice of instrumental methods of chemical analysis including atomic and molecular spectroscopy, gas and liquid chromatography, mass spectrometry, and electrochemistry. Prereqs., CHEM 3331 or 3371 (min grade C-).

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## Courses

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Search by Course Number

**Subject** **Number**

CHEM

### CHEM-4181 (3) Instrumental Analysis Laboratory with Environmental Emphasis

One lect. and six hours of lab per week. Instruction and experience in using instrumental methods of analysis to address problems in chemistry, biochemistry, industrial chemistry, and environmental chemistry. Prereq., CHEM 4171 (min grade C-). Prerequisites: Requires pre-requisite course of CHEM 4171 (minimum grade C-). Restricted to Chemistry and Biochemistry majors only.

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### CHEM-4251 (3) Materials Chemistry and Properties

Lec. Understanding of materials from chemistry perspective including metals, oxides, semiconductors and polymers. Basic description of chemical preparation of materials. Overview of fundamental properties of materials including structural, chemical, mechanical, thermal, electrical, and optical properties. Description of behavior of materials and various applications in modern technology. Discussion of materials characterization methods. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4251 and 5251 are the same course.

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### CHEM-4261 (3) Organic Materials: Structures and Functions

Overview of the preparation and functioning mechanism of novel organic materials that have recently been developed, including conductive polymers, 2-D macrocyclic structures, 3-D molecular cages, molecular machines/muscles/switches, fullerene derivatives and carbon nanotube composites. This course will emphasize the use of organic and physical chemistry as tools to develop novel materials and probe their structure-property relationship. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4261 and 5261 are the same course.

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## CHEM-4271 (3) Chemistry of Solar Energy

Chemical principles of conversion of solar energy into electricity and fuels in molecular and semiconductor-based systems. Overview of solid-state electronic structure of materials and interfaces, light-matter interactions, principles of harvesting photoexcited currents and useful chemical species. Description of processes utilized in established and emerging solar energy technologies. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4271 and 5271 are the same course.

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## CHEM-4411 (3) Physical Chemistry with Biochemistry Applications 1

Lect. Introduces thermodynamics and kinetics, emphasizing macromolecule and biochemical applications. Includes thermodynamics, chemical and physical equilibria, solution chemistry, transport properties, multiple site binding phenomena, and the rates of chemical and biochemical reactions. Alternative to CHEM 4511. Designed for biochemistry and biology majors. Prereqs., CHEM 3311 or 3351, PHYS 1110 or 2010, MATH 2400 or APPM 2350 (min grade C-), or instructor consent. Prereq. or coreq., PHYS 1120 or 2020. Credit not granted for this course and CHEM 4511. Same as CHEM 5411. Prerequisites: Requires pre-requisite courses CHEM 3311 or 3351, PHYS 1110 or 2010, MATH 2400 or APPM 2350 (all minimum grade C-). Requires pre-requisite or co-requisite of PHYS 1120 or 2020.

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## CHEM-4431 (3) Physical Chemistry with Biochemistry Applications 2

Lect. Principles of physical chemistry (second semester) for students in the biological sciences. Topics include quantum mechanics, chemical bonds, principles of spectroscopy, statistical mechanics, and transport processes with application to biological systems. Mathematical background (integral and differential calculus including partial differentiation) required. Prereq., grade of C- or higher in CHEM 4411 or 4511, and MATH 2400 or APPM 2350, and PHYS 1120 or 2020, or instructor consent. Credit not granted for this course and CHEM 4531. Same as CHEM 5431. Prerequisites: Requires pre-requisite courses of CHEM 4411 or 4511, MATH 2400 or APPM 2350 and PHYS 1120 or 2020 (minimum grade of C- for all).

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## CHEM-4511 (3) Physical Chemistry 1

Lect. Chemical thermodynamics and kinetics. Includes study of laws of thermodynamics, thermochemistry, entropy, free energy, chemical potential, chemical equilibria, and the rates and mechanisms of chemical reactions. Prereqs., CHEM 3311 or 3351, MATH 2400 or APPM 2350, and PHYS 1110 or 2020 (all min grade C-) or instructor consent. Prereq. or coreq., PHYS 1120. Credit not granted for this course and CHEM 4411/5411. Prerequisites: Requires pre-requisite of courses CHEM 3311 or 3351, MATH 2400 or APPM 2350, and PHYS 1110 or 2020 (all minimum grade C-). Requires pre-requisite or co-requisite course of PHYS 1120.

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## CHEM-4521 (3) Physical Chemistry for Engineers

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Lec. Covers kinetic theory of gases; chemical equilibrium; electrochemistry; chemical kinetics; quantum mechanics and atomic structure; chemical bonding; spectroscopy; statistical mechanics; the solid state; the liquid state; and surface chemistry. Prereq., CHEM 1211 and CHEM 1221, CHEM 1113/1114 (formerly 1111) and 1133/1134 (formerly 1131), 1351 or 1371, MATH 2400 or APPM 2350, and PHYS 1110 (min grade C- required in all) or instructor consent. Prereq. or coreq., PHYS 1120. Restricted to Engineering students only. Prerequisites: Restricted to College of Engineering majors only.

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## CHEM-4531 (3) Physical Chemistry 2

Lect. Introduces the quantum theory of atoms, molecules and chemical bonding, and statistical thermodynamics. Includes principles of quantum mechanics and their application to atomic structure, molecular spectroscopy, symmetry properties, and the determination of molecular structure. Also includes principles of statistical mechanics and their applications to properties of gases, liquids, and solids. Prereqs., CHEM 4511 or 4411, and PHYS 1120 or 2020, and MATH 2400 or APPM 2350 (min grade C- required in all). Credit not granted for this course and CHEM 4431 or 5431. Prerequisites: Requires pre-requisite courses of CHEM 4511 or 4411, PHYS 1120 or 2020, and MATH 2400 or APPM 2350 (minimum grade C- for all)

College of Arts & Sciences Chemistry

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## CHEM-4581 (1) Physical Chemistry Lab 1

One 3-hour lab per week. Instruction in experimental techniques of modern physical chemistry. Experiments illustrate the fundamental principles of thermodynamics and chemical kinetics. Illustrates the material discussed in CHEM 4511. Prereq. or coreq., CHEM 4411 or 4511 (min grade C-) or instructor consent. Restricted to CHEM and BCHM majors. Credit not granted for this course and CHEM 4561. Prerequisites: Requires pre-requisite or co-requisite course of CHEM 4411 or 4511 (minimum grade C-). Restricted to Chemistry and Biochemistry majors only.

College of Arts & Sciences Chemistry

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## CHEM-4591 (2) Physical Chemistry Lab 2

One lect. and one 3-hour laboratory every two weeks. a continuation of CHEM 4581, but may be taken concurrently with CHEM 4531 or CHEM 4431. Experiments illustrate the principles of quantum chemistry and spectroscopy discussed in CHEM 4531. Prereq., CHEM 4411 or 4511 and 4581 (min grade C- in all) or instructor consent. Prereq. or coreq., CHEM 4431 or 4531. Restricted to CHEM and BCHM majors. Credit not granted for this course and CHEM 4561. Prerequisites: Requires pre-requisite courses of CHEM 4411 or 4511 and CHEM 4581 (minimum grade C- for all). Restricted to Chemistry and Biochemistry majors only.

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## CHEM-4611 (3) Survey of Biochemistry

Lec. One-semester survey of the main themes of modern biochemistry: biomolecular structure/function, metabolism, biosynthesis, DNA from genome to proteome, and cellular signaling. For biology and engineering majors and others wanting a survey of biochemistry. Prereq., one semester of organic chemistry (CHEM 3311, 3351, or equivalent; min grade C-). Prerequisites: Requires pre-requisite course of CHEM 3311 or 3351 (minimum grade C-).

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## CHEM-4621 (3) Genome Databases: Mining and Management

Lect. Develops essential skills for performing genomic analyses, with focus on developing practical research tools. Introduces human genome and microbiome projects, Python/Sql scripting, accessing and understanding genomic data, sequence alignment and search, evolutionary models, expression data, biological networks, and macromolecular structure. Prereqs., MCDB 3500, CSCI 3104, or CHEM 4711; coreq., CSCI 2270. Same as CHEM 5621. Credit not granted for this course and CSCI 4317 or MCDB 4621.

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## CHEM-4711 (3) General Biochemistry 1

Lect. Topics include structure, conformation, and properties of proteins, nucleic acids, carbohydrates, and membranes; enzyme mechanisms, kinetics, and regulation; intermediary metabolism; energetics and metabolic control; electron transport and oxidative phosphorylation. Prereq., CHEM 3331 or 3371 (mingrade C-). Same as CHEM 5711. Prerequisites: Requires pre-requisite course of CHEM 3331 or 3371 (minimum grade C-).

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## CHEM-4731 (3) General Biochemistry 2

Lect. Continuation of CHEM 4711. Metabolism of carbohydrates, lipids, amino acids, and nucleic acids; photosynthesis; biosynthesis and function of macromolecules including DNA, RNA, and proteins; biochemistry of subcellular systems; and special topics. Prereq., CHEM 4711 (min grade C-). Same as CHEM 5731. Prerequisites: Requires pre-requisite course of CHEM 4711 (minimum grade C-).

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## CHEM-4751 (3) Current Topics in Biochemical Research

Lect. Covers current topics in modern biochemical research through lectures, reading recent research articles, critical thinking, and class discussion. Topics include protein and nucleic acid structure and function, biomolecular interactions, enzyme function, and cellular signaling and regulation. Prereqs., CHEM 4711 and 4731 (min grade C-) or instructor consent. Same as CHEM 5751.

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## CHEM-4761 (4) Biochemistry Laboratory

Two 5-hour periods per week. The first hour of each period is lecture, the remainder is laboratory. Introduction to modern biochemical techniques. Topics include enzymology, spectrophotometry, electrophoresis affinity chromatography, radioisotopes, recombinant DNA, and molecular cloning. Prereq., CHEM 4711 (min grade of C-). Recommended prereq., CHEM 4731 or MCDB 3500. Restricted to CHEM or BIOCHEM majors. Prerequisites: Requires pre-requisite course of CHEM 4711 (minimum grade C-). Restricted to Chemistry & Biochemistry majors only.

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## CHEM-4791 (3) Bioorganic Chemistry in Biotechnology

Lec. Explores examples of antibodies, peptides, proteins, RNA, DNA, carbohydrates and lipids. The course uses the primary literature and requires student participation. Prereq., CHEM 3331 or 3371, and CHEM 4731 or 5731 (min. grade C-). Recommended prereq., undergraduate molecular biology. Same as CHEM 5791.

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## CHEM-4901 (1-6) Independent Study in Chemistry and Biochemistry

For undergraduate study. May be repeated up to 8 total credit hours. Prereq., instructor consent.

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## CHEM-5011 (3) Advanced Inorganic Chemistry 1

Lect. Inorganic chemistry based on principles of bonding, structure, reaction mechanisms, and modern synthetic methods. Chemistry and general properties of representative and transition elements and their compounds. Prereqs., CHEM 4011 and 4531, or graduate standing. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5061 (3) Advanced Inorganic Chemistry 2

Lectures in physical inorganic chemistry with an emphasis on topics for understanding modern solar energy conversion to electricity and fuels. Includes a description of bonding and properties of coordination compounds in terms of the ligand field and molecular orbital theories. The primary research literature will be used to motivate exploration of relevant themes including spectroscopy, electron transfer, energy transfer, bioenergetic conversion, and small-molecule activation. Prereqs., CHEM 4011 and graduate standing.

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## CHEM-5151 (3) Atmospheric Chemistry

Lect. Basic kinetics and photochemistry of atmospheric species. Stratospheric chemistry with emphasis on processes controlling ozone abundance. Tropospheric chemistry focusing on photochemical smog, acid deposition, oxidative capacity of the atmosphere, and global climate change. Prereq., graduate standing or instructor consent. Same as ATOC 5151. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5161 (3) Analytical Atmospheric Spectroscopy

Optical spectrochemical analysis, atmospheric transmittance, including atomic and molecular spectroscopy, line-by-line spectral databases such as HITRAN, absorption, emission, fluorescence, scattering processes of gases, surface enhancements, aerosols, optical spectroscopic instrument components, and techniques, and their applications to atmospheric, and environmental problems. Prereq., undergraduate physical chemistry or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5171 (3) Electroanalytical Chemistry

Lect. Establishes a background for understanding electrochemical systems through a review of the relevant thermodynamic, kinetic, and electronic principles. Compares classical and modern electrochemical methods of analysis. Several special topics are discussed in depth. Prereq., undergraduate physical chemistry or instructor consent.

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## CHEM-5181 (3) Mass Spectrometry and Chromatography

Mass spectrometry, including instrumentation, ionization techniques, and interpretation of mass spectra. Theory and practice of analytical separation processes including ion mobility, capillary electrophoresis, and liquid gas chromatography. Introduction to applications in e.g. atmospheric and biological mass spectrometry. Introduction to computer simulation of instrumentation and physical processes. Prereq., undergraduate physical chemistry or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## Courses

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Search by Course Number

**Subject** **Number**

CHEM

### CHEM-5201 (3) Atmospheric Aerosol Discussions

Discusses recent literature concerning atmospheric aerosols and their role in atmospheric problems, including global ozone depletion, air quality, regional haze, acid rain, and global climate change. May be repeated up to 12 total credit hours. Recommended prereq., CHEM/ATOC 5151. Restricted to graduate students.

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### CHEM-5251 (3) Materials Chemistry and Properties

Lec. Understanding of materials from chemistry perspective including metals, oxides, semiconductors and polymers. Basic description of chemical preparation of materials. Overview of fundamental properties of materials including structural, chemical, mechanical, thermal, electrical, and optical properties. Description of behavior of materials and various applications in modern technology. Discussion of materials characterization methods. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4251 and 5251 are the same course.

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### CHEM-5261 (3) Organic Materials: Structures and Functions

Overview of the preparation and functioning mechanism of novel organic materials that have recently been developed, including conductive polymers, 2-D macrocyclic structures, 3-D molecular cages, molecular machines/muscles/switches, fullerene derivatives and carbon nanotube composites. This course will emphasize the use of organic and physical chemistry as tools to develop novel materials and probe their structure-property relationship. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4261 and 5261 are the same course.

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## CHEM-5271 (3) Chemistry of Solar Energy

Chemical principles of conversion of solar energy into electricity and fuels in molecular and semiconductor-based systems. Overview of solid-state electronic structure of materials and interfaces, light-matter interactions, principles of harvesting photoexcited currents and useful chemical species. Description of processes utilized in established and emerging solar energy technologies. Prereqs., CHEM 3331 or 3371, and CHEM 4431, 4521, or 4531 (min. grade C-) or instructor consent. CHEM 4271 and 5271 are the same course. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5311 (3) Advanced Synthetic Organic Chemistry

Lect. Surveys synthetic transformations emphasizing important functional group transformations and carbon-carbon, bond-forming reactions. Required of all organic chemistry graduate students. Prereq., one year of organic chemistry. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5321 (3) Advanced Physical Organic Chemistry

Lect. Modern concepts of physical organic chemistry and their use in interpreting data in terms of mechanisms of organic reactions and reactivities of organic compounds. Required of all organic chemistry graduate students. Prereqs., one year of organic chemistry and one year of physical chemistry. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5331 (3) Advanced Spectroscopic Techniques in Organic Chemistry

Lect. Advanced spectroscopic techniques for structure and determination in organic chemistry. Emphasizes proton and carbon-13 NMR spectroscopy. Prereqs., one year of organic chemistry and one year of physical chemistry. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5341 (3) Chemical Biology and Drug Design

Develop knowledge base and skills in the interdisciplinary field of chemical biology, including aspects of chemistry and biology, and integrating both with respect to hierarchical levels of structure (atomic, molecular, cellular). Students will receive training that helps to develop their careers in biotech, pharmaceutical, and other research-oriented industries as well as in academia. Prereqs., introductory organic chemistry and general biochemistry.

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## CHEM-5411 (3) Physical Chemistry with Biochemistry Applications 1

Lect. Introduces thermodynamics and kinetics, emphasizing macromolecules and biochemical applications. Intended for biology graduate students. Not open to students in chemistry or other physical sciences. Prereqs., three semesters of calculus, one year of physics, and instructor consent or graduate standing. Same as CHEM 4411. Credit not granted for this course and CHEM 4411 or CHEM 4511.

Prerequisites: Restricted to Graduate Students only.

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## CHEM-5431 (3) Physical Chemistry with Biochemistry Applications 2

Lect. Principles of physical chemistry (second semester) for graduate students in biology. Not open to students of chemistry or the physical sciences. Prereqs., graduate standing and CHEM 5411, or instructor consent. Credit not granted for this course and CHEM 4531. Same as CHEM 4531. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5501 (3) Advanced Topics in Physical Chemistry

Covers various topics in physical chemistry focusing on their mathematical and physical background. Topics include the application of classical mechanics and electrodynamics in chemistry, the classical mechanics background for the description of atoms and molecules, the use of vector spaces in wave mechanics and quantum mechanics and the classical description of spectroscopy in terms of interaction of light and matter. Prereqs., undergrad physical chemistry, graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5531 (3) Statistical Mechanics

Lect. Fundamental concepts of quantum and classical statistical mechanics. Applications to properties of gases, liquids, solids, spin, and polymer systems. Reaction, fluctuation, nucleation, and relaxation phenomena. Prereq., undergraduate physical chemistry. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5541 (3) Chemical Dynamics

Lect. Discussion of mechanism and rate of chemical reactions from a fundamental point of view. Discusses nature of collision and develops concepts of cross section and rate constant. Theories of elementary bimolecular and decay processes are critically examined. Prereq., undergraduate physical chemistry. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5561 (3) Methods of Molecular Biophysics

Discusses techniques used to determine structure, function, and dynamics of macromolecules, including optical spectroscopy, magnetic resonance, diffraction, and electron microscopy. Approved for credit toward molecular biophysics certificate. Prereq., one year physical chemistry or quantum mechanics with graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5571 (3) Surface Science

Lect. Principles of surface science with emphasis on fundamental surface phenomena, surface techniques, and surface chemistry. Basic description of surfaces, adsorbate-surface interactions, surface kinetics, and methods of surface analysis. Surface science of interactions, surface kinetics, and methods of surface analysis. Surface science of heterogeneous catalysis, semiconductor processing, and environmental interfaces. Prereq., undergraduate physical chemistry and graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5581 (3) Introductory Quantum Chemistry

Lect. Basic principles and techniques of quantum mechanics with applications to questions of chemical interest. Quantum dynamics of atoms, molecules, and spin; electronic structure of atoms and molecules. Prereq., two semesters of physical chemistry and graduate standing, or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5591 (3) Advanced Molecular Spectroscopy

Lect. Rotational, vibrational, and electronic spectra of molecules, and their interpretation in terms of the quantum theory of molecular structure. Prereq., two semesters of physical chemistry and graduate standing, or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5621 (3) Genome Databases: Mining and Management

Same as CHEM 4621. Credit not granted for this course and CSCI 5317 or MCDB 5621.

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## CHEM-5711 (3) General Biochemistry 1

Lect. Same lectures as CHEM 4711. Course work includes library studies and preparation of special reports. Not open to undergraduates. Prereq., one year of organic chemistry and graduate standing. Prerequisites: Restricted to Graduate Students only.

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## CHEM-5731 (3) General Biochemistry 2

Lect. Same lectures as CHEM 4731. Course work includes library studies and report preparations. Not open to undergraduates. Prereqs., CHEM 5711 and graduate standing, or instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-5751 (3) Current Topics in Biochemical Research

Prereq., instructor consent required. Same as CHEM 4751.

## CHEM-5770 (3) Fundamentals of Biochemistry I

Analysis of topics in biochemistry including DNA structure and replication, RNA synthesis and processing, protein synthesis, enzyme function and mechanism, and protein structure and dynamics. Intended as a comprehensive treatment of areas central to modern biochemistry for entering graduate students. Lectures concurrent with CHEM 5771 covering the same topics except for the requirement of a written research proposal. Prereq., CHEM 4731 or equivalent, and graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-5771 (5) Advanced General Biochemistry 1

Lect. In-depth analysis of DNA structure and replication, RNA synthesis and processing, protein synthesis, enzyme function and mechanism, protein structure, protein dynamics, and physical chemistry of macromolecules. Intended as a comprehensive treatment of areas central to modern biochemistry for entering graduate students. Prereq., CHEM 4731 or equivalent, and graduate standing, or instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-5776 (1) Scientific Ethics and Responsible Conduct in Research

Lect. Advanced discussion of topics in scientific ethics, including requirements for responsible conduct of research, case histories of fraud, research misconduct, ethical misconduct, and development of professional values and ethical standards. Prereqs., CHEM 5771 or MCDB 5210 taken concurrently, and instructor consent. Same as MCDB 5776. Prerequisites: Restricted to Graduate Students only.

## CHEM-5780 (3) Fundamentals of Biochemistry II

Analysis of topics in biochemistry including protein structure, methods of structure determination and prediction, protein folding, and protein dynamics. Intended as a comprehensive treatment of areas central to modern biochemistry for entering graduate students. Lectures concurrent with CHEM 5781, covering the same topics except for the requirement of a written research proposal. Prereq., CHEM 5770 or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

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## Courses

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**College/School**

All

Search by Course Number

**Subject** **Number**

CHEM

### CHEM-5781 (5) Advanced General Biochemistry 2

Lect. Detailed consideration of contemporary topics in biochemistry, including protein structure (primary, secondary, tertiary, and quaternary), methods of structure determination and prediction, protein folding (kinetics, thermodynamics, denaturation, and renaturation), and protein dynamics (internal motions and methods of analysis). Prereq., CHEM 5771 or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-5791 (3) Biorganic Chemistry in Biotechnology

Same as CHEM 4791.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-5801 (3) Advanced Signal Transduction and Cell Cycle Regulation

Lect. Advanced discussion of current research and literature in signal transduction, including ligands, receptors, and intracellular signaling pathways, as well as control on transcription, chromatin structure, Dna replication, mitosis, and cell cycle progression. Recommended prereqs., CHEM 5771 and 5781, MCDB 5210 or MCDB 5220, and graduate standing.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-5811 (3) Advanced Methods in Protein Sequencing and Analysis

Lect. Advanced discussion of current methods in protein sequencing, sequence analysis, and posttranslational modifications,

emphasizing techniques of mass spectrometry, use of protein databases, sequence alignment and motifs, structure prediction, and modeling of signaling pathways. Prereq., instructor consent. Recommended prereqs., CHEM 5771, CHEM 5781, MCDB 5210, and graduate standing.

College of Arts & Sciences Chemistry

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## CHEM-5821 (1) Special Topics in Signaling and Cell Regulation

Lect. Reviews and evaluates literature on subjects of current interest in signal transduction transcription, cell cycle progression, and cell regulation. Primarily for graduate level presentation of special topics by students, faculty, and research staff. May be repeated up to 5 total credit hours. Prereqs., graduate standing and instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6001 (1) Seminar: Inorganic Chemistry

Student, faculty, and guest presentations and discussions of current research in inorganic chemistry and related topics (transition element and main group element compound properties, inorganic compound in biological, industrial, and materials applications). Required of all inorganic chemistry graduate students. Credit deferred until presentation of satisfactory seminar. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Chemistry

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## CHEM-6021 (1-3) Special Topics in Inorganic Chemistry

Lect. Subjects of current interest in inorganic chemistry. Primarily used for graduate-level presentations of special topics by visiting and resident faculty. Variable class schedule. May be repeated up to 7 total credit hours. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Chemistry

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## CHEM-6031 (3) Special Topics in Nanoscience

Introduces the synthesis, physical properties, and applications of nanometer-scale materials and devices. Includes synthesis of metal and semiconductor nanoparticles and nanowires, optical and electronic properties of nanoscale systems, and applications in biotechnology and energy. Prereqs., CHEM 1111, 1131, and 4431 or 4521 or 4511. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6101 (1) Seminar: Analytical Chemistry

Student, faculty, and guest presentations and discussions of current research in analytical chemistry. Required of all analytical chemistry graduate students. Credit deferred until presentation of satisfactory seminar. Prereq., graduate standing or instructor consent.

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Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6111 (1-3) Special Topics in Analytical Chemistry

Lect. Subjects of current interest in analytical chemistry. Used for graduate-level presentations of special topics by visiting and resident faculty. Variable class schedule. May be repeated up to 7 total credit hours. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Chemistry

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## CHEM-6301 (1-3) Seminar in Organic Chemistry

Discussions principally concerned with recent literature in organic chemistry. Required of all organic chemistry graduate students. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6311 (1-3) Special Topics in Synthetic Organic Chemistry

Lect. Selected topics in synthetic organic chemistry, encompassing both methods and/or total synthesis of complex molecules. Prereqs., CHEM 5311 and graduate standing, or instructor consent.

College of Arts & Sciences Chemistry

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## CHEM-6321 (1-3) Special Topics in Physical Organic Chemistry

Lect. Selected topics in physical organic chemistry, which may include photochemistry, carbene chemistry, free radical chemistry, molecular orbital methods, organic materials, or gas phase ion chemistry. Prereq., CHEM 5321 and graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6401 (1-3) Seminar: Physical Chemistry

Student, faculty, and guest presentations of current research in physical chemistry. Discussion of research topics related to the subject of weekly physical chemistry/chemical physics seminar and appropriate journal articles. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6411 (1-3) Advanced Topics in Physical Chemistry

Lect. May be repeated up to 7 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6601 (1) Biochemistry Seminar

Required of all biochemistry graduate students. Credit is deferred until presentation of satisfactory seminar. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6621 (1) Special Topics in RNA

Reviews and evaluates recent scientific literature in the field of RNA chemistry and biology, including topics in structure, catalysis, bioinformatic approaches, and control of gene expression. Primarily for graduate level presentation of special topics by students and research staff. May be repeated up to 5 total credit hours. Prereq., graduate standing or instructor consent. Same as MCDB 6621. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6711 (3-6) Advanced Topics in Biochemistry

Detailed study of current literature relative to one main topic is undertaken each semester. Topics covered on a rotating basis include enzyme kinetics and mechanisms; lipids and lipoproteins; chemistry and enzymology of nucleic acids; biochemistry of nucleic acids in eukaryotic cells; and protein chemistry. Presentations include faculty lectures and student reports. May be repeated up to 12 total credit hours. Prereqs., one year of biochemistry courses, graduate standing, and instructor consent.

College of Arts & Sciences Chemistry

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## CHEM-6731 (3-6) Advanced Topics in Biochemistry

Detailed study of current literature relative to one main topic is undertaken each semester. Topics covered on a rotating basis include enzyme kinetics and mechanisms; lipids and lipoproteins; chemistry and enzymology of nucleic acids; biochemistry of nucleic acids in eukaryotic cells; and protein chemistry. Presentations include faculty lectures and student reports. May be repeated up to 12 total credit hours. Prereqs., one year of biochemistry courses, graduate standing, and instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-6801 (0) Departmental Research Seminar

Lectures by visiting scientists and occasionally by staff members and graduate students on topics of current research. Meets once a

week. Required for all graduate students in chemistry. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-6901 (1-6) Special Topics in Chemistry

Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-6941 (1) Master's Candidate

College of Arts & Sciences Chemistry

## CHEM-6951 (1-6) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-7021 (2) Seminar: Structural Inorganic Chemistry

Current research in the area of structural inorganic chemistry. Concerns topics related to electronic and molecular structure of transition metal complexes. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-7101 (2) Seminar: Chromatography and Trace Analysis

Student and faculty discussions and reports on research advances in chromatography, trace analysis, and environmental chemistry. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry



## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

CHEM

### CHEM-7111 (2) Seminar: Electrochemistry

Student and faculty discussions and reports on research advances in electrochemistry. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7131 (1) Seminar in Atmospheric Aerosol Chemistry

Discusses advances in atmospheric aerosol chemistry, with emphasis on new methods for analysis and their application to laboratory and field studies. May be repeated up to 2 total credit hours. Prereq., graduate standing or instructor consent. Recommended prereqs., CHEM 5151, 5181. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7141 (1) Seminar: Spectroscopy at Dielectric Interfaces

Focuses on current research results and relevant literature in the areas of Raman spectroscopy, interfacial reactions/interactions, fluorescence spectroscopy, and photoacoustic spectroscopy. May be repeated up to 6 total credit hours. Prereq., instructor consent.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7161 (1) Seminar: Heterogeneous Atmospheric Chemistry

Topics in atmospheric chemistry emphasizing the structure and reactivity of atmospheric particulates. Presentations on current research and critical evaluations of recent literature. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7211 (1) Seminar: Topics in Synthetic Methodology and Natural Product Synthesis

Discussion of contemporary synthetic organic chemistry with a focus on new methodology and total synthesis of natural products. Prerequisites: Restricted to Graduate Students only.

## CHEM-7221 (1) Seminar: Photochemistry and Free Radical Chemistry

Current research in areas of organic free radical chemistry, photochemistry, and related topics are presented and discussed. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7231 (1) Seminar: Reactive Intermediates

Application of contemporary ideas of chemical physics to organic molecules. Special attention to structures and bonding in organic ions and radicals. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7241 (1) Seminar: Synthetic Organic Chemistry

Series of seminars on directed total synthesis. Emphasizes modern synthetic methodology and applications to total synthesis of natural products. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7251 (1) Selected Topics in Chemical Genetics

Discusses the brief history of the emerging field of chemical genetics, and focuses on the recent development of concepts, techniques, applications, and its impact on both science and human health. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7271 (1) Seminar: Picosecond Dynamics of Reactions

Includes development and application of picosecond laser spectroscopy to organic and organometallic reactions. Emphasizes relationship

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between current theoretical developments and experiments. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7281 (1) Seminar: Molecular Self-Assembly

Discusses current topics and recent advances in molecular self-assembly, with emphasis on new liquid crystal designs and applications. May be repeated up to 2 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7291 (1) Seminar: Physical Organic Chemistry

Modern experimental techniques and theoretical models in physical organic chemistry are discussed in relation to the development of new materials, such as molecular size tinkertoys to the development of novel photochemical systems and their spectroscopies. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7301 (1) Seminar: Synthetic and Mechanistic Chemistry

Discusses particularly the synthesis of complex organic molecules and the mechanism of reagents used in organic synthesis. Includes a study of transition metal mediated organic reactions. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7311 (1) Selected Topics in Organic Materials

Current research in the area of organic/materials chemistry. Concerns topics related to organic materials synthesis, carbon nanotube functionalization, artificial photosynthesis, gas storage and catalysis. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7401 (1) Seminar in Photochemical Reaction Control

Discusses progress towards control of molecular reactivity using light, including synthetic methods for creating control subjects. Emphasizes new methods to achieve coherent control. May be repeated up to 2 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7421 (2) Seminar: Negative Ion Chemistry

Chemistry of negative ions; experimental methods and designs; laser spectroscopy of ions; theoretical methods; reactive dynamics of ions in the gas phase. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7431 (1) Seminar: Topics in Theoretical Chemical Physics

Seminars presented on a variety of topics in theoretical chemical physics. Molecular collisions and unimolecular dynamics predominantly featured. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7441 (2) Research Seminar: Theoretical Chemistry

Studies theoretical description of molecular dynamics as related to rate processes. Focuses on chemical reactions in liquids, absorption-desorption on surfaces, nucleation reactions, and energy flow in molecules. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7461 (1) Seminar: Gas Phase Ion Chemistry

Studies gas phase ion chemistry relevant to thermochemical measurements and atmospheric, interstellar, and biomedical applications. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7471 (1) Seminar in Ultrafast Spectroscopy of Proteins

Discusses advances and developments in biomolecular dynamics, and considers the connection of protein dynamics with function. Emphasizes experimental studies via ultrafast laser spectroscopy. May be repeated up to 2 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7481 (2) Seminar: Molecular Spectroscopy and Photochemistry

Discussion and presentation of current research in spectroscopy and photochemistry of organic as well as organometallic systems. Reviews state of the art techniques available for the theoretical and experimental characterization of excited states. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-7491 (1) Seminar: Molecular Vibrational Dynamics

Topics pertaining to vibrational dynamics of small molecules are discussed, with particular emphasis upon IR laser spectroscopy, van der Waals' clusters, vibrationally induced dipole moments, and predissociation. Discussion of current research and recently published literature. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7501 (1) Seminar: Theoretical Molecular Dynamics

Variety of topics in theoretical chemical physics, emphasizing dynamics of molecules in dissipative environments or in radiation fields. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7511 (1) Seminar: Reaction Dynamics in Condensed Phases

Studies elementary steps in chemical reactions and their observation by ultrafast spectroscopy. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7521 (1) Seminar: Atmospheric Kinetics and Photochemistry

Discusses laboratory studies of degradation mechanisms. Applies these studies to atmospheric phenomena such as global warming and stratospheric ozone loss. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.



## Courses

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CHEM

### CHEM-7531 (1) Seminar: Surface Chemistry and Thin Film Growth

Topics in surface chemistry and thin film growth with focus on atomic layer deposition (ALD) and molecular layer deposition (MLD). Properties of thin films grown using ALD and MLD. Applications of thin films in areas including flexible displays, energy storage and catalysis. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7551 (1) Selected Topics in Ion Spectroscopy

Treats current topics in the spectroscopy of ions. Seminar lectures are given by graduate students on their research and on literature topics, and the results of both in-house and external research groups are studied. Additionally, ideas for interesting directions of research and new experiments are proposed and discussed. May be repeated up to 2 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7601 (2) Seminar: Nucleic Acid Chemistry

Topics in various aspects of current research; emphasizes student readings and presentations. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Chemistry](#)

### CHEM-7611 (1) Seminar: Structures and Dynamics of Biopolymers in Solution

Discussion of experimental and theoretical approaches for probing structures and dynamics of proteins, peptides, and nucleic acids; and

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computations in molecular dynamics simulation, modeling, and geometry. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7621 (1) Seminar: Biochemistry and Molecular Biology of Signal Transduction

Discusses and reviews the current literature and experimental results in signal transduction, cell cycle and tumor suppressor gene regulation. Emphasizes the understandings of molecular and biochemical mechanisms of the origin of human tumor cells. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7651 (2) Seminar: Environmental Biochemistry

Topics in various aspects of current biochemical and environmental research. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7661 (1) Structure/Function of Human Mediator Transcription Complexes

Study of the mechanisms of eukaryotic gene expression with an emphasis on the structure and function of human mediator transcription complexes. Restricted to graduate students or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7671 (1) Seminar: Topics in Designing Probes for Signaling Reactions

Discussion of advances and developments in biomolecular dynamics, with emphasis on experimental studies via ultrafast laser spectroscopy. The connection of protein dynamics with function will also be considered. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## CHEM-7691 (1) Seminar: Protein Dynamics and the Mechanism of Sensory Proteins

Discusses recent results and current literature in the areas of the mechanism of sensory proteins, internal motions of proteins, and protein folding. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

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## CHEM-7701 (1) Seminar: Enzyme Mechanisms and Kinetics

Studies experimental approaches to understand the mechanisms of enzymic catalysis. Techniques include steady-state and pre-steady-state kinetics, isotope trapping and partitioning, inhibition by substrate analogues, and covalent modification of proteins. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7711 (1) RNA Mediated Inorganic and Organic Reactions

Discussion of advances and developments in biomolecular dynamics, with emphasis on experimental studies via ultrafast laser spectroscopy. The connection of protein dynamics with function will also be considered. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

## CHEM-7741 (1) Seminar: Signal Transduction and Protein Phosphorylation

Devoted to experimental methods for understanding mechanisms of signal transduction in mammalian cells through pathways involving regulation of protein phosphorylation. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7751 (1) Seminar: Protein Structure and Folding

Studies structure and folding of proteins and protein complexes using biophysical methods, including nuclear magnetic resonance (NMR), circular dichroism, and fluorescence spectroscopies. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7761 (1) Seminar: Eukaryotic Transcriptional Regulation

Studies the regulation of transcription by RNA Polymerase II from human promoters. May be repeated up to 6 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEM-7781 (1) Seminar: Topics in Structural Biology

Discussion of advances and developments in structural biology with emphasis on new methods for protein expression, purification and crystallization; and structure solution implementation. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-7791 (1) Seminar: Topics in Ribonucleoprotein Assemblies

Studies aspects of the biochemical and structural analysis of ribonucleic acid (RNA) and its interactions with proteins and assemblies into functional ribonucleoprotein (RNP) enzymes. Techniques focus on x-ray crystallography, spectroscopic methods, and biochemical probing. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

## CHEM-8991 (1-10) Doctoral Dissertation

All doctoral students must register for 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Chemistry

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## Courses

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CHEN

### CHEN-1000 (3) Creative Technology

Lect. Introduces undergraduate arts and sciences students to the most recent concepts in technology and how these concepts impact all aspects of life, such as health, the health of the planet, and social structures. Engineering students should consult an advisor before registering for this course. Approved for arts and sciences CORE curriculum: natural science. Prerequisites: Restricted to Non-Engineering Majors only.

[College of Engineering & Applied Science](#) | [Chemical Engineering](#)

### CHEN-1211 (3) General Chemistry for Engineers

Lect. a one-semester course designed to meet the general chemistry requirement for engineering students. Topics include stoichiometry; thermodynamics; gases, liquids, and solids; equilibrium; acids and bases; bonding concepts; kinetics; reactions; and materials science. Examples and problems illustrate the application of chemistry to engineering subdisciplines. Restricted to students in the College of Engineering and Applied Science; one year of high school chemistry or CHEM 1001 or 1021 (min. grade C-); and high school algebra. Not recommended for students with grades below B- in CHEM 1001 or 1021. Coreq., CHEM 1221. Credit not granted for this course and CHEM 1111, 1113/1114, 1251, or 1351. Prerequisites: Requires co-requisite course of CHEM 1221. Restricted to College of Engineering Majors only.

[College of Engineering & Applied Science](#) | [Chemical Engineering](#)

### CHEN-1300 (1) Introduction to Chemical Engineering

Meets for one lecture per week. Introduces chemical engineering emphasizing history of the profession, curriculum, chemical industry, and industrial chemistry. Includes industry visits, oral presentations, faculty and professional meetings, and development of a goals statement.

[College of Engineering & Applied Science](#) | [Chemical Engineering](#)

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## CHEN-2120 (3) Chemical Engineering Material and Energy Balances

Provides a basic understanding of chemical engineering calculations involving material and energy balances around simple chemical processes. Prereq., CHEN 1211 and GEEN 1300 (min. grade C-). Prerequisites: Restricted to Chemical, Chemical and Biological, Environmental, or Civil Engineering majors only.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-2810 (3) Biology for Engineers

Develops a basic understanding of the science of biology, including an introduction to the disciplines of biochemistry, cell organization, metabolism, genetics, genomics, molecular biology, recombinant DNA technology and evolution. Provides a basic introduction to several key techniques used in biological engineering laboratories. Uses examples of complex and creative structures engineered by natural processes.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-2840 (1-4) Independent Study

Available to sophomores with approval of Department of Chemical Engineering. Subject arranged to fit needs of student.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3010 (3) Applied Data Analysis

Teaches students to analyze and interpret data. Topics include engineering measurements, graphical presentation and numerical treatment of data, statistical inference, and regression analysis. Prereqs., GEEN 1300 and APPM 2360 (all min. grade C-).

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3130 (2) Chemical Engineering Laboratory 1

One four-hour lab session per week. Investigates chemical engineering fluid flow, heat transfer, and thermodynamics. Emphasizes communication by written reports and oral presentations as well as laboratory safety. Prereq., CHEN 3010, 3200, 3320 and either CHEN 3210 or MCEN 3022 (all min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 3010 and CHEN 3200 (or MCEN 3021 or GEEN 3853) and CHEN 3320 and CHEN 3210 (or MCEN 3022)

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3200 (3) Chemical Engineering Fluid Mechanics

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Introduces fluid mechanics and momentum transfer, emphasizing the application of these principles to chemical engineering systems. Prereqs., APPM 2350 and either CHEN 2120 (min. grade C) or MCEN 2023 (min. grade C-). Coreq., APPM 2360. Same as GEEN 3853.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3210 (3) Chemical Engineering Heat Transfer

Examines conservation and transfer of thermal energy. Focuses on conduction and convection of heat in the context of chemical processes, with a special focus on heat exchangers. Also studies thermal radiation. Prereq., GEEN 1300 and either CHEN 3200 or MCEN 3021 (all min. grade C-), and CHEN 2120 (min. grade C). Prerequisites: Requires pre-requisite courses of CHEN 2120 and GEEN 1300, and either CHEN 3200 or MCEN 3021 (all minimum grade C-). Restricted to CHEN, CBEN or EVEN Majors or Civil/Environmental Engineering Concurrent Degree Majors only.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3220 (3) Chemical Engineering Separations and Mass Transfer

Studies separation methods including distillation, absorption, and extraction, and graphical and computer-based solutions to separation problems. Also studies mass transfer rate processes, including diffusion, microscopic material balances, and correlations for mass transfer coefficients. Applies mass transfer rate theory to packed and tray columns. Prereq., CHEN 3200, CHEN 3210 or MCEN 3022, and CHEN 3320. Prerequisites: Requires pre-requisite courses of CHEN 3200 (or MCEN 3021 or GEEN 3853) and CHEN 3320 and CHEN 3210 (or MCEN 3022)

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3320 (3) Chemical Engineering Thermodynamics

Applies thermodynamic principles to nonideal systems, phase equilibrium, chemical equilibrium, power generation, refrigeration, and chemical processes. Prereqs., CHEN 2120 (min. grade C) and either CHEM 4511 or 4521 (min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 2120 and either CHEM 4511 or 4521 (all minimum grade C-)

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3840 (1-4) Independent Study

Available to juniors with approval of the Department of Chemical Engineering. Subject arranged to fit needs of the student.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-3930 (6) Chemical Engineering Cooperative Education

Students enrolled in this course participate in a previously arranged, department-sponsored cooperative education program. Prereqs., CHEN 2120 (min. grade C) and GPA higher than 2.85. GPA higher than 3.00 strongly recommended.

## CHEN-4010 (2) Chemical Engineering Senior Thesis 1

Provides an opportunity for advanced students to conduct exploratory research in chemical engineering.

## CHEN-4020 (2) Chemical Engineering Senior Thesis 2

Continuation of CHEN 4010. CHEN 4010 and 4020 can substitute for CHEN 4130.

## CHEN-4090 (1) Undergraduate Seminar

Provides chemical engineering career and professional information, facilitates contact with faculty and industry representatives, and improves communication and leadership skills. Consists of a series of seminars and field trips and requires a research project involving a written and oral report. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Chemical Engineering (CHEN) or Chemical and Biological Engineering (CBEN) majors only.

## CHEN-4130 (2) Chemical Engineering Laboratory 2

Involves planning and execution of chemical engineering experiments on mass transfer operations, separations, and chemical reactors. Interprets experimental data with theoretical principles and statistical analysis. Emphasizes communication with written memos, full reports, and oral presentations. Prereqs., CHEN 3010, 3130, 3320, and 4330 (all min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 3010, 3130, 3320, 4330 (all minimum grade C-)

## CHEN-4330 (3) Chemical Engineering Reaction Kinetics

Introduces chemical kinetics and chemical reactor design. Involves mass and energy balances for steady-state and transient reactor systems. Also covers residence time distribution, mass transfer, catalytic reactions, and multiple steady states in reactors. Prereq., CHEN 3210 or MCEN 3022 and CHEN 3320 (min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 3320 and CHEN 3210 (or MCEN 3022). This class is restricted to junior/senior Chemical Engineering majors or MS/BS CHEN concurrent degree majors.

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## CHEN-4440 (3) Chemical Engineering Materials

Introduces materials engineering, including properties of polymers, metals, ceramics, and semiconductors, especially as related to chemical engineering processes. Prereq., CHEN 3320 and CHEM 3311 (min grade C-).

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4450 (3) Polymer Chemistry

Introduces polymer science with a focus on polymer chemistry and polymerization reactions. Focuses on polymerization reaction engineering and how polymer properties depend on structure. Prereq., CHEN 4330 and CHEM 3311 (all min. grade C-). Same as CHEN 5450.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4460 (3) Polymer Engineering

Introductory polymer engineering course reviewing basic terminology and definitions; the properties and synthetic routes of important industrial polymers; and processing of polymers and their applications. Prereq., CHEM 3311 and CHEN 3320 (min. grade C-). Same as CHEN 5460. Prerequisites: Requires pre-requisite courses of CHEM 3311 and CHEN 3320

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4520 (3) Chemical Process Synthesis

Studies applied chemical process design including equipment specification and economic evaluation. Prereqs., CHEN 3010, 3210, 3220, 3320 and 4330 or 4830 (all min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 3010, 3210, 3220, 3320 and 4330 or 4830 (all minimum grade C-).

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4530 (2) Chemical Engineering Design Project

Provides a team-based capstone design experience for chemical engineering students. Projects are sponsored by industry and student design teams collaborate with industrial consultants. Projects consider chemical process and product design with emphasis on economic analysis. Deliverables include an oral mid-project design review, a final oral presentation and final written design report. Prereq., CHEN 4520 (min. grade C-). Prerequisites: Requires pre-requisite course of CHEN 4520

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4570 (4) Instrumentation and Process Control

Examines principles of control theory and their application to chemical processes. Focuses on single-loop feedback and feedforward control. Laboratory sessions cover measurement fundamentals, signal transmission, dynamic testing, control system synthesis, and implementation and adjustment. Prereqs., CHEN 3220, 4330 or 4830, and APPM 2360 (all min. grade C-).

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## Courses

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CHEN

### CHEN-4630 (1) Intellectual Property Law and Engineering

Learn the fundamentals of the various types of intellectual property, obtain the ability to search the USPTO database for patents, learn the difference between provisional patents, utility patents and foreign patents, and learn the timing requirements related to the filing of patents and public disclosure, use, and/or sale of an invention. Restricted to seniors. Same as CHEN 5630.

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### CHEN-4650 (3) Particle Technology

Aims to identify the important physical mechanisms occurring in processes involving particles, formulate and solve mathematical descriptions of such processes, and analyze experimental and theoretical results in both a qualitative and quantitative manner. Teaches students to apply this knowledge to the design of particulate systems. Conveys the breadth and depth of natural and industrial applications involving particulates. Prereq., APPM 2360 and CHEN 3200 or MCEN 3021 (all min. grade C-). Same as CHEN 5650.

[College of Engineering & Applied Science](#) | [Chemical Engineering](#)

### CHEN-4670 (3) Environmental Separations

Lect. Covers traditional, as well as new, chemical separations processes that have environmental applications. Includes chemically benign processing (pollution prevention) as well as approaches to address existing pollution problems. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) or graduate students only. Prereq., CHEN 2120 (min. grade C). Same as CHEN 5670.

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## CHEN-4800 (3) Bioprocess Engineering

Reviews the recent developments in the fields of microbiology, molecular genetics, and genetic engineering that are of commercial value and benefit to mankind. Covers engineering implementation of such biological processes. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) or graduate students in engineering. Same as CHEN 5800.

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## CHEN-4801 (3) Pharmaceutical Biotechnology

Focuses on the engineering needed to bring therapeutic products derived from living organisms (e.g., proteins, peptides, DNA, RNA) from the production plant to the patient. Covers the challenges of keeping these products "active" as they are stored, shipped, and administered to patients. Prereq., CHEN 3320 (min. grade C-). Coreq., CHEN 4330 or 4830. Prerequisites: Requires pre-requisite courses of CHEN 3320 and pre-requisite or co-requisite courses of CHEN 4830 or CHEN 4330.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-4803 (3) Metabolic Engineering

Introduces basic concepts in metabolic engineering and explores modern approaches in metabolic and strain engineering. Application areas that will be discussed will include the use of metabolic engineering approaches in biofuels and biorefining as well as biopharmaceutical production. Prereq., CHEM 4611 or 4711 and 4731, and APPM 2360. CHEN 4803 and 5803 are the same course.

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## CHEN-4805 (3) Biomaterials

Provides an overview of biomaterials. Covers major classes of materials used in medical applications, properties, degradation mechanisms, and characterization methods, foreign body response, methods to control physiological response to biomaterial surfaces, biocompatibility, biomaterials used in soft and hard tissue replacements, drug delivery devices and tissue engineering, and design criteria for developing a material for a given biological application. Prereq., CHEM 3311 (min. grade C-). Same as CHEN 5805.

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## CHEN-4810 (2) Biological Engineering Laboratory

Involves planning and execution of chemical engineering experiments on mass transfer operations, bioseparations, and biological reactors. Interprets experimental data with theoretical principles and statistical analysis. Emphasizes communication with written memos, full reports and oral presentations. Prereqs., CHEN 3130 and 4820.

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## CHEN-4820 (3) Biochemical Separations

Lect. and lab. Presents purification methods, mass transfer coefficients, problems specific to biologicals, and scale-up of processes. Also covers chromatography, phase extraction, supercritical fluids, sedimentation, precipitation, electrophoresis, dialysis, affinity techniques, cell separation, application of separations to bioreactors, and comparison of batch and continuous processes. Prereq., senior standing or above in engineering or science. Same as CHEN 5820.

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## CHEN-4830 (3) Chemical Engineering Biokinetics

Introduces chemical kinetics, chemical reactor design, and biological kinetics. Involves mass and energy balances for steady-state and transient reactor systems. Also covers residence time distribution, mass transfer, catalytic reactions, multiple steady states in reactors, enzyme kinetics, metabolic networks, and cell growth kinetics. Prereqs., CHEN 2810, 3210 and 3320 (all min. grade C-). Prerequisites: Requires pre-requisite courses of CHEN 3320 and CHEN 3210 (or MCEN 3022). Restricted to junior/senior CBEN majors, or MS/BS CBEN/CHEN concurrent degree majors.

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## CHEN-4836 (3) Nanomaterials

Presents fundamental chemical and physical concepts that give rise to the unique optical, electronic and magnetic properties of nanoscale materials. Introduces important synthetic routes for producing nanomaterials, and interparticle forces governing colloidal behavior and self-assembly. Discusses current and potential applications in catalysis, biomedicine, renewable energy, and other fields. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) or graduate students only. CHEN 4836 and 5836 are the same course. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

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## CHEN-4838 (1-3) Special Topics in Chemical Engineering

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## CHEN-4840 (1-4) Independent Study

Available to seniors with approval of chemical engineering department. Subject arranged to fit needs of student.

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## CHEN-5090 (1) Seminar in Chemical Engineering

Required of all chemical engineering graduate students. Includes reports on research activities and on special current topics.  
Prerequisites: Restricted to Graduate Students only.

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## CHEN-5127 (3) Applied Statistics for the Manufacturing and Process Industries

Discusses the concepts and techniques of applied statistics essential to quality control and product/process improvement. Includes computer control (SQC/SPC), sampling methods and time series analysis, and methods of experimental design. Prereq., MCEN 4120. Same as CVEN 5127 and MCEN 5126.

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## CHEN-5128 (3) Applied Statistics In Research and Development

Students learn current and emerging statistical methods that are appropriate to experimentation in research and development activities. Statistical design of experiments and model fitting is emphasized. Prereq., one introductory probability/statistics course. Same as MCEN 5146.

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## CHEN-5210 (4) Transport Phenomena

Considers continuum mechanics, emphasizing fundamental relationships for fluid mechanics and heat transfer and their applications to engineering problems. Prereq., senior or graduate standing and undergraduate courses in fluid mechanics, heat transfer, and differential equations.

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## CHEN-5220 (3) Mass Transport

Examines fundamentals of mass transport with particular attention to microscopic balances in complex systems, such as those involving multiple components, chemical reaction, simultaneous heat and mass transport, and/or high mass flux. Prereq., CHEN 5210, undergraduate mass transfer, and familiarity with vector and tensor calculus.

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## CHEN-5333 (3) Research Methods and Ethics

Prepares graduate students to carry out independent research. Research ethics, laboratory skills, experimental methods, critical thinking,

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presentations, proposal preparation and career planning are discussed. Independent research project carried out under direction of chemical engineering faculty. Prereq., graduate standing.

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## CHEN-5343 (1) Research Methods and Ethics Seminar

Prepares graduate students to carry out independent research. Focuses on topics such as safety, ethics, communication skills, data analysis, intellectual property considerations, and time management. Prerequisites: Restricted to Graduate Students only.

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## CHEN-5360 (3) Catalysis and Kinetics

Studies principles of chemical kinetics and catalytic reactions, emphasizing heterogeneous catalysis. Coreq., CHEN 4330, or prereq., CHEM 4551 and instructor consent, or graduate standing in CHEM or CHEN.

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## CHEN-5370 (3) Intermediate Chemical Engineering Thermodynamics

Reviews fundamentals of thermodynamics, application to pure fluids and mixtures, and physical equilibrium and changes of state. Examines the equation of state and computation of fluid properties for pure fluids, mixtures, and solutions. Also looks at relations between thermodynamics and statistical mechanics. Prereq., undergraduate thermodynamics (CHEN 3320 or equivalent). Prerequisites: Restricted to Graduate Students only.

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## CHEN-5390 (3) Chemical Reactor Engineering

Studies ideal and nonideal chemical reactors, including unsteady state behavior, mixing effects, reactor stability, residence time distribution, and diffusion effects. Prereq., undergraduate course in chemical reactor design/kinetics.

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## CHEN-5420 (3) Physical Chemistry and Fluid Mechanics of Interfaces

Covers thermodynamics of interfaces and surface tension measurement; adsorption at liquid-gas, liquid-liquid, and solid-gas interfaces; monolayers; conservation equations for a fluid interface; rheology of interfaces; surface tension driven flows; contact angle and wettability; and double layer phenomena. Prereq., CHEN 3200 or equivalent.

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## CHEN-5450 (3) Polymer Chemistry

Same as CHEN 4450.

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CHEN

## CHEN-5460 (3) Polymer Engineering

Same as CHEN 4460.

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## CHEN-5630 (1) Intellectual Property Law and Engineering

Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Chemical Engineering](#)

## CHEN-5650 (3) Particle Technology

Extra work required for graduate course. Same as CHEN 4650.

[College of Engineering & Applied Science](#) [Chemical Engineering](#)

## CHEN-5670 (3) Environmental Separations

Extra work required for graduate course. Same as CHEN 4670.

[College of Engineering & Applied Science](#) [Chemical Engineering](#)

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## CHEN-5740 (3) Analytical Methods in Chemical Engineering

Presents applied analytical and numerical mathematical methods in the context of chemical engineering problems. Topics include modeling techniques, algebraic equations, and ordinary and partial differential equations. Prereq., senior or graduate standing; working knowledge of computing, calculus, differential equations, linear algebra, and vector operations; and undergraduate courses in physics, fluid mechanics, heat transfer, and reaction engineering. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-5750 (3) Numerical Methods in Chemical Engineering

Covers numerical methods for solving ordinary differential, partial differential, and integral equations. These principles are employed to develop, test, and assess computer programs for solving problems of interest to chemical engineers. Prereq., graduate standing or instructor consent.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-5800 (3) Bioprocess Engineering

Same as CHEN 4800, except that a major term report is required.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-5803 (3) Metabolic Engineering

Introduces basic concepts in metabolic engineering and explores modern approaches in metabolic and strain engineering. Application areas that will be discussed will include the use of metabolic engineering approaches in biofuels and biorefining as well as biopharmaceutical production. Prereq., CHEM 4611 or 4711 and 4731, and APPM 2360. CHEN 4803 and 5803 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-5805 (3) Biomaterials

Same as CHEN 4805.

College of Engineering & Applied Science | Chemical Engineering

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## CHEN-5820 (3) Biochemical Separations

Extra work required for graduate course. Same as CHEN 4820. Prerequisites: Restricted to Graduate Students only.

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## CHEN-5830 (1) Introduction to Modern Biotechnology

Introduces students to the biotechnology enterprise. Topics include the biotechnology industry and profession, the various academic disciplines of biotechnology, intellectual property, financing, and ethics.

## CHEN-5831 (2) Biotechnology Case Studies

Capstone course required of all graduate students in the interdisciplinary graduate biotechnology certificate program. Reviews molecular genetics, product synthesis and purification, economics, intellectual property, and business planning. Working in teams, students present a biotechnology product plan. Prereq., CHEN 5830.

## CHEN-5835 (3) Colloids and Interfaces

Provides a deep exploration of the fundamental principles of colloid and interface science and of related applications. Core topics include fundamental equations of interfacial science, capillary phenomena, interfacial thermodynamics interfaces, molecular monolayers, electrical surface properties, and interfacial forces. Advanced topics include wetting phenomena, adsorption isotherms, dynamic interfacial behavior, surface modification, tribology, surfactant self-assembly, and foams/emulsions among others. Prereq., CHEN 3320 (min. grade C-).

## CHEN-5836 (3) Nanomaterials

Presents fundamental chemical and physical concepts that give rise to the unique optical, electronic and magnetic properties of nanoscale materials. Introduces important synthetic routes for producing nanomaterials, and interparticle forces governing colloidal behavior and self-assembly. Discusses current and potential applications in catalysis, biomedicine, renewable energy, and other fields. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) or graduate students only. CHEN 4836 and 5836 are the same course. Prerequisites: Restricted to Graduate Students only.

## CHEN-5838 (1-3) Special Topics in Chemical Engineering

Graduate-selected topics courses offered upon demand. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

## CHEN-5840 (1-4) Independent Study

Available to MS and PHD students.

## CHEN-5900 (3) Pharmaceutical Biotechnology

Incorporates biochemistry, pharmaceutical science, and engineering for application in the pharmaceutical industry. Emphasizes microscale mechanisms affecting drug delivery, bioavailability, and stability. Specific topics include thermodynamics of macromolecular conformational stability, crystallization kinetics, interfacial phenomena, and industrial protein folding. Prereq., graduate standing.

## CHEN-6210 (3) Microhydrodynamics of Suspensions and Colloids

Focuses on fluid mechanics and colloid science of suspensions of particles, cells, and drops. Covers fundamentals, applications, and research frontiers. Prereq., CHEN 5210 or equivalent.

## CHEN-6820 (3) Biochemical Engineering Fundamentals

Covers design and operation of fermentation processes, microbial and enzyme kinetics, multiple substrate and multiple species of fermentation, regulation of enzyme activity, energetics of cellular growth, immobilized enzyme and cell reactors, and transport phenomena in microbial systems and downstream processing. Prereq., graduate standing in CHEM, CHEN, or MCDB, or instructor consent.

## CHEN-6940 (1) Master's Candidate

## CHEN-6950 (1-6) Master's Thesis

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## CHEN-8990 (1-10) Doctoral Thesis

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# Courses

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CHIN

## CHIN-1010 (5) Beginning Chinese 1

Introduces modern Chinese (Mandarin), developing all four skills (speaking, listening, reading and writing) and communicative strategies. Students learn both traditional full-form characters and the principles for converting them into simplified characters. Credit not granted for this course and CHIN 1150.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Chinese](#)

## CHIN-1012 (3-4) Introduction to Chinese Civilization

An interdisciplinary introduction from ancient to modern times. Arts, literature, politics, social relations, religion, and material culture are studied in terms of significant themes and ideas pertaining to the civilization of China. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Chinese Courses in English](#)

## CHIN-1020 (5) Beginning Chinese 2

Continuation of CHIN 1010. Prereq., CHIN 1010 (min. grade C) or instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Chinese](#)

## CHIN-1051 (3) Masterpieces of Chinese Literature in Translation

Surveys Chinese thought and culture through close reading and discussion of selected masterworks of Chinese literature in translation.

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Texts include significant works of poetry, fiction, and drama, as well as philosophical and historical writings from various eras. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-1061 (3) Boudoirs, Books, Battlefields: Voices and Images of Chinese Women

Explores narrative and visual representations of women throughout Chinese history. Emphasizes how modern values of freedom and equality have transformed women's lives and shaped their aspirations. Course materials include memoirs, novels, ethnographies, documentaries, and feature films. No knowledge of Chinese is necessary. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-2110 (5) Intermediate Chinese 1

Emphasizes reading, speaking, and writing modern Chinese, including continued study of both full-form and simplified characters. Introduces dictionaries and principles of character formation. Prereq., CHIN 1020 (min. grade C) or instructor consent. Credit not granted for this course and CHIN 2150. Meets MAPS requirement: foreign language.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-2120 (5) Intermediate Chinese 2

Continuation of CHIN 2110. Prereq., CHIN 2110 (min. grade C) or instructor consent. Credit not granted for this course and 2150.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-2441 (3) Film and the Dynamics of Chinese Culture

Through studying a group of Chinese films in light of modern Chinese history and literature, students examine a series of cultural dilemmas and issues in 20th century China and develop skills in analyzing literary and filmic texts. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-3110 (5) Advanced Chinese 1

Surveys a variety of authentic-language materials, including films, plays, newspaper articles, essays, and short stories. Emphasizes

proficiency-oriented approach to reading, writing, and oral communication. Prereq., CHIN 2120 (min. grade C) or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-3120 (5) Advanced Chinese 2

Continuation of CHIN 3110. Prereq., CHIN 3110 (min. grade C) or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-3200 (3) Adv Wrtg Topics on Chinese & Japanese Literature and Civilization

Provides an introduction to the academic study of Chinese and Japanese literature and culture with a focus on writing skills in English through a survey of standard academic writing conventions. Review and assessment of selected textual materials, class presentation, critique, and revision. Recommended for Chinese and Japanese majors and minors. Approved for arts and sciences core curriculum: written communication. CHIN 3200 and JPNS 3200 are the same course.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-3311 (3) The Dao and the World in Medieval China

An interdisciplinary examination of role of Daoist and Buddhist philosophical and religious concepts and images in medieval Chinese civilization, including literature and the arts. Focuses on the personal aspects of this period of religious and intellectual ferment, tracing the representation of these ideas in Chinese poetry, prose, painting and the plastic arts as well as their role in philosophical and religious speculation. Taught in English. Recommended prereq., CHIN 1012 or 1051.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-3321 (3) Culture and Literature of Ancient China

Focuses on the religious, cultural, philosophical, and literary aspects of ancient Chinese civilization (1500 B.C.--A.D. 200). Special attention is paid to foundational works that influenced later developments in Chinese culture. All readings are in English. Recommended prereq., EALC 1011 or CHIN 1051. Same as HUMN 3321.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-3331 (3) Culture and Literature of Late Imperial China

The late imperial period was marked by growth of great metropolitan areas, expanded urban entertainments, and an extensive popular

culture. Focuses on the literature and artifacts of this urban culture as well as the hegemonic culture of the state and of traditional social codes and their literary manifestations. Also considers growing contacts with the West and the transition to the modern period. All readings are in English. Taught in English . Recommended prereq., CHIN 1012 or 1051.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-3334 (3) Chinese Narrative Tradition

Examines the major works of Chinese narrative tradition from the fourth to the nineteenth century. Emphasizes the reading and analysis of selected texts and understanding of the cultural and social contexts of text production and circulation. Text selections vary from year to year. All readings are in English. Recommended prereq., CHIN 1012.

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## CHIN-3341 (3) Literature and Popular Culture in Modern China

Surveys 20th century Chinese literature and popular culture against the historical background of rebellion, revolution, and reform. Emphasizes close and critical reading skills and an understanding of how aesthetic texts reflect and critically engage with historical and cultural experiences. Assignments include novels, essays, short stories, poems, plays, songs, films, and scholarly articles. Taught in English. Recommended prereq., CHIN 1021 or 1051. Same as HUMN 3341. Approved for arts and sciences core curriculum: literature and the arts.

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## CHIN-3342 (3) Literary Culture in Contemporary China

Surveys the late 20th century Chinese and Taiwanese literature and popular culture against the historical background Market Reform in China and the lifting of Martial Law in Taiwan. Emphasizes close and critical reading skills and an understanding of how aesthetic texts critically engage within historical and cultural experiences. Assignments include novels, essays, short stories, poems, plays, songs, films, and scholarly articles. Taught in English. recommended prereq., CHIN 1012 or 1051.

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## CHIN-3351 (3) Reality and Dream in Traditional Chinese Literature

Explores the role of dreams in pre-modern Chinese literature from the beginnings in the 2nd millennium B.C.E. to the 19th century. The source texts will range from religious, philosophical, medical and historical writings to poetry to various genres of fictional prose and drama. Taught in English. Prereq., junior standing or instructor consent. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences East Asian Languages & Civilizations Chinese Courses in English

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## CHIN-3361 (3) Women and the Supernatural in Chinese Literature

Explores the relationship between the worlds of women and the supernatural in Chinese literature, from ancient to modern times. Focuses on selected significant works of classical and vernacular fiction, religious texts, and poetry. Taught in English. Prereq., junior standing or instructor consent.

College of Arts & Sciences | East Asian Languages & Civilizations | Chinese Courses in English

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## CHIN-3371 (3) Topics in Chinese Film

Offers in-depth, critical analysis of key issues in Chinese culture as represented in Chinese film. Focuses on various topics, such as specific directors, regions, representation of gender in Chinese film, historical periods, etc. Varies from year to year. Requires no knowledge of Chinese. May be repeated up to 6 total credit hours on different topics. Prereq., junior standing or instructor consent. Recommended prereq., CHIN 1051, 2441.

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## CHIN-4110 (3) Advanced Readings in Modern Chinese 1

Surveys a wide variety of 20th- and 21st-century written materials, including texts from literature, the social sciences, religion, and cultural history. Focuses on content and style with extensive discussion and frequent written assignments in Chinese. Conducted in Chinese. Prereq., CHIN 3120 (min. grade C) or instructor consent.

College of Arts & Sciences | East Asian Languages & Civilizations | Chinese

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## CHIN-4120 (3) Advanced Readings in Modern Chinese 2

Continuation of Chin 4110. Prereq., Chin 4110 (min. grade C) or instructor consent.

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## CHIN-4210 (4) Introduction to Classical Chinese

Introduces the classical language based on texts from the pre-Han and Han periods. Stresses precise knowledge of grammatical principles and exactitude in translation--the basis for all further work in classical Chinese. Prereq., CHIN 2120 or instructor consent.

College of Arts & Sciences | East Asian Languages & Civilizations | Chinese

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## CHIN-4220 (4) Readings in Classical Chinese

Close reading of selected texts of ancient and medieval literature. Readings in both prose and poetry. Emphasizes a disciplined, philological approach to the texts, with proper attention to diction, tone, and nuance. Prereq., CHIN 4210, or instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Chinese](#)

## CHIN-4300 (3) Open Topics: Readings in Chinese Literature

Studies selected texts on a particular topic taught by regular or visiting faculty. Topics change each term. May be repeated up to 6 total credit hours. Prereq., junior standing or instructor consent.

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CHIN

## CHIN-4750 (3) Daoism

Detailed examination of scriptures, liturgies, precept codes, and hagiographies of Daoism, China's indigenous organized religion. Focusing on origins and development, ethical teachings, ritual activities and world view. Topics include the relationship of Daoism to popular religion, practice of alchemy and self-cultivation, beliefs concerning death and afterlife, and structure of the Daoist pantheon. Prereq., RLST 3800 or instructor consent. Same as CHIN 5750 and RLST 4750.

College of Arts & Sciences    East Asian Languages & Civilizations    Chinese

## CHIN-4900 (1-3) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences    East Asian Languages & Civilizations    Chinese

## CHIN-5010 (3) Sinological Methods

Provides training in research methods for graduate work in Sinology. Regular exercises require students to use standard bibliographic sources and tools, such as leishu, congshu, specialized dictionaries, dynastic histories, geographical treatises, gazetteers, and private historiography. Prereq., CHIN 4220 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences    East Asian Languages & Civilizations    Chinese

## CHIN-5030 (3) Readings in Pre-Modern Chinese Literary Theory

Introduces the field of pre-modern Chinese literary theory and its relevance in Chinese intellectual history. Based on the close reading of

primary sources, i.e. typically on selected core texts of Chinese literary thought, as well as on the reading of secondary literature. Texts and topics vary from year to year. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5120 (3) History of Literature through the Ninth Century

Surveys, with readings in primary and secondary sources, major landmarks in various areas of ancient and medieval literature. Focuses on the classic and most influential works of the Zhou through Tang dynasties. Gives attention to matters of historical fact and actuality as well as to textual and interpretive history. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5210 (3) Ancient Prose

Studies selected pre-imperial and Han prose texts important in their own time and for the influence they exercised on the later development of Chinese literary history. Focuses on works such as the Lun yu, Mengzi, Zhuangzi, Huainanzi, Shiji, Hanshu, and Lunheng. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5220 (3) Ancient Poetry

Studies selected pre-imperial and Han poetic works important in their own time and for the influence they exercised on the later development of Chinese literary history. Focuses on the Shijing and the Chu ci, as well as the fu and shi of Han writers. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5230 (3) History of Early Chinese Thought

Introduces early Chinese philosophy, mostly "Masters' Literature" of the 5th--1st c. BCE, which is foundational for all later Chinese philosophy and political thought. Close reading of primary sources will be combined with an introduction to secondary scholarship in English and modern Chinese, both articles on individual texts/philosophers and comprehensive histories of early Chinese philosophy. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5280 (3) Topics in Ancient Literature

Examines a specific problem or issue in ancient Chinese literature, e.g., early views of language's relationship to reality, or the

commentary tradition and the emergence of allegorical and metaphysical approaches to interpreting texts. Topics vary from year to year. May be repeated up to 9 total credit hours. Prereq., Chin 4220 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5410 (3) Medieval Prose

Studies works of early medieval (ca. 200-600 AD) and/or late medieval (600-900) prose that played important role in development of Chinese literature. Writers and topics vary, ranging from surveys of specific genre, literary essays, proto-fiction, or historical writings, to focused studies of major figures Liu Zhiji, Han Yu, or Liu Zongyuan. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent required.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5420 (3) Medieval Poetry

Studies works of early medieval (ca. 200-600 AD) poetry . Writers and topics vary ranging from surveys of specific genre, shi or fu, or shared subject such as religious or commemorative verse, or specific periods, to focused studies of particular major figures Cao Zhi, Tao Qian, Li Bo, or Du Fu. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5430 (3) Medieval Thought and Religion

Studies selected works of early medieval (ca. 200-600 AD) and/or late medieval (600-900) religious importance. Selections vary from fundamental texts of both literary and religious value, Daoist and Buddhist canons, the Huangting jing, Zhen gao, Miaofa lianhua jing, and Tan jing, particular topics of social or cultural importance, character assessment, arcane learning, or methods of commentary. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5480 (3) Topics in Medieval Literature

Examines a specific problem or issue in medieval literature, e.g., the role of encyclopedias and anthologies in literary training, or the place and forms of literary composition at the imperial court. Topics vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5610 (3) Early Modern Prose

Studies Song, Ming, and Qing prose texts selected for their inherent literary merit and for their significance in the Chinese literary

tradition. Typically focuses on works by major authors such as Ouyang Xiu, Su Shi, and Yuan Hongdao. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

## CHIN-5620 (3) Early Modern Poetry

Studies Song, Yuan, Ming and Qing poetry. Stresses major figures, stylistic variations, various poetry schools, new directions in shi verse, and the rise and development of ci. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

## CHIN-5630 (3) Early Modern Fiction

Explores selected vernacular and classical fiction of the Ming and Qing periods. Normally focuses on long novels such as Xiyou ji, Sanguo yanyi, Shuihu zhuan, Jin Ping Mei, as well as short stories by Feng Menglong and Ling Mengchu. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

## CHIN-5680 (3) Topics in Early Modern Literature

Examines a specific problem or issue in early modern literature (e.g., the relationships among religion, folklore, and early fiction; the issue of genre and traditional fiction); the role of elite versus popular cultures in the composition of fiction; or the relationship of the state and censorship and the southern philosophical schools to the publication of fiction. Topics vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4220 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

## CHIN-5750 (3) Daoism

Detailed examination of scriptures, liturgies, precept codes, and hagiographies of Daoism, China's indigenous organized religion. Focusing on origins and development, ethical teachings, ritual activities and world view. Topics include the relationship of Daoism to popular religion, practice of alchemy and self-cultivation, beliefs concerning death and afterlife, and structure of the Daoist pantheon. Restricted to graduate students or instructor consent required. Same as CHIN 4750 and RLST 5750. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5810 (3) Modern Literature

Examines selected texts in various genres of Chinese literature from the May Fourth period (beginning 1917) to the establishment of the People's Republic of China (1949). Focuses on major and influential works produced in this fertile period of experimentation with Western, modernist types of literature. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4120 or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5820 (3) Contemporary Literature

Examines selected texts in various genres of Chinese literature from 1949 (the establishment of the People's Republic of China) to the present. Focuses on major works from the very different literary worlds of Taiwan and mainland China. Texts and selections vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4120 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5830 (3) History of Chinese Film

Examines the development of narrative film in China from the early twentieth century to today, covering the major periods, styles, and themes developed in Chinese cinema. Texts and selections vary from year to year. May be repeated up to 6 total credit hours. Prereq., CHIN 4120 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5880 (3) Topics in 20th Century Literature

Examines a specific problem or issue in 20th century literature, e.g., feminist fiction in China, modernism in fiction and poetry, or the role of literary criticism in modern literature. Topics vary from year to year. May be repeated up to 9 total credit hours. Prereq., CHIN 4120 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5890 (3) Topics in Chinese Film

Examines a specific problem or issue in Chinese film, e.g. 5th generation filmmakers, early film, genre (martial arts, melodrama, Hong Kong action, etc.), Taiwan New Cinema, Hollywood crossover. Topics vary from year to year. May be repeated up to 6 total credit hours. Prereq., CHIN 4120 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## CHIN-5900 (1-3) Independent Study

May be repeated up to 9 total credit hours.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Chinese](#)

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## CHIN-6900 (1-6) Independent Study

May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

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# Courses

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CHIN

## CHIN-6940 (1) Master's Degree Candidate

College of Arts & Sciences East Asian Languages & Civilizations Chinese

## CHIN-6950 (1-6) Master's Thesis

College of Arts & Sciences East Asian Languages & Civilizations Chinese



# Courses

Search by College, Department & Category

**College/School**

All

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CLAS

## CLAS-1010 (3) The Study of Words

Study of English words of Latin and Greek origin, focusing on etymological meaning by analysis of component parts (prefixes, bases, suffixes) and on the ways in which words have changed and developed semantically. No Greek or Latin required. Same as LING 1010.

[College of Arts & Sciences](#) [Classics](#) [Literature, Culture, & Thought](#)

## CLAS-1013 (4) Beginning Classical Greek 1

For students with no previous knowledge of Greek. Introduces basic grammar and vocabulary.

[College of Arts & Sciences](#) [Classics](#) [Greek](#)

## CLAS-1014 (4) Beginning Latin 1

Introduces basic grammar and vocabulary. For students with no previous knowledge of Latin.

[College of Arts & Sciences](#) [Classics](#) [Latin](#)

## CLAS-1020 (3) Argument from Evidence: Critical Writing about the Ancient World

Introduces students to writing about the ancient world, with special attention to the possibilities and the limitations of ancient source-material. Taught as a writing workshop, with emphasis on critical thinking, analysis, argument and inquiry. While the course reads foundational ancient texts, the skills acquired will be broadly useful among humanities disciplines. Approved for arts and sciences core

curriculum: written communication.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-1023 (4) Beginning Classical Greek 2

Completes the presentation of grammar and introduces reading of literature. Prereq., CLAS 1013 or equivalent.

College of Arts & Sciences Classics Greek

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## CLAS-1024 (4) Beginning Latin 2

Completes the presentation of grammar, incorporates review of fundamentals, and introduces reading of literature. For students with previous experience of Latin. Prereq., CLAS 1014 or equivalent.

College of Arts & Sciences Classics Latin

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## CLAS-1030 (3) Introduction to Western Philosophy: Ancient

Develops three related themes: the emergence in antiquity of a peculiarly scientific mode of thinking: the place of religious belief within this developing scientific world view and the force of ethical speculation within the culture and political climates of ancient Greece and Rome. No Greek or Latin required. Same as PHIL 1010. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-1051 (3) The World of the Ancient Greeks

Presents a survey of the emergence, the major accomplishments, the failures, and the decline of the ancient Greeks, from the Bronze Age civilizations of the Minoans and Mycenaeans through the Hellenistic Age (2000--30 B.C.). No Greek or Latin required. Same as HIST 1051. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences Classics Ancient History

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## CLAS-1061 (3) The Rise and Fall of Ancient Rome

Presents a survey of the rise of ancient Rome in the eighth century B.C. to its fall in the fifth century A.D. Emphasizes political institutions, foreign policy, leading personalities, and unique cultural accomplishments. No Greek or Latin required. Same as HIST 1061. Approved for arts and sciences CORE curriculum: historical context.

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## CLAS-1100 (3) Greek Mythology

Covers the Greek myths as documents of early human religious experience and imagination, the source of Greek culture, and part of the fabric of Western cultural tradition. Of particular interest to students of literature and the arts, psychology, anthropology, and history. No Greek or Latin required. Approved for arts and sciences CORE curriculum: literature and the arts.

## CLAS-1110 (3) Muses and Man-eaters (1): The Literature of Ancient Greece

Surveys Greek authors whose works have most influenced Western thought: Homer, Aeschylus, Sophocles, Euripides, Aristophanes, and Plato. No Greek or Latin required. Approved for arts and sciences core curriculum: literature and the arts.

## CLAS-1115 (3) Masterpieces of Greek Literature in Translation

Students read about mythological heroes and historical individuals from Achilles to Socrates in Greek literature. Class discusses why the Greeks told stories the way they did and what those stories might have meant to them and might mean to us. Approved for arts and sciences core curriculum: literature and the arts.

## CLAS-1120 (3) Muses and Man-Eaters (2): The Literature of Ancient Rome

Surveys ideas and culture of the Romans through a study of representative literature: comedy, tragedy, history, philosophy, oratory, the novel, lyric, epic, and didactic poetry. No Greek or Latin required. Approved for arts and sciences core curriculum: literature and the arts.

## CLAS-1140 (3) Bread and Circuses: Society and Culture in the Roman World

Surveys the outstanding achievements of Roman culture and society as reflected in literature; philosophy and art; private and official religion; and legal and political thought. No Greek or Latin required. Approved for arts and sciences CORE curriculum: historical context.

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## CLAS-1509 (4) Trash and Treasure, Temples and Tombs: Art and Archaeology of the Ancient World

Introduces the art and archaeology of ancient Egypt, Mesopotamia, Greece and Rome, examining various ancient approaches to power, religion, death and the human body. Analyzes art, architecture, and everyday trash to learn about ancient humanity. Same as ARTH 1509. Approved for arts and sciences core curriculum: historical context or literature and the arts.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-2004 (3) Accelerated Latin 1

Intensive introductory course in Latin including a survey of grammar and practice reading and writing. No previous knowledge of Latin is required. Formerly CLAS 5804.

College of Arts & Sciences Classics Latin

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## CLAS-2009 (3) Modern Issues, Ancient Times

Considers issues of vital importance to humans, both now and in ancient times. Topics such as food, death, sex, family, literacy, or power are explored to consider how ancient societal norms and attitudes evolved, and how they relate to modern culture. Draws on material and literary evidence to develop an understanding of the complexities of ancient life. Same as ANTH 2009. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-2019 (3) Pompeii and the Cities of Vesuvius

Introduces the towns and villas buried by the eruption of Mt. Vesuvius in 79 C.E. Explores the layout and decoration of ancient Roman houses, the variety of artifacts uncovered as evidence for daily life and the history of the excavations. Same as ARTH 2019. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-2020 (3) Science in the Ancient World

Covers the development of scientific modes of thought, theory, and research from mythological origins (e.g., Hesiod's poetry) through pre-Socratic philosophers. Culminates in theories and research of Plato and Aristotle, including the Roman Empire. Students read original sources in translation. No Greek or Latin required. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-2041 (3) War and Society in Ancient Greece

Studies Greek warfare in its cultural, social, and economic contexts, in the light of anthropological comparisons and modern theories. No Greek or Latin required. Same as HIST 2041.

College of Arts & Sciences Classics Ancient History

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## CLAS-2100 (3) Women in Ancient Greece

Examines evidence of art, archaeology, and literature of Greek antiquity from a contemporary feminist point of view. Focuses on women's roles in art, literature, and daily life. No Greek or Latin required. Same as WMST 2100. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-2110 (3) Women in Ancient Rome

Uses art, archaeology, and literature to study, from a contemporary feminist point of view, the status of women in works of Roman art and literature, the development of attitudes expressed toward them, and their daily life. No Greek or Latin required. Same as WMST 2110. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-2114 (4) Intermediate Latin 1

Readings from Caesar and/or Cicero, with review of grammar. Prereq., CLAS 1024, or equivalent. Meets MAPS requirement for foreign language.

College of Arts & Sciences Classics Latin

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## CLAS-2124 (4) Intermediate Latin 2

Selections from Virgil's Aeneid with attention to literary form and context as well as advanced grammar and syntax. Prereq., CLAS 2114 or equivalent.

College of Arts & Sciences Classics Latin

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## CLAS-2610 (3) Paganism to Christianity

Offers a cultural history of Greek and Roman religion. Students read ancient texts in translation and use evidence from archaeology to reconstruct the shift from paganism to Christianity in antiquity. No Greek or Latin required. Same as PHIL 2610. Approved for arts and sciences core curriculum: ideals and values.

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## Courses

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CLAS

### CLAS-3004 (3) Accelerated Latin 2

Continuation of CLAS 2004. Reading of advanced texts: Caesar, Cicero, Ovid and others. Prereq., CLAS 2004 Formerly CLAS 5814.

[College of Arts & Sciences](#) [Classics](#) [Latin](#)

### CLAS-3013 (1) Readings in the Greek New Testament and Septuagint

Readings in ancient (koine) Greek from the New Testament and the Septuagint. Students aim to achieve fluency in reading and to enrich their knowledge of key terms and ideas borrowed from the Greek past in the early Christian tradition. May be repeated up to 4 total credit hours. Prereq., CLAS 1013 and 1023.

[College of Arts & Sciences](#) [Classics](#) [Greek](#)

### CLAS-3014 (3) Introduction to Latin Prose

Author or topic in Latin specified in the online Schedule Planner (e.g., Cicero, Livy, Pliny). May be repeated up to 9 total credit hours for different topics.

[College of Arts & Sciences](#) [Classics](#) [Latin](#)

### CLAS-3024 (3) Introduction to Latin Poetry

Author or topic in Latin specified in the online Schedule Planner (e.g., Virgil, Ovid, Catullus, Horace.) May be repeated up to 9 total credit hours for different topics.

College of Arts & Sciences Classics Latin

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## CLAS-3039 (3) Greek Art and Archaeology

Covers prehistoric Aegean through the fourth century B.C.E., considering architecture, pottery, painting, sculpture, and personal ornament. Societal customs such as use of space and burial patterns are considered as well as art and its uses, to help understand developments in Greek culture. Credit not granted for this course and CLAS/FINE 1009. Same as ARTH 3039. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-3049 (3) Introduction to Roman Art and Architecture

Introduces the monuments and sites of the ancient Roman world from the foundation of Rome (753 B.C.E.) to Constantine (306-307 C.E.). Emphasizes the relationship of art, architecture, and artifacts to the political, social, and religious institutions of Italy and the provinces. Same as ARTH 3049. Credit not granted for this course and CLAS 1019 or FINE 1019. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-3113 (3) Intermediate Classical Greek 1

Reading of selected prose texts of authors in ancient Greek such as Plato, Xenophon, Lysias, and selections from the Greek New Testament. Incorporates review of grammar. May be repeated up to 6 total credit hours. Prereqs., CLAS 1013 and 1023 or equivalent. Meets MAPS requirement for foreign language.

College of Arts & Sciences Classics Greek

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## CLAS-3123 (3) Intermediate Classical Greek 2

Reading of selections from Homer or a Greek tragedy in ancient Greek, with attention to literary form and context as well as advanced grammar and syntax. Maybe repeated up to 6 total credit hours. Prereqs., CLAS 1013, 1023 and 3113, or equivalent.

College of Arts & Sciences Classics Greek

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## CLAS-3820 (3) Greek and Roman Antiquity in Music from 1600 to Present

Explores the influence of Greek and Roman mythology and history on various genres of music since 1600. Explains the context and meaning of ancient themes and their use by composers from the Renaissance to the present. No Greek or Latin required. Recommended

prereq., CLAS 1100. Same as HUMN 3820.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4013 (3) Topics in Greek Prose

Author or topic in ancient Greek specified in the online Schedule Planner (e.g., Thucydides, Herodotus, Plato, Aristotle, Attic Orators). May be repeated up to 6 total credit hours for different topics. Same as CLAS 5013.

College of Arts & Sciences Classics Greek

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## CLAS-4014 (3) Topics in Latin Prose

Author or topic in Latin specified in the online Schedule Planner (e.g., Roman historians, Roman epistolography, Cicero, Roman novel). May be repeated up to 9 total credit hours for different topics. Prereq., CLAS 3014 and 3024, or equivalent. Same as CLAS 5014.

College of Arts & Sciences Classics Latin

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## CLAS-4021 (3) Athens and Greek Democracy

Studies Greek history from 800 B.C. (the rise of the city-state) to 323 B.C. (the death of Alexander the Great). Emphasizes the development of democracy in Athens. Readings are in the primary sources. Same as CLAS 5021 and HIST 4021.

College of Arts & Sciences Classics Ancient History

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## CLAS-4023 (3) Topics in Greek Poetry

Author or topic in ancient Greek specified in the online Schedule Planner (e.g., Homer, Hesiod, lyric poetry, tragedy, comedy). May be repeated up to 9 total credit hours for different topics. Same as CLAS 5023.

College of Arts & Sciences Classics Greek

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## CLAS-4024 (3) Latin Prose Composition

Reviews grammar and syntax. Introduces Latin prose style and composition. Prereqs., CLAS 3014 and 3024, or equivalent. Same as CLAS 5024.

College of Arts & Sciences Classics Latin

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## CLAS-4031 (3) Alexander the Great and the Rise of Macedonia

Covers Macedonia's rise to dominance in Greece under Philip II and the reign and conquests of Alexander the Great. Prereq., one of the following: CLAS 1509, 3039, 3113, 4051, 4139, 4149, CLAS/HIST 1051, 2041, 4021, or 4041. Same as CLAS 5031 and HIST 4031.

College of Arts & Sciences Classics Ancient History

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## CLAS-4040 (3) Seminar in Classical Antiquity

Examines an advanced topic in classical language, literature, history, philosophy, art, or culture. Combines the techniques of philology with a critical approach to the literary and material legacy of the past. Prereq., second-year proficiency in Greek or Latin. May be repeated up to 6 total credit hours.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4041 (3) Classical Greek Political Thought

Studies main representatives of political philosophy in antiquity (Plato, Aristotle, Cicero) and of the most important concepts and values of ancient political thought. No Greek or Latin required. Prereq., CLAS/HIST 1051, CLAS/HIST 1061, HIST 1010, PSCI 2004, or PHIL 3000. Same as CLAS 5041, HIST 4041, and PHIL 4210.

College of Arts & Sciences Classics Ancient History

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## CLAS-4044 (3) Topics in Latin Poetry

Author or topic specified in Latin specified in the online Schedule Planner (e.g., Roman elegy, Neronian poetry, Lucretius, Roman satire). May be repeated up to 9 total credit hours for different topics. Prereqs., CLAS 3014 and 3024, or equivalent. Same as CLAS 5044.

College of Arts & Sciences Classics Latin

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## CLAS-4061 (3) Twilight of Antiquity

Explores the reasons for the fall of the Roman Empire in the western Mediterranean and its survival in the East as Byzantium. Emphasizes Christianity; barbarians; social, economic, and cultural differences; contemporary views of Rome; and modern scholarship. No Greek or Latin is required. Same as CLAS 5061 and HIST 4061.

College of Arts & Sciences Classics Ancient History

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## CLAS-4071 (3) Seminar in Ancient Social History

Considers topics ranging from demography, disease, family structure, and the organization of daily life to ancient slavery, economics, and law. Focuses either on Persia, Greece, or Rome and includes a particular emphasis on the methodology required to reconstruct an ancient society, especially the interpretation of problematic literary and material evidence and the selective use of comparisons with better known societies. No Greek or Latin required. May be repeated up to 9 total credit hours. Same as CLAS 5071 and HIST 4071.

College of Arts & Sciences Classics Ancient History

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## CLAS-4081 (3) The Roman Republic

Studies the Roman Republic from its foundation in 753 B.C. to its conclusion with the career of Augustus. Emphasizes the development of Roman Republican government. Readings are in the primary sources. No Greek or Latin required. Same as CLAS 4081 and HIST 4081.

College of Arts & Sciences Classics Ancient History

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## CLAS-4084 (3) Survey of Roman Literature Part 2: Imperial

Covers Imperial Roman literary history from the mid-late Augustan Period to the start of Late Antiquity. Students read principal surviving works of Imperial Roman poetry and prose in the original Latin. Prereqs. CLAS 3014 and 3024 or equivalent. Same as CLAS 5084.

College of Arts & Sciences Classics Latin

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## CLAS-4091 (3) The Roman Empire

Intense survey of Imperial Rome from the Roman revolution to the passing of centralized political authority in the western Mediterranean. Emphasizes life, letters, and personalities of the empire. No Greek or Latin required. Same as CLAS 5091 and HIST 4091.

College of Arts & Sciences Classics Ancient History

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## CLAS-4093 (3) Survey of Greek Literature

Greek literary history in ancient Greek from Homer to the Hellenistic age. Prereqs., CLAS 3113 and 3123 or equivalent. Same as CLAS 5093.

College of Arts & Sciences Classics Greek

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## CLAS-4094 (3) Survey of Roman Literature Part 1: Republican to Augustan

Introduces Roman literary history from its origins to the 30s BCE. Students read principal surviving works of the Roman Republican poetry and prose in the original Latin. Prereqs., CLAS 3014 and 3024 or equivalent. Same as CLAS 5094.

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# Courses

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CLAS

## CLAS-4109 (3) Ancient Italian Painting

Explores the problems, theories and methods for understanding the iconography, styles, topologies, contexts and techniques of fresco wall painting in ancient Italy from the 6th century B.C.E. to the 4th century C.E. Topics covered include Etruscan tomb paintings, late Republican and early imperial fresco paintings from Rome and Campania, and later Roman wall paintings, including the painted images in ancient catacombs. Previous course work on ancient Italy or the history of pre-modern art is highly recommended. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 5109 and ARTH 4109.

[College of Arts & Sciences](#) [Classics](#) [Art and Archaeology](#)

## CLAS-4110 (3) Greek and Roman Epic

Students read in English translation the major epics of Graco-Roman antiquity such as the Iliad, Odyssey, Argonautica, Aeneid, and Metamorphoses. Topics discussed may include the nature of classical epic, its relation to the novel, and its legacy. No Greek or Latin required. Same as CLAS 5110 and HUMN 4110. Approved for arts and science CORE curriculum: literature and the arts.

[College of Arts & Sciences](#) [Classics](#) [Literature, Culture, & Thought](#)

## CLAS-4119 (3) Roman Sculpture

Examines ancient Roman sculpture, emphasizing the display, iconography, and production of private and public monuments in the Roman Empire. Same as CLAS 5119 and ARTH 4119.

[College of Arts & Sciences](#) [Classics](#) [Art and Archaeology](#)

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## CLAS-4120 (3) Greek and Roman Tragedy

Intensive study of selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca in English translation. No Greek or Latin required. Same as CLAS 5120 and HUMN 4120. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4129 (3) Aegean Art and Archaeology

A detailed study of the cultures of prehistoric Greece, the Cycladic Islands, and Crete, their art and archaeology, and their history within the broader context of the eastern Mediterranean, from earliest human settlement to the collapse of the Bronze Age at about 1100 B.C.E. Emphasis is on palace states. Same as ANTH/ARTH 4129, CLAS 5129.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4130 (3) Greek and Roman Comedy

Studies Aristophanes, Plautus, and Terence in English translation. No Greek or Latin required. Same as CLAS 5130 and HUMN 4130. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4139 (3) Greek Vase Painting

A comprehensive overview of Greek vase painting, from prehistoric through the fourth century B.C.E. Emphasis is on learning the development of primary decorative styles and on refining skills of visual analysis, scholarly research, critical thinking, oral commentary, and written presentation. Same as CLAS 5139 and ARTH 4139.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4140 (3) The Greek and Roman Novel

Studies five surviving complete Greek novels from classical antiquity, three Latin novels, and their predecessors and contemporary neighbors in the genres of Greek prose fiction. Readings in English translation. No required prerequisite, but a previous course in classical literature or myth is recommended. Same as CLAS 5140 and HUMN 4131.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4149 (3) Greek Cities and Sanctuaries

Examines Greek architecture in context, from the ninth century B.C.E. into the Hellenistic period, considering the use of space, both in religious and in civic settings, and using texts as well as material culture. Emphasis is on developing analytical skills. Same as CLAS 5149 and ARTH 4149.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4169 (3) Topics in Ancient and Classical Art and Archaeology

In-depth consideration of an aspect of ancient Mediterranean culture. Topics vary; they may include ancient wall painting, Greek sculpture, artists and patrons, the ancient Near East, Egyptian art and archaeology, or Etruscan art and archaeology. Maybe repeated up to 9 total credit hours providing the topics are different. Same as CLAS 5169 and ARTH 4169.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4199 (3) Roman Architecture

Examines the designs, functions, and construction methods of ancient Roman towns, temples, baths, houses, and civic structures, as well as utilitarian structures, including roads and aqueducts. Emphasizes Roman architectural forms and spaces as vehicles for political propaganda and empire consolidation. Same as CLAS 5199 and ARTH 4199.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4209 (3) Classical Archaeological Field Methods

Offers experiential learning in theories and methods of field excavation at the Villa of Maxentius in Rome. Applies methods for stratigraphic excavation, electronic surveying with GIS, ceramic analysis, numismatic analysis, architectural construction materials and methods, artifact conservation and data processing and documentation. Offered abroad only. May be repeated up to 6 total credit hours. Coreq., CLAS 4219 for first 3 credit hours. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 5209 and ARTH 4209.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4219 (3) Maxentius and the City of Rome

Combines seminar discussion and site visits in Rome and Tivoli to understand the excavations at the Villa of Maxentius and its artifacts in the broader contexts of Roman architectural development, late Roman art, and late imperial Roman history. Offered abroad only. Must be taken concurrently with CLAS/ARTH 4209 or CLAS 5209. Recommended prereqs., CLAS/ARTH 1509, 3049. Same as CLAS 5219 and ARTH 4219.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4269 (3) Art and Archaeology of the Ancient Near East

Examines civilizations of the Iran-Iraq region from the rise of urbanism in Mesopotamia through the era of the first 'world empire,' Achaemenid Persia. Emphasizes the material record of religious and state institutions of the ancient Near East, especially monuments that illustrate concepts of kingship. Explores notions of style, symbolism, visual rhetoric, text-image synthesis, patronage, creativity, and roles of artists. Recommended prereq., CLAS/ARTH 1509. Same as CLAS 5269 and ARTH 4269. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4761 (3) Roman Law

Studies the constitutional and legal history of ancient Rome; emphasizes basic legal concepts and comparisons with American law. No Greek or Latin required. Same as CLAS 5761 and HIST 4761.

College of Arts & Sciences Classics Ancient History

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## CLAS-4824 (3) Latin Teaching Methods: Open Topics

Covers specialized topics in Latin pedagogy specified in the online Schedule Planner. Same as CLAS 5824.

College of Arts & Sciences Classics Latin

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## CLAS-4840 (1-4) Independent Study

No Greek or Latin required. May be repeated up to 7 total credit hours.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-4843 (1-3) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Classics Greek

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## CLAS-4844 (1-3) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Classics Latin

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## CLAS-4849 (1-3) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-4852 (1-3) Honors Thesis

College of Arts & Sciences Classics Classical Philology

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## CLAS-5013 (3) Topics in Greek Prose

Same as CLAS 4013. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Greek

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## CLAS-5014 (3) Topics in Latin Prose

Same as CLAS 4014.

College of Arts & Sciences Classics Latin

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## CLAS-5021 (3) Athens and Greek Democracy

Same as CLAS 4021. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Ancient History

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## CLAS-5023 (3) Topics in Greek Poetry

Same as CLAS 4023.

College of Arts & Sciences Classics Greek

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

CLAS

## CLAS-5024 (3) Latin Prose Composition

Same as CLAS 4024. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Classics](#) [Latin](#)

## CLAS-5031 (3) Alexander the Great and the Rise of Macedonia

Same as CLAS 4031. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Classics](#) [Ancient History](#)

## CLAS-5041 (3) Classical Greek Political Thought

Same as CLAS 4041.

[College of Arts & Sciences](#) [Classics](#) [Ancient History](#)

## CLAS-5044 (3) Topics in Latin Poetry

Same as CLAS 4044. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Classics](#) [Latin](#)

## CLAS-5061 (3) Twilight of Antiquity

Same as CLAS 4061 and HIST 5061.

College of Arts & Sciences | Classics | Ancient History

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## CLAS-5071 (3) Seminar in Ancient Social History

Same as CLAS 4071.

College of Arts & Sciences | Classics | Ancient History

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## CLAS-5081 (3) The Roman Republic

Same as CLAS 4081. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Classics | Ancient History

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## CLAS-5084 (3) Survey of Roman Literature Part 2: Imperial

Same as CLAS 4084.

College of Arts & Sciences | Classics | Latin

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## CLAS-5091 (3) The Roman Empire

Same as CLAS 4091. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Classics | Ancient History

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## CLAS-5093 (3) Survey of Greek Literature

Same as CLAS 4093. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Classics | Greek

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## CLAS-5094 (3) Survey of Roman Literature Part 1: Republican to Augustan

Same as CLAS 4094.

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College of Arts & Sciences Classics Latin

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## CLAS-5109 (3) Ancient Italian Painting

Same as CLAS 4109 and ARTH 5109. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5110 (3) Greek and Roman Epic

Same as CLAS 4110. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-5119 (3) Roman Sculpture

Same as CLAS 4119 and ARTH 5119. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5120 (3) Greek and Roman Tragedy

Same as CLAS 4120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-5129 (3) Aegean Art and Archaeology

Same as CLAS 4129.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5130 (3) Greek and Roman Comedy

Same as CLAS 4130. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-5139 (3) Greek Vase Painting

Same as CLAS 4139.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5140 (3) The Greek and Roman Novel

Same as CLAS 4140.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-5149 (3) Greek Cities and Sanctuaries

Same as CLAS 4149 & ARTH 5149.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5159 (3) Hellenistic Art and Archaeology

Examines art and archaeology from the period following the death of Alexander the Great (late fourth century B.C.E.) to the conquest of Greece by the Romans (middle second century B.C.E.). Same as ARTH 5159. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5169 (3) Topics in Ancient and Classical Art and Archaeology

Same as CLAS 4169 and ARTH 4169. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5179 (3) City of Athens

Explores in detail the buildings, sculptures, pots, foreign imports, and society of Athens, considering material culture of individuals as much as civic programs. Emphasis is on ways the textual and archaeological evidence complement and/or contradict one another. The course focuses on the Periklean period, considering ways in which it developed from earlier times and influenced later ones in Athens. Same as ARTH 5179.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-5189 (3) City of Rome

Explores in detail the architecture, sculptures, coins, frescos, and other material evidence alongside the political and social history of Augustan Rome. Emphasis is on ways in which the textual and archaeological evidence complement and/or contradict one another. Will explore the impact of the early imperial period on later Roman phases of urban design and image making in the capital city. Same as ARTH 5189. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Classics](#) [Art and Archaeology](#)

## CLAS-5199 (3) Roman Architecture

Same as CLAS 4199 and ARTH 4199.

[College of Arts & Sciences](#) [Classics](#) [Art and Archaeology](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

CLAS

## CLAS-5209 (3) Classical Archaeological Field Methods

Same as CLAS 4209.

College of Arts & Sciences Classics Art and Archaeology

## CLAS-5219 (3) Maxentius and the City of Rome

Same as CLAS 4219.

College of Arts & Sciences Classics Art and Archaeology

## CLAS-5269 (3) Art and Archaeology of the Ancient Near East

Same as CLAS 4269/ARTH 5269.

College of Arts & Sciences Classics Art and Archaeology

## CLAS-5404 (3) Special Project: Teaching

Trains students to prepare classroom-ready materials, which are then tested in the students' own classroom. Required of master's candidates (teaching of Latin option). Prereq., fulfillment of the remaining requirements for MA (teaching of Latin) or 27 hours of graduate work in classics. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Latin

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## CLAS-5761 (3) Roman Law

Same as CLAS 4761.

College of Arts & Sciences Classics Ancient History

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## CLAS-5824 (3) Latin Teaching Methods: Open Topics

Same as CLAS 4824.

College of Arts & Sciences Classics Latin

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## CLAS-5840 (1-3) Graduate Independent Study

No Greek or Latin required. May be repeated up to 7 total credit hours.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-6003 (3) Graduate Reading

Author or topic specified in the online Schedule Planner. May be repeated up to 9 total credit hours for different topics. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Greek

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## CLAS-6004 (3) Graduate Reading

Author or topic specified in the online Schedule Planner. May be repeated up to 9 total credit hours for different topics. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Latin

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## CLAS-6109 (3) Topics in Critical Theory and Ancient Art and Archaeology

Topics will vary and may focus on a particular approach to ancient material culture or on a particular time period or artifact category. Emphasis is placed on reading and using theory in considering the ancient world. May be repeated once for credit, provided the topics are different.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-6119 (1-3) Graduate Independent Study in Classical Art and Archaeology

May be repeated up to 7 total credit hours. Prereq., graduate standing.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-6843 (1-3) Graduate Independent Study

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Greek

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## CLAS-6844 (1-3) Graduate Independent Study

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Latin

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## CLAS-6940 (1) Master's Degree Candidate

No Greek or Latin required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-6952 (1-6) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Classical Philology

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## CLAS-7011 (3) Seminar in Ancient History

Examines topics in ancient Greek and Roman history at an advanced seminar level. May be repeated up to 6 total credit hours. Same as HIST 7011.

College of Arts & Sciences Classics Ancient History

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## CLAS-7012 (3) Graduate Seminar

Topic specified in online Schedule Planner. May be repeated up to 9 total credit hours for different topics. Prereq., graduate standing.

College of Arts & Sciences Classics Classical Philology

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## CLAS-7013 (3) Graduate Seminar in Greek Literature

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Greek

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## CLAS-7014 (3) Graduate Seminar in Latin Literature

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Latin

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## CLAS-7109 (3) Graduate Seminar in Ancient and Classical Art and Archaeology

Topics vary. Emphasis is on gaining expertise in using archaeological reports in tandem with (or contradiction to) textual sources, on reading and using critical theory, on improving analytical skills and discussion, and on honing discussion leadership abilities. May be repeated up to 6 total credit hours providing the topics are different.

College of Arts & Sciences Classics Art and Archaeology

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## CLAS-7840 (1-3) Graduate Independent Study

No Greek or Latin required. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Classics Literature, Culture, & Thought

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## CLAS-8992 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Classics Classical Philology

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

COML

## COML-5000 (3) Proseminar

Introduces basic issues in comparative literature and basic problems in literary history. Provides an overview of history and rationale of the discipline, traditional areas of research, and recent developments. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Comparative Literature](#)

## COML-5003 (3) Film and Fiction

Explores similarities and differences between literature and film as narrative arts. Studies several novels, short stories, and plays and films made from them. Examines problems in point of view, manipulation of time, tone, structure, and setting. Same as FILM 4003. COML 5003 and ARTF 5003 are the same course.

[College of Arts & Sciences](#) [Comparative Literature](#)

## COML-5030 (3) Foundations of Critical Theory

An introductory study of nineteenth-century German philosophy (especially Kant, Hegel, and Marx). Required course for the graduate certificate in Critical Theory. GRMN 5030 and COML 5030 are the same course.

[College of Arts & Sciences](#) [Comparative Literature](#)

## COML-5051 (3) Critical Theory of the Frankfurt School

Serves as an introduction to the "Frankfurt School" and Critical Theory with particular emphasis upon rationality, social psychology,

cultural criticism, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward a critical understanding of the analytical tools they developed and consider their validity. Taught in English. GRMN 4051, 5051 and COML 5051 are the same course.

College of Arts & Sciences Comparative Literature

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## COML-5350 (3) Studies in Prose Narrative

Examines both short and long narrative prose fiction from a variety of periods and from diverse national literatures. Focuses on issues of defining genre and on the origins and significance of narrative prose within its cultural context. May be repeated once for credit. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Comparative Literature

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## COML-5352 (3) Russian Novel: Theory and Practice

Examines the Russian novel and its evolution as well as Western and Russian theories of the novel as they engage and reflect upon the claims of modernity. May be repeated up to 6 total credit hours. Restricted to graduate students or instructor consent required. Same as GSLL 5352. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5360 (3) Studies in Drama

Covers selected drama topics using a comparative approach. May be repeated once for credit. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5370 (3) Studies in Poetry

Explores topics and problems in rhetoric and poetic practice from antiquity to the present day. May be repeated once for credit. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5410 (3) Translation

Review of theories and practices of literary translation in their linguistic, historical, cultural, and other contexts. Translation of literary and other works from chosen foreign languages, commentaries, and analyses. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5504 (3) Goethe's Faust

Systematic study of the Faust motif in Western literature, with major emphasis on Faust I and II by Goethe and Thomas Mann's Doctor Faustus. Restricted to graduate students or instructor consent required. Same as HUMN 4504 and GRMN 5504. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5540 (3) Studies in the Baroque

Explores the literary, intellectual, and aesthetic culture of the European baroque of the late 16th and 17th centuries through different topics pertinent to this period. Presents an interdisciplinary analysis of baroque literature, philosophy, science, and art. Illuminates the complex historical transition from the Renaissance to the modernity of the Enlightenment. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Comparative Literature

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## COML-5610 (3) Introduction to Literary Theory

Covers major trends in 20th-century critical thinking. May be repeated once for credit. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5620 (3) History of Literary Criticism

Prereq., graduate standing or instructor consent.

College of Arts & Sciences Comparative Literature

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## COML-5660 (3) Themes, Motifs, and Characters

May be repeated once for credit. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-5830 (3) Topics in Literature and History

May be repeated up to 6 total credit hours. Restricted to graduate students or instructor consent. Same as GSLL 5830. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences Comparative Literature

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## COML-5840 (1-3) Independent Study

May be repeated up to 7 total credit hours. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-6040 (3) Seminar: A Selected Topic

May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-6940 (1) Master's Candidate for Degree

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-6950 (1-6) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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## COML-6970 (3) Colloquium in Comparative Literature

May be repeated up to 6 total credit hours.

College of Arts & Sciences Comparative Literature

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## COML-7840 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Comparative Literature

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# COML-8990 (1-10) Doctoral Dissertation

Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Comparative Literature](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

COMM

## COMM-1210 (3) Perspectives on Human Communication

Surveys communication in a variety of contexts and applications. Topics include basic concepts and general models of communication, ethics, language and nonverbal communication, personal relationships, group decision making, organizational communication, and impact of technological developments on communication. Required for COMM majors. Meets MAPS requirement for social science: general. Approved for arts and sciences core curriculum: contemporary societies.

[College of Arts & Sciences](#) [Communication](#)

## COMM-1300 (3) Public Speaking

Covers theory and skills of speaking in various public settings. Examines fundamental principles from rhetorical and communication theory and applies them to oral presentations. Required for COMM majors.

[College of Arts & Sciences](#) [Communication](#)

## COMM-1600 (3) Group Interaction

Covers basic theories, concepts, and characteristics that underlie face-to-face interactions in interpersonal, small group, and organizational settings. Activities stress the development of both task and relational skills in these settings. Required for COMM majors.

[College of Arts & Sciences](#) [Communication](#)

## COMM-2000 (3) Topics in Communication

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Investigates select topics in communication. Does not count toward the 2000-level courses required for the major, unless explicitly stated in the course schedule. May be repeated up to 6 total credit hours on different topics. Recommended prereqs., COMM 1210 and 1600.

College of Arts & Sciences Communication

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## COMM-2360 (3) Campaigns and Revolutions

Introduces concepts in rhetoric and argumentation that are used to explain significant social and political changes in our society. The goal is to show how social actors use rhetoric to promote some social goals and hinder others. Recommended prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Communication

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## COMM-2400 (3) Discourse, Culture and Identities

Examines how aspects of talk (e.g., turn-taking, speech acts, narratives, dialect, and stance indicators) link with identities (e.g., ethnic and racial, age, gender, work-related, and personal). Considers how communication is central to constructing who people are and examines social controversies related to talk and identities. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Communication

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## COMM-2500 (3) Interpersonal Communication

Focuses on basic processes in face-to-face interaction, including verbal and nonverbal messages, coordination in conversation, messages about self and others, and communication in personal relationships. Emphasizes theory and concepts rather than skills. Recommended prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Communication

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## COMM-2600 (3) Organizational Communication

Provides a communicatively based definition of formal organization and deals with individual-organizational relationships. Addresses topics such as organizational theory, organizational culture, power, technology, decision making, teamwork, leadership, diversity, gender, socialization, and ethics. Recommended prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Communication

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## COMM-3000 (3) Issues in Communication

Explores select issues in communication. May be repeated up to 6 total credit hours on different issues. Prereqs., COMM 1210 and 1600 or instructor consent. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## COMM-3210 (3) Human Communication Theory

Acquaints students with general, thematic, and contextual theories of human communication. Gives attention to criteria for evaluating theories. Prereqs., COMM 1210 and 1600. Prerequisites: Requires pre-requisite courses of COMM 1210 and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

## COMM-3300 (3) Rhetorical Foundations of Communication

Provides the rhetorical foundations of communication through study of the humanistic traditions of rhetorical theory, with applications to social interaction and message analysis. Prereqs., COMM 1210, 1300 and 1600. Restricted to junior or senior Communication majors. Prerequisites: Requires pre-requisite courses of COMM 1210, 1300, and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

## COMM-3310 (3) Principles and Practices of Argumentation

Focuses on principles of argument, the process of critical decision making, and uses and limitations of logic and evidence. Contemporary issues (personal, social, political, or philosophical) are analyzed and debated. Prereq., COMM 1210 and 1600. Restricted to juniors or seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## COMM-3320 (3) Persuasion in Society

Explores how persuasion influences decision making. Focuses on different definitions and models of persuasion, ethical perspectives on persuasion, qualitative and quantitative research on persuasion, and the tools of motivation, as well as how to create effective and ethical persuasive messages. Prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

## COMM-3340 (3) Political Communication

Provides an overview of the role of communication in contemporary political life. Topics include political communication theories, political campaign communication, media and political communication, and the role of political communication in promoting democracy and public policy. Prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

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## COMM-3410 (3) Intercultural Communication

Explores complex relationships between culture and communication processes from various conceptual perspectives, such as social, psychological, interpretive, and critical. Considers the important role of context (e.g., social, historical, and cultural) in intercultural interactions. Recommended prereqs., COMM 1210 and 1600. Restricted to Juniors or Seniors only. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Communication

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## COMM-3510 (3) Family Communication

Explores communication in families from various theoretical perspectives, such as social constructionism, systems theory, and dialectical theory. Communication patterns and processes created and sustained by family members are examined, including rules, roles, stories, rituals, myths, metaphors, themes, and cycles. Prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-3610 (3) Communication, Technology, and Society

Presents theory, research, and exploration into computer-based technologies; studies implications for communication, interaction, and social relationships. Recommended prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Communication

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## COMM-3740 (3) Qualitative Communication Research Methods

Provides an understanding of methods associated with the study of communication in natural settings. Focuses on strategies of collecting, analyzing, and reporting qualitative data, including participant observation, in-depth interviewing, textual analysis, and ethnographic narrative. Prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-3750 (3) Quantitative Research Methods

Introduces empirically oriented research methods in communication, critical review of the logic of social-scientific principles in communication, and analysis of quantitative data. Prereqs., COMM 1210 and 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-3760 (3) Rhetorical Criticism

Applies key concepts from rhetorical theory to the analysis of specific speeches, written texts, and social situations within the humanistic tradition. Students read a variety of types of criticism and are encouraged to develop their own strategies for critical analysis. Prereqs., COMM 1210, 1600 and 3300. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4000 (3) Advanced Topics in Communication

Analyzes special interest areas of communication theory, research, and practice. Course format involves lecture, discussion, investigative analysis, and practical application. May be repeated twice for credit on different topics. Prereqs., COMM 3210 and 3300 or consent required. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4100 (3) Seminar in Honors Thesis Writing and Research

Provides the opportunity for students writing an honors thesis to develop their understanding of the research process and to improve their research and writing skills. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4220 (3) Senior Seminar: Functions of Communication

2Topical seminar on the functions of communication across interpersonal, group, organizational, and public contexts. Reviews current theory and research on topics such as communication and conflict, persuasion, and ethical dimensions of communication practices. May be taken twice for credit on different topics. Prereq., COMM 3210. Prerequisites: Requires pre-requisite courses of COMM 1210 and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4300 (3) Senior Seminar: Rhetoric

Reviews current theory and research on topics such as rhetoric and publics, rhetoric as an interpretive social science, and rhetoric of social movements and political campaigns. May be taken twice for credit on different topics. Prereq., COMM 3300. Prerequisites: Requires pre-requisite courses of COMM 1210, 1300, and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4510 (3) Senior Seminar: Interpersonal Communication

Reviews current theory and research on topics such as strategic interaction, relationship formation and maintenance, and identity and

self-presentation. May be taken twice for credit on different topics. Prereq., COMM 3210. Prerequisites: Requires pre-requisite courses of COMM 1210 and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

[College of Arts & Sciences](#) [Communication](#)

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

COMM

### COMM-4600 (3) Senior Seminar: Organizational Communication

Reviews current theory and research on topics such as communication and organizational decision making, organizational culture, gender relations, communication technology, and power and control in organizations. May be repeated up to 6 total credit hours on different topics. Prereq., COMM 3210. Prerequisites: Requires pre-requisite courses of COMM 1210 and 1600. Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

[College of Arts & Sciences](#) [Communication](#)

### COMM-4610 (3) Communication Studies of Science and Technology

Reviews current theory and research associated with science, technology, and medicine. Topics include new communication technologies in organizations and society, discourses of scientific theory and science policy, and interaction in clinical setting. May be taken twice for credit on different topics. Prereqs., COMM 3210 and 3300 or instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Communication](#)

### COMM-4840 (1-6) Undergraduate Independent Study

Note that the 14-hour limit in the major applies to any combination of independent study and internship credit. This course does not count toward the 33 credit hours required for the major. Recommended prereq., COMM 3250 or 3360. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

[College of Arts & Sciences](#) [Communication](#)

### COMM-4930 (1-6) Internship

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Studies are pursued in communication-related work experience projects that generally require 40 hours on the job per credit hour and evidence (e.g., journal, paper, and employer evaluation) of significant learning. Prereqs., COMM major status, 72 hours of overall course work, 18 hours of communication course work completed, 2.50 overall GPA, and a faculty sponsor. The 14-hour limit in the major applies to any combination of independent study and internship credit. This course does not count toward the 33 hours required for the major. Course is offered only for pass/fail credit. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Communication (COMM) majors only.

College of Arts & Sciences Communication

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## COMM-4950 (1-6) Senior Thesis: Honors

For exceptional communication majors who wish to graduate with department honors and receive credit for writing an honors thesis. Prereqs., COMM 4100, overall GPA of 3.35 or higher, and COMM GPA of 3.50 or higher.

College of Arts & Sciences Communication

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## COMM-5210 (3) Readings in Communication Theory

Critical overview of leading theoretical traditions in communication studies. Gives attention to metatheoretical issues, including epistemological foundations, the structure of communication theory as a field, and reflexivity between communication theory and cultural practice. Required for doctoral students in COMM; optional for master's students. Restricted to graduate students or instructor consent.

College of Arts & Sciences Communication

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## COMM-5220 (3) Seminar: Functions of Communication.

Prereq., graduate standing or instructor consent. Same as Comm 4220.

College of Arts & Sciences Communication

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## COMM-5230 (3) Applied Communication

Examines application of communication concepts, theories, methods, facilitations, and other practices to address real-world issues and problems. Discusses conceptual issues framing applied communication, examines purposes and methods informing such scholarship, and provides opportunity to evaluate and propose research. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Communication

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## COMM-5300 (3) Seminar: Rhetoric

Prereq., graduate standing or instructor consent. Same as COMM 4300.

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College of Arts & Sciences Communication

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## COMM-5310 (3) Contemporary Rhetorical Criticism

Advanced critical analysis of rhetorical texts in terms of how they shape issues and appeal for judgment, create identities for speakers and their audiences, and construct perceptions of time, space, and the human condition. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Communication

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## COMM-5320 (3) Readings in Rhetoric

Survey of classical and contemporary readings in rhetoric. Required for doctoral students in COMM; optional for master's students. Restricted to graduate students or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-5420 (3) Readings in Group Interaction

Reading course examining communicative problems, practices, and outcomes in groups. Definitions of group and interaction, meta-theoretical and theoretical orientations, methodological practices for studying group interactions, including boundary development and management, interpersonal symbolic practices, deliberation, dialogue, and decision making are examined. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-5425 (3) Readings in Discourse and Social Practices

Examines the way communicators' discourse expressions (language, talk, interactional devices, semiotic practices, written texts) reflect and construct interpersonal exchanges, societal activities, and institutional scenes, as well as how discourse expression varies across different speech communities. Prereq., graduate standing. Recommended prereq., COMM 6010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-5600 (3) Seminar: Organizational Communication

Prereq., graduate standing or instructor consent. Same as Comm 4600.

College of Arts & Sciences Communication

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## COMM-5610 (3) Organizational Culture and Symbolism

Focuses on relationship between ideological elements (e.g., norms, values, and beliefs) and symbolic practices (e.g., metaphor, ritual, and storytelling) of organizational culture. Analyzes topics from viewpoints of academic theory and managerial practice. Reviews interpretive methods of researching workplace culture and symbolism. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Communication

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## COMM-5620 (3) Readings in Organizational Communication

Survey of traditional and contemporary readings in organizational communication. Treats theory, research, and application from a variety of perspectives. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-5720 (3) Readings in Communication and Technology

Survey of multidisciplinary research that examines various relationships between communication and technology. Students are encouraged to develop critical skills in perceiving assumptions and perspectives that motivate major theories in this area, and to examine how these have changed overtime. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6010 (3) Communication Research and Theory

Provides an integrative overview of approaches and areas of study in communication. Required for MA and PHD communication students. Prereq., graduate standing in COMM. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6020 (3) Quantitative Research Methods

Introduces students to the practice of quantitative research in communication: conceptualization and critique of research projects, coding, experimental and survey approaches, reliability and validity, and statistical reasoning and methods of analysis. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6030 (3) Qualitative Research Methods

Introduction to the epistemology, methodology, and representational practices associated with qualitative studies in communication. Fieldwork methods emphasized include participant observation, interviewing, and document/artifact analysis. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6200 (3) Seminar: Selected Topics

Facilitates understanding of current and past theory and research on a selected topic in communication and the ability to develop new theory and research on that topic. May be repeated up to 9 total credit hours on different topics. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6310 (3) Rhetorical Criticism

Reviews current critical methods and issues related to rhetorical criticism, such as contemporary theory of rhetorical criticism, continental discourse theory, and critical theory. May be repeated up to 6 total credit hours on different topics. Prereq., graduate standing or instructor consent. Recommended prereqs., COMM 5310 and 5320.

College of Arts & Sciences Communication

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## COMM-6320 (3) Rhetorical Theory

Reviews current theory and research on topics such as contemporary rhetorical theory, rhetoric and public life, rhetoric as an interpretive social science, and rhetoric of social movements and political campaigns. May be repeated up to 6 total credit hours on different topics. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5320.

College of Arts & Sciences Communication

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## COMM-6330 (3) Rhetoric of Inquiry

Surveys foundational texts and contemporary research in the rhetoric of inquiry. Focuses on the role of persuasion in the production of knowledge. Analysis of distinctions between philosophical and rhetorical approaches to argument. Critical analysis of major theoretical and methodological traditions and topics with an emphasis on social dimensions of inquiry. Emphasizes critical analysis of major theoretical and methodological traditions. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5320. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6340 (3) Rhetoric and Civic Community

Considers performances of public life as rhetorical inducements of civitas. Topics include negotiation of self-regulation among interdependent partners, rhetorical exclusions and/or counterpublics, and dialectical tensions of public/private as these contribute to and have civic consequences for publicness, community, and social will. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5320.

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

COMM

## COMM-6350 (3) Seminar in Argumentation

Surveys foundational texts and contemporary research in argumentation. Analysis of distinctions between philosophical and rhetorical approaches to argument. Critical analysis of major theoretical and methodological traditions and topics with an emphasis on social dimensions of argument. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5320.

[College of Arts & Sciences](#) [Communication](#)

## COMM-6360 (3) Social and Cultural Theory

Traces select traditions in social and/or cultural theory, emphasizing how these traditions affect and are affected by the field of rhetoric studies. Examines the origins and resolutions of major debates in social and/or cultural theory from a rhetorical perspective. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5320.

[College of Arts & Sciences](#) [Communication](#)

## COMM-6410 (3) Discourse Analysis

Acquaints students with the main types of discourse analysis: conversation analysis, critical discourse analysis, and rhetorically-informed discourse approaches. Teaches how to conduct discourse analysis, including transcribing, selecting excerpts, documenting inferences, and linking to scholarly controversies. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Communication](#)

## COMM-6420 (3) Interaction Analysis

Educates students in one of a selected set of methodological specializations used in the study of human interaction. May be repeated up to 6 total credit hours on different topics. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Communication

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## COMM-6435 (3) Interpersonal Processes in Communication

Focuses on key processes in interpersonal communication relevant to understanding interaction at the dyadic, group, and organizational levels. Examines theory and research on selected interpersonal processes such as facework/identity, support/emotional communication, relational communication, and conflict in interaction. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Communication

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## COMM-6440 (3) Grounded Practical Theory

Examines theory, method, and application of grounded practical theory, an approach to building normative theory through description, critique, and theoretical reconstruction of situated communication practices. Semester project involves analysis of a sample of discourse from a public or field observation setting. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5210.

College of Arts & Sciences Communication

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## COMM-6450 (3) Group Interaction Facilitation and Pedagogy

Examines theory, research, and practice associated with facilitating group interaction processes (e.g., group creation, conflict communication management, conversation and discussion, task accomplishment, and team communication), including facilitation associated with teaching an introductory group interaction course. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5420. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6470 (3) Meetings, Their Practices and Problems

Explores the history, routine communicative practices, common interactional troubles, cross-cultural differences, and expectations about "Ideal" communicative conduct for workplace and public meetings. Seminar project involves field study of a meeting group. Prereq., graduate standing or instructor consent. Recommended prereq., Comm 6030.

College of Arts & Sciences Communication

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## COMM-6730 (3) Collaboration and Decision Making in Organizations

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Explores theory and research on communication processes associated with collaboration and decision making in contemporary organizations, particularly as they are influenced by participation programs, technology, and team structures. Prereq., graduate standing or instructor consent. Recommended prereqs., COMM 5620 and 6010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6740 (3) Theory and Philosophy of Organizing and Organizations

Reviews theory and philosophy of organizations and organizing where communication processes are seen as constitutive. Focuses on discursive and material practices in the formation and change of organizational structure, culture, and operation. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5620.

College of Arts & Sciences Communication

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## COMM-6750 (3) Communication and Organizational Change

Addresses the role of communication in cultural change efforts in organizations. Topics include the nature and function of organizational cultures, the role of leadership, ethical issues, and member involvement in change processes. Specific organizational cases are highlighted throughout. Prereq., graduate standing or instructor consent. Recommended prereq., COMM 5620.

College of Arts & Sciences Communication

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## COMM-6780 (3) Roles, Relationships, and Identities in Interaction

Examines how social roles influence communication practices, the development of relationships, and the impact of relationships on identity. Considers these processes in contexts such as personal relationships and institutional settings. Topic varies. May be repeated up to 6 total credit hours on different topics. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6840 (1-3) Master's Independent Study

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Communication

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## COMM-6940 (1) Master's Degree Candidate

College of Arts & Sciences Communication

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## COMM-6950 (1-6) Master's Thesis

College of Arts & Sciences Communication

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## COMM-8840 (1-6) Doctoral Independent Study

May be repeated up to 18 total credit hours.

College of Arts & Sciences Communication

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## COMM-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Communication

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# Courses

Search by College, Department & Category

**College/School**

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COMR

## COMR-1000 (1) Communication and Community

Introduction to how communication builds community by creating and sharing meaning. Examination of communication practices at the interpersonal level (friends and family), the group level (teams, classrooms and organizations) and the societal level (citizenship, social change, mass media). Restricted to students in the Communication Residential Academic Program.

[College of Arts & Sciences](#) [Communication Residential Academic Program](#)

## COMR-1100 (1) RAP Community Leadership Practicum

Examines relationships between competent communication and effective leadership in the context of the Communication and Society RAP. Upon completion of the Community Leadership RAP practicum, the student will be able to identify, discuss, demonstrate, and critique effective communication skills as they apply to many different leadership opportunities within the RAP. Restricted to students in the Communication Residential Academic Program.

[College of Arts & Sciences](#) [Communication Residential Academic Program](#)

## COMR-1800 (3) Visual Literacy: Images and Ideologies

Explores the relationship between visual images and cultural values, including how we process visual information, the evolution of conventions in various media, common visual portrayals, and ethical issues. Restricted to students in the Communication Residential Academic Program. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Communication Residential Academic Program](#)



## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

CSCI

### [CSCI-1000 \(1\) Computer Science as a Field of Work and Study](#)

Introduces curriculum, learning techniques, time management and career opportunities in Computer Science. Includes presentations from alumni and others with relevant educational and professional experience.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

### [CSCI-1220 \(4\) Virtual Worlds: An Introduction to Computer Science](#)

Introduces the fundamental principles of computer science using an on-line virtual world called Second Life as the "Laboratory" for the course. Students will learn how to program by creating objects of interest in Second Life. In-class and in-world discussions and readings will introduce the student to important ideas and concepts that shape the field of computer science. Same as ATLS 1220.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

### [CSCI-1240 \(3\) The Computational World](#)

Introduces and explores the "Computational style of thinking" and its influence in science, mathematics, engineering and the arts. The course does not focus on the nuts and bolts of any particular programming language, but rather on the way in which computing has affected human culture and thought in the past half century. Same as ATLS 1240.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

### [CSCI-1300 \(4\) Computer Science 1: Programming](#)

Teaches techniques for writing computer programs in higher level programming languages to solve problems of interest in a range of application domains. Restricted to Computer Science (CSEN) undergraduate students only. Prerequisites: Restricted to Computer Science (CSEN) undergraduate students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-2270 (4) Computer Science 2: Data Structures

Studies data abstractions (e.g., stacks, queues, lists, trees) and their representation techniques (e.g., linking, arrays). Introduces concepts used in algorithm design and analysis including criteria for selecting data structures to fit their applications. Prereqs., CSCI 1300, and one of APPM 1350 or MATH 1300.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-2400 (4) Computer Systems

Covers how programs are represented and executed by modern computers, including low-level machine representations of programs and data, an understanding of how computer components influence performance and memory hierarchy. Prereq., CSCI 2270. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-2824 (3) Discrete Structures

Covers foundational materials for computer science that is often assumed in advanced courses. Topics include set theory, Boolean algebra, functions and relations, graphs, propositional and predicate calculus, proofs, mathematical induction, recurrence relations, combinatorics, discrete probability. Focuses on examples based on diverse applications of computer science. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Prereq., CSCI 2270. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-2830 (1-3) Special Topics in Computer Science

Covers topics of interest in computer science at the sophomore level. Content varies from semester to semester.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-2900 (1-3) Lower Division, Undergraduate Level Independent Study

Offers selected topics at the elementary level for students with little or no previous computing experience.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-3002 (3) Human-Centered Computing Foundations

Introduces practice and research in human-computer interaction, design of interactive systems, computer supported cooperative work, computer supported collaborative learning, educational technology, tools that support creativity, user-developed knowledge collections, and gaming.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-3104 (4) Algorithms

Covers advanced data structures, computational geometry, cryptography, dynamic programming, greedy algorithms, divide-and-conquer, graph algorithms (e.g., depth-first search), network algorithms (e.g., shortest paths), approximation algorithms. Prereqs., CSCI 2824 and two semesters of calculus. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-3112 (1-3) Human-Centered Computing Professional Development

Supports students in developing professional skills and practices in human-computer interaction, design of interactive systems, computer supported cooperative work, computer supported collaborative learning, educational technology, tools that support creativity, user-developed knowledge collections, and gaming. May be repeated up to 10 total credit hours. Same as ATLS 3112.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-3155 (4) Principles of Programming Languages

Study fundamental concepts on which programming of languages are based, and execution models supporting them. Topics include values, variables, bindings, type systems, control structures, exceptions, concurrency, and modularity. Learn how to select a language and to adapt to a new language. Prereqs., CSCI 2270 and one of CSCI 2400 or ECEN 2120. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Programming Languages](#)

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## CSCI-3202 (3) Introduction to Artificial Intelligence

Surveys artificial intelligence techniques of search, knowledge representation and reasoning, probabilistic inference, machine learning, and natural language processing. Introduces artificial intelligence programming. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Prereq., CSCI 2824. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-3287 (3) Database and Information Systems

Surveys data management, including file systems, database management systems design, physical data organizations, data models, query languages, concurrency, and database protection. Prereq., CSCI 3104.

College of Engineering & Applied Science | Computer Science | Database Systems

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## CSCI-3302 (3) Introduction to Robotics

Introduces students to fundamental concepts in autonomous, mobile robotics: mechanisms, locomotion, kinematics, control, perception and planning. The course consists of lectures and lab sessions that are geared toward developing a complex robot controller in a realistic, physics-based multi-robot simulator. Prereqs., CSCI 2270 and 2824. CSCI 3302 and ECEN 3303 are the same course.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-3308 (3) Software Engineering Methods and Tools

Focuses on software engineering methods and tools for application development, including design and system organization; using and creating reusable libraries; building, testing, and debugging; and performance evaluation. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Prereq., CSCI 2270. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

College of Engineering & Applied Science | Computer Science | Software Engineering

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## CSCI-3434 (3) Theory of Computation

Introduces the foundations of formal language theory, computability, and complexity. Shows relationship between automata and various classes of languages. Addresses the issue of which problems can be solved by computational means, and studies complexity of solutions. Prereq., CSCI 3104 and 3155.

College of Engineering & Applied Science | Computer Science | Theory of Computation

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## CSCI-3656 (3) Numerical Computation

Covers development, computer implementation, and analysis of numerical methods for applied mathematical problems. Topics include floating point arithmetic, numerical solution of linear systems of equations, root finding, numerical interpolation, differentiation, and integration. Prereqs., two semesters of calculus, linear algebra, and either CSCI 1200 or 1300.

College of Engineering & Applied Science | Computer Science | Numerical Computation

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## CSCI-3702 (3) Cognitive Science

Introduces cognitive science, drawing from psychology, philosophy, artificial intelligence, neuroscience, and linguistics. Studies the linguistic relativity hypothesis, consciousness, categorization, linguistic rules, the mind-body problems, nature versus nurture, conceptual structure and metaphor, logic/problem solving, and judgment. Emphasizes the nature, implications, and limitations of the computational model of mind. Prereqs., two of the following: PSYC 2145, LING 2000, CSCI 1300, and PHIL 2440. Same as LING 3005, PHIL 3310, and PSYC 3005.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-3753 (4) Operating Systems

Examines software comprising computing systems as it builds upon hardware to provide a programming environment. Looks at structure and function of editors, compilers/assemblers, linkers, etc. Basic operating systems concepts and systems programming in high-level languages. Prereqs., CSCI 2270 and one of CSCI 2400 or ECEN 2120.

College of Engineering & Applied Science Computer Science Operating Systems and Hardware

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## CSCI-4000 (3) Entrepreneurship in Computing

Examines the development of new venture creation from the entrepreneur's perspective. Provides an understanding of the entire process including opportunity identification, feasibility study, fundraising, organization, team creation, and exit strategies through case studies, oral and written presentations, and outside speakers. Taught by an experienced entrepreneur. Prereq., CSCI 2270. Restricted to juniors/seniors.

College of Engineering & Applied Science Computer Science General Computer Science

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## CSCI-4113 (3) Unix System Administration

Introduces UNIX (Linux) system administration and related topics, including trouble-shooting system and network problems, hardware and software configuration and installation, basic scripting, and security aspects of Internet hosts. Students build a Linux server from the ground up, using provided computing resources, and must maintain and secure the server themselves. Prereqs., CSCI 2270 or instructor consent. Recommended prereq., CSCI 3308.

College of Engineering & Applied Science Computer Science Operating Systems and Hardware

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## CSCI-4123 (3) Network Laboratory

Develops enterprise level design and configuration skills on local area networking via switching and routing, as well as the provisioning of remote data communications across diverse Wan technologies, using the latest available transport and security services. Prereq., CSCI 4273. Credit not granted for this course and TLEN 5460.

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## CSCI-4133 (3) Security Laboratory

Allows students to gain practical experience with network security in a simulated network environment. Topics to be covered include system hardening, firewalls, intrusion detection, vulnerability assessment, and investigation. Prereq., CSCI 4273. Credit not granted for this course and TLEN 5540.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

CSCI

## CSCI-4143 (2) Principles of Telecommunications Policy

Learn the key issues and principles that guide the decisions of policymakers with respect to the regulatory treatment of voice, video, and data communications. Engage in critical debate, and develop instincts for anticipating the likely regulatory models that may be applied to new technologies. This introductory course covers technical, economic, legal, political, and institutional considerations. Coreq., CSCI 4123 or 4133. Same as TLEN 5210

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

## CSCI-4202 (3) Artificial Intelligence 2

Second course in artificial intelligence. Topics may vary, but typically cover neural networks, natural language processing, and artificial life. Prereq., CSCI 3202 or instructor consent.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

## CSCI-4229 (3) Computer Graphics

Studies design, analysis, and implementation of computer graphics techniques. Topics include interactive techniques, 2D and 3D viewing, clipping, segmentation, translation, rotation, and projection. Also involves removal of hidden edges, shading, and color. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Prereqs., knowledge of basic linear algebra and CSCI 2270. Same as CSCI 5229. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Graphics](#)

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## CSCI-4239 (3) Advanced Computer Graphics

Studies design, analysis and implementation of advanced computer graphics techniques. Topics include shaders, using the GPU for high performance computing, graphics programming on embedded devices such as mobile phones; advanced graphics techniques such as ray tracing. Prereq., CSCI 4229 or instructor consent required. Same as CSCI 5239.

College of Engineering & Applied Science Computer Science Graphics

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## CSCI-4273 (3) Network Systems

Focuses on design and implementation of network programs and systems, including topics in network protocols, file transfer, client-server computing, remote procedure call, and other contemporary network system design and programming techniques. Prereqs., CSCI 3753 or equivalent, and familiarity with C and Unix. Same as CSCI 5273.

College of Engineering & Applied Science Computer Science Operating Systems and Hardware

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## CSCI-4308 (4) Software Engineering Project 1

Advanced practicum in which students design, implement, document and test software systems for use in industry, non-profits, government and research institutions. Also offers extensive experience in oral and written communication throughout the software lifecycle. Students must take CSCI 4308 and 4318 contiguously, as the project spans the entire academic year. Prereqs., successful completion of a minimum of 36 credit hours of Computer Science Foundation, Track Foundation, Track Core, Computer Science electives, and WRTG 3030. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Computer Science (CSCI) majors or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Software Engineering

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## CSCI-4312 (3) Health Informatics

Teaches students essential skills necessary for developing usable assistive and performance support systems, which include consideration of the academic and professional interdisciplinary issues that govern the work. An overview of ongoing and emerging topics in medical informatics will be presented. Prereq., CSCI 2270. Recommended prereq., CSCI 3002. Same as CSCI 5312.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-4314 (3) Algorithms for Molecular Biology

Surveys combinatorial algorithms used to understand DNA, RNA, and proteins. Introduces students to methods used to process genomic data. Topics covered include a review of algorithms and molecular biology, sequence analysis, RNA and protein structure analysis, and comparative genomics. Students will get hands-on experience processing recent genomic data. Prereqs., CSCI 2270 and CSCI 3104, or CHEM 4711, or MCDB3500 or Iphy 4200. Same as CSCI 5314 and MCDB 4314.

College of Engineering & Applied Science Computer Science Theory of Computation

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## CSCI-4317 (3) Genome Databases: Mining and Management

Develops essential skills for performing genomic analyses, with focus on developing practical research tools. Introduces human genome and microbiome projects, Python/SQL scripting, accessing and understanding genomic data, sequence alignment and search, evolutionary models, expression data, biological networks, and macromolecular structure. Prereqs., MCDB 3500, CSCI 3104, or CHEM 4711; coreq., CSCI 2270. Same as CSCI 5317. Credit not granted for this course and CHEM 4621 or MCDB 4621.

College of Engineering & Applied Science | Computer Science | Database Systems

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## CSCI-4318 (4) Software Engineering Project 2

Second semester of an advanced practicum in computer science. Students must take CSCI 4308 and 4318 contiguously as the project spans the entire academic year. Prereq., CSCI 4308.

College of Engineering & Applied Science | Computer Science | Software Engineering

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## CSCI-4342 (3) Groupware and Workflow Systems

Supports students in developing professional skills and knowledge concerning the use of computer technologies to support collaborative activities. Also covers the impact of digital collaboration technologies on users, groups, organizations and society. Students will gain practical experience with Business Process Management and the use of Workflow Management Systems. Same as CSCI 5342.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-4412 (3) Design, Creativity, and New Media

Explores the design of new media and technologies to support design and creativity. Analyzes design and creativity as human activities of fundamental importance in the networked information culture and economy. Provides theoretical and practical analysis of new media. Instructor consent required. Recommended prereq., CSCI 3002. Instructor consent required. Same as CSCI 5412.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-4446 (3) Chaotic Dynamics

Explores chaotic dynamics theoretically and through computer simulations. Covers the standard computational and analytical tools used in nonlinear dynamics and concludes with an overview of leading-edge chaos research. Topics include time and phase-space dynamics, surfaces of section, bifurcation diagrams, fractal dimension, and Lyapunov exponents. Prereqs., two semesters calculus, CSCI 1200, 1300 or equivalent, and PHYS 1110. Recommended prereqs., PHYS 1120, CSCI 3656, and MATH 3130. Same as CSCI 5446 and ECEN 4423.

College of Engineering & Applied Science | Computer Science | Numerical Computation

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## CSCI-4448 (3) Object-Oriented Analysis and Design

An applied analysis and design class addressing the use of object-oriented techniques. Topics include domain modeling, use cases, architectural design, and modeling notations. Students apply the techniques in analysis and design projects. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Prereq., CSCI 3155 or expertise in one or more object-oriented programming languages, such as C++ or Java. Same as CSCI 5448. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Software Engineering](#)

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## CSCI-4502 (3) Data Mining

Introduces basic data mining concepts and techniques for discovering interesting patterns hidden in large-scale data sets, focusing on issues relating to scalability and efficiency. Topics covered include data preprocessing, data warehouse, association, classification, clustering, and mining specific data types such as time-series, social networks, multimedia, and Web data. Prereq., CSCI 2270 or instructor consent. CSCI 4502 and 5502 are the same course.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-4555 (3) Compiler Construction

Introduces the basic techniques used in translating programming languages: scanning, parsing, definition table management, operator identification and coercion, code selection and register allocation, error recovery. Students build a complete compiler for a simple language. Prereqs., CSCI 2824 or ECEN 3703 and CSCI 2400 or ECEN 2120. Same as ECEN 4553 and CSCI 5525.

[College of Engineering & Applied Science](#) [Computer Science](#) [Programming Languages](#)

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## CSCI-4576 (4) High-Performance Scientific Computing

Introduces computing systems, software, and methods used to solve large-scale problems in science and engineering. Students use high-performance workstations and a supercomputer. First course in a two-semester sequence. Recommended prereq., CSCI 3656. Same as CSCI 5576.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## CSCI-4586 (4) High-Performance Scientific Computing 2

Introduces computing systems, software, and methods to solve large-scale problems in science and engineering. Students use high-performance workstations and a supercomputer. Second course in a two-semester sequence. Prereq., CSCI 4576.

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## CSCI-4593 (3) Computer Organization

Studies computer design at the gate level. Discusses instruction set architecture design, arithmetic and logic unit design, control logic, memory design and caches, simple pipelining, I/O, and peripheral devices. Briefly covers aspects of modern computer architecture, such as multicore processors and cache coherence for these. Prereq., ECEN 2350, and ECEN 3350 or CSCI 2400. Same as ECEN 4593. Prerequisites: Restricted to Electrical Engineering (EEEN), Electrical and Computer Engineering (ECEN) Computer Science (CSEN), Engineering Physics (EPEN) or Applied Mathematics (APPM) majors only.

## CSCI-4753 (3) Computer Performance Modeling

Presents a broad range of system measurement and modeling techniques, emphasizing applications to computer systems. Topics include system measurement, work load characterization, and analysis of data; design of experiments; simulation; and queuing theory and queuing network models. Prereq., CSCI 3753 or equivalent, and second-semester calculus. Recommended prereq., a course in statistics. Same as CSCI 5753 and ECEN 4753/5753.

## CSCI-4809 (3) Computer Animation

Develops a firm understanding of the general principles of computer animation. Lectures cover the creation of models, materials, textures, surfaces, and lighting. Path and key frame animation, particle dynamics, and rendering are introduced. Students are assigned a number of animation tutorials to carry out. CSCI 4809/5809 and ATLS 4809/5809 are all the same course.

## CSCI-4810 (1) Seminar in Computational Biology

Provides an overview of current research topics in computational biology and health informatics, with a focus on research conducted on campus. Each week students will attend an on-campus seminar or a presentation by an on-campus research group. Prepares students to participate in a research project. Prereqs., CSCI 4312 or 4314 or 4317. CSCI 4810 and 5810 are the same course.

## CSCI-4830 (1-3) Special Topics in Computer Science

Covers topics of interest in computer science at the senior undergraduate level. Content varies from semester to semester. May be repeated up to 9 total credit hours.

## CSCI-4839 (3) User-Centered Design

Develops the skills and practices necessary to apply user-centered approaches to software requirements analysis, and the design and evaluation of computer applications. Restricted to Computer Science (CSMR) or all other College of Engineering majors only. Same as CSCI 5839. Prerequisites: Restricted to Computer Science (CSMR) or all other College of Engineering majors only.

## CSCI-4900 (1-3) Upper Division, Undergraduate Level Independent Study

Provides opportunities for independent study at the upper-division undergraduate level. Students work on a small research problem or tutor lower-division computer science students. Prereq., CSCI 1200 or 1300.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

CSCI

## CSCI-4950 (2-4) Senior Thesis

Provides an opportunity for senior computer science majors to conduct exploratory research in computer science. Prereqs., successful completion of a minimum of 36 credit hours of Computer Science Foundation, Track Foundation, Track Core, and Computer Science electives, and WRTG 3030. Restricted to seniors. May be repeated up to 8 total credit hours. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

[College of Engineering & Applied Science](#)
[Computer Science](#)
[General Computer Science](#)

## CSCI-5229 (3) Computer Graphics

Same as CSCI 4229. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#)
[Computer Science](#)
[Graphics](#)

## CSCI-5239 (3) Advanced Computer Graphics

Prereq., CSCI 5229. Restricted to graduate students only. Same as CSCI 4239. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#)
[Computer Science](#)
[Graphics](#)

## CSCI-5273 (3) Network Systems

Same as CSCI 4273. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#)
[Computer Science](#)
[Operating Systems and Hardware](#)

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## CSCI-5312 (3) Health Informatics

Same as CSCI 4312. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-5314 (3) Algorithms for Molecular Biology

Same as CSCI 4314 and MCDB 5314. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Theory of Computation

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## CSCI-5317 (3) Genome Databases: Mining and Management

Same as CSCI 4317. Credit not granted for this course and CHEM 5621 or MCDB 5621. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Database Systems

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## CSCI-5342 (3) Groupware and Workflow Systems

Same as CSCI 4342. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-5412 (3) Design, Creativity, and New Media

Same as CSCI 4412. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-5417 (3) Information Retrieval Systems

Addresses practical issues in the design, implementation and analysis of modern information retrieval systems. The major focus is on Web-based applications including ad hoc retrieval, classification, and clustering. Introduces the use of open source retrieval systems, standard evaluation metrics and gold-standard evaluation collections. Formerly CSCI 7000. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Database Systems

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## CSCI-5444 (3) Introduction to Theory of Computation

Reviews regular expressions and finite automata. Studies Turing machines and equivalent models of computation, the Chomsky hierarchy, context-free grammars, push-down automata, and computability. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-5446 (3) Chaotic Dynamics

Same as CSCI 4446 and ECEN 5423. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## CSCI-5448 (3) Object-Oriented Analysis and Design

Same as CSCI 4448. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Software Engineering](#)

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## CSCI-5454 (3) Design and Analysis of Algorithms

Techniques for algorithm design, analysis of correctness and efficiency; divide and conquer, dynamic programming, etc. Advanced data structures, algorithms in graph theory, geometry, Vlsi, linear algebra, etc. Lower bounds, Np-completeness, intractability. Prereqs., CSCI 2270 or equivalent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-5473 (3) Applied Operating Systems

Examines design and implementation of contemporary operating systems. Significant laboratory component applies practice with OS use, analysis, and internal design. Topics include OS organization and structure, process and thread management, memory management, file management, device management, network and distributed systems, and modern runtime systems. Prereq., two years programming and instructor consent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

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## CSCI-5502 (3) Data Mining

Introduces basic data mining concepts and techniques for discovering interesting patterns hidden in large-scale data sets, focusing on issues relating to scalability and efficiency. Topics covered include data preprocessing, data warehouse, association, classification, clustering, and mining specific data types such as time-series, social networks, multimedia, and Web data. Prereq., CSCI 2270 or instructor consent. CSCI 4502 and 5502 are the same course. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-5525 (3) Compiler Construction

Offers practical experience using state-of-the-art CAD tools on high-performance workstations. Provides skills needed to rapidly create little languages for specific problem domains and familiarizes students with automated software development. Prereqs., CSCI 2824 or ECEN 3703 and CSCI 2400 or ECEN 2120. Same as ECEN 5523 and CSCI 4555. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Programming Languages

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## CSCI-5535 (3) Fundamental Concepts of Programming Languages

Considers concepts common to a variety of programming languages--how they are described (both formally and informally) and how they are implemented. Provides a firm basis for comprehending new languages and gives insight into the relationship between languages and machines. Prereq., CSCI 3155, or instructor consent. Same as ECEN 5533. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Programming Languages

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## CSCI-5548 (3) Software Engineering of Standalone Programs

Applies engineering principles to phases of software product development, project planning, requirements definition, design, implementation, validation, and maintenance. Emphasizes practical methods for communicating and verifying definitions and designs--- prototyping, inspections, and modeling. Includes relation to RTS and object-oriented programming. Prereqs., CSCI 1300, CSCI 2270, or instructor consent. Same as ECEN 5543. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Software Engineering

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## CSCI-5551 (3) Parallel Processing

Examines a range of topics involved in using parallel operations to improve computational performance. Discusses parallel architectures, parallel algorithms and parallel programming languages. Architectures covered include vector computers, multiprocessors, network computers, and data flow machines. Prereq., background in computer organization, introduction to programming languages, elementary numerical analysis, ECEN 4593 and CSCI 3656, or instructor consent. Same as ECEN 5553. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Parallel Processing

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## CSCI-5573 (3) Advanced Operating Systems

Intended to create a foundation for operating systems research or advanced professional practice. Examines the design and implementation of a number of research and commercial operating systems and their components, system organization and structure, threads, communication and synchronization, virtual memory, distribution, file systems, security and authentication, availability, and Internet services. Prereqs., CSCI 3753, 4593, equivalent undergraduate coursework in operating systems and computer architecture, or

instructor consent. Same as ECEN 5573. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

## CSCI-5576 (4) High-Performance Scientific Computing

Same as CSCI 4576. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

## CSCI-5582 (3) Artificial Intelligence

Surveys artificial intelligence methods, theories, and applications. Studies the relationship between artificial intelligence and psychology, linguistics, and philosophy. Introduces artificial intelligence programming. Prereq., CSCI 3155 or equivalent. Same as ECEN 5583.

Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

## CSCI-5593 (3) Advanced Computer Architecture

Provides a broad-scope treatment of important concepts in the design and implementation of high-performance computer systems. Discusses important issues in the pipelining of a machine and the design of cache memory systems. Also studies current and historically important computer architectures. Prereq., CSCI 4593 or instructor consent. Same as ECEN 5593. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

## CSCI-5606 (3) Principles of Numerical Computation

Highlights computer arithmetic, solution of linear systems, least-squares approximations, nonlinear algebraic equations, interpolation, and quadrature. Prereqs., CSCI 3656 and three semesters of calculus, or equivalent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

CSCI

## CSCI-5608 (3) Software Project Management

Presents topics and techniques critical to the management of software product development, including estimating, planning, quality, tracking, reporting, team organization, people management, and legal issues. Gives special attention to problems unique to software projects. Prereqs., ECEN 4583, CSCI 5548 and 4318, or equivalent industrial experience. Same as ECEN 5603 and EMEN 5031.

Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Software Engineering](#)

## CSCI-5622 (3) Machine Learning

Trains students to build computer systems that learn from experience. Includes the three main subfields: supervised learning, reinforcement learning and unsupervised learning. Emphasizes practical and theoretical understanding of the most widely used algorithms (neural networks, decision trees, support vector machines, Q-learning). Covers connections to data mining and statistical modeling. A strong foundation in probability, statistics, multivariate calculus, and linear algebra is highly recommended. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

## CSCI-5636 (3) Numerical Solution of Partial Differential Equations

Focuses on finite difference solution for partial differential equations, methods of SoR, ADI, conjugate gradients, finite element method, nonlinear problems, and applications. Prereqs., CSCI 5606. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## CSCI-5646 (3) Numerical Linear Algebra

Offers direct and iterative solutions of linear systems. Also covers eigen value and eigenvector calculations, error analysis, and reduction by orthogonal transformation. Prereqs., CSCI 5606. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## CSCI-5654 (3) Linear Programming

Presents algorithms, simplex, and modifications. Examines theory---duality and complementary slackness. Involves network flow algorithms. Introduces integer programming. Prereq., linear algebra. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-5673 (3) Distributed Systems

Examines systems that span multiple autonomous computers. Topics include system structuring techniques, scalability, heterogeneity, fault tolerance, load sharing, distributed file and information systems, naming, directory services, resource discovery, resource and network management, security, privacy, ethics, and social issues. Recommended prereqs., CSCI 5573 or a course in computer networks. Same as ECEN 5673. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

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## CSCI-5714 (3) Formal Languages

Explores context-free languages: pumping lemma and variants, closure properties, and decision properties. Involves parsing algorithms, including general and special languages, e.g., LR. Additional topics chosen by instructor. Prereq., CSCI 5444 or instructor consent. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-5722 (3) Computer Vision

Explores algorithms that can extract information about the world from images or sequences of images. Topics covered include: imaging models and camera calibration, early vision (filters, edges, texture, stereo, optical flow), mid-level vision (segmentation, tracking), vision-based control, and object recognition. Recommended prereq., probability, multivariate calculus, and linear algebra. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-5753 (3) Computer Performance Modeling

Same as CSCI 4753. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

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College of Engineering & Applied Science Computer Science Operating Systems and Hardware

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## CSCI-5809 (3) Computer Animation

Same as CSCI 4809 and ATLS 4809/5809. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Graphics

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## CSCI-5810 (1) Seminar in Computational Biology

Provides an overview of current research topics in computational biology and health informatics, with a focus on research conducted on campus. Each week students will attend an on-campus seminar or a presentation by an on-campus research group. Prepares students to participate in a research project. Prereqs., CSCI 4312 or 4314 or 4317. CSCI 4810 and 5810 are the same course.

College of Engineering & Applied Science Computer Science General Computer Science

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## CSCI-5817 (3) Database Systems

Provides an advanced treatment of basic database concepts. Prereq., CSCI 2270. Recommended prereq., CSCI 3287 and 3753. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Database Systems

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## CSCI-5828 (3) Foundations of Software Engineering

Explores techniques, languages, and tools for development and maintenance of software systems. Topics include specification languages, configuration modeling, testing techniques, process modeling, program annotations, and program proofs. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Software Engineering

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## CSCI-5832 (3) Natural Language Processing

Explores the field of natural language processing as it is concerned with the theoretical and practical issues that arise in getting computers to perform useful and interesting tasks with natural language. Covers the problems of understanding complex language phenomena and building practical programs. Prereq., graduate standing or instructor consent. Same as LING 5832. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Artificial Intelligence

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## CSCI-5839 (3) User-Centered Design

Restricted to graduate students or instructor consent. Same as CSCI 4839. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Graphics

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## CSCI-5900 (1-6) Master's Level Independent Study

Provides opportunities for independent study at the master's level. Prerequisites: Restricted to Computer Science (CSEN) graduate students only or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science General Computer Science

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## CSCI-5919 (3) Human-Computer Interaction: Survey and Synthesis

Examines interdisciplinary field of human-computer interaction through a comprehensive content and historical survey. Considers new trajectories of inquiry and how the field merges with others. "Social computing" is emphasized as a central topic. Students across disciplines will find the course foundational for understanding human-centered technology matters, including computer scientists; social scientists; and business and media arts students. Recommended prereq., CSCI 4839 or 5839. Prerequisites: Restricted to graduate students or Computer Science Concurrent Degree majors only.

College of Engineering & Applied Science Computer Science Graphics

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## CSCI-5929 (3) Human-Computer Interaction: Survey and Synthesis 2

Studies recent advances in human-computer interaction through critical analysis of influential papers and self-guided research. Examines new paradigms in input, output, and visualization for technology design and interaction. Considers innovative methods to assess various population design and technological needs. Studies in computer-related fields, social science, business, media arts, and communications benefit learning about human-centered computing research. Recommended prereq., CSCI 5919.

College of Engineering & Applied Science Computer Science Graphics

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## CSCI-6000 (1) Introduction to the Computer Science PhD Program

Instructs new Ph.D students in Computer Science how to obtain a Ph.D and how to become an effective member of the computer science research community. Makes students aware of formal requirements, educational objectives, and research themes. Provides evaluative criteria and guidelines for all objectives to be achieved. Restricted to new Ph.D students in Computer Science. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Computer Science General Computer Science

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## CSCI-6268 (3) Foundations of Computer and Network Security

Studies methods to protect information, and the ability to process and move information, from theft, misuse, tampering, destruction, and

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unauthorized access. Introduces foundational topics of computer and network security, including security models, cryptography, and authentication protocols. Prereq., CSCI 5273. Same as TLEN 5550. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Software Engineering](#)

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## CSCI-6302 (3) Speech Recognition and Synthesis

Introduction to automatic speech recognition and understanding, conversational agents, dialogue systems, and speech synthesis/text-to-speech. Topics include the noisy channel model, Hidden Markov Models, A\* and Viterbi decoding, language modeling (N-grams, entropy), concatenative synthesis, text normalization, dialogue and conversation modeling. Prereqs., CSCI 5582 or 5832, or LING 5200, and graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-6402 (3) Issues and Methods in Cognitive Science

Interdisciplinary introduction to cognitive science, examining ideas from cognitive psychology, philosophy, education, and linguistics via computational modeling and psychological experimentation. Includes philosophy of mind; learning; categorization; vision and mental imagery; consciousness; problem solving; decision making, and game-theory; language processing; connectionism. Prereqs., graduate standing, or at least one course at the 3000-level or higher in computer science, linguistics, philosophy, or psychology. No background in computer science will be presumed. Same as EDUC 6504, LING 6200, PHIL 6310, and PSYC 6200. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-6454 (3) Advanced Algorithms

Topics include matching and network flows, matroids, computational geometry, parallel computation (PRAM, hypercube, mesh). Also includes Vlsi, database theory, distributed computation, cryptography, robotics, scheduling, probabilistic algorithms, approximation algorithms, average case, and amortized analysis, time permitting. Prereq., CSCI 5454. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-6622 (3) Advanced Machine Learning

Covers advanced theoretical and practical topics in machine learning and latest developments in the field. Students conduct original research, either applied or theoretical, and present their results. Prereq., CSCI 5622 or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-6676 (3) Numerical Methods for Unconstrained Optimization

Looks at modern computational methods for solution of unconstrained optimization problems, nonlinear leastsquares, and systems of

nonlinear equations. Techniques for building algorithms to solve problems with special structure. Prereq., CSCI 5606. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## Courses

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CSCI

### CSCI-6686 (3) Numerical Methods for Constrained Optimization

Covers computational methods for constrained optimization. Topics include basic theory, methods for quadratic programming, active set strategies for linear constraints, and penalty and successive quadratic programming methods for nonlinearly constrained problems.

Prereq., CSCI 5606. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

### CSCI-6800 (1-6) Master of Engineering Project

Students seeking the master of engineering degree must complete a creative investigation project, including a written report, supervised by a member of the graduate faculty. Prereq., completion of 21 hours towards the ME degree. Prerequisites: Restricted to graduate student Computer Sciences students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

### CSCI-6940 (1) Master's Degree Candidacy

For students who need to be registered for the purpose of taking the master's comprehensive exam and who are not otherwise registered. Credit does not count toward degree requirements. Graded on a pass/fail basis. Prerequisites: Restricted to Computer Science (CSEN) graduate students only or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

### CSCI-6950 (1-6) Master's Thesis

Prerequisites: Restricted to Computer Science (CSEN) graduate students only or Computer Science Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-7000 (1-4) Current Topics in Computer Science

Covers research topics of current interest in computer science that do not fall into a standard subarea. May be repeated up to 8 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [General Computer Science](#)

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## CSCI-7111 (3) Topics in Parallel Processing

Content varies, but subjects include parallel machine architecture, parallel algorithms, languages for parallel computation, and applications. Takes subject matter from current research. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Parallel Processing](#)

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## CSCI-7123 (3) Topics in Operating Systems

Topics selected by instructor. Possible topics are system design, measurement and evaluation, simulation, mathematical modeling, and parallelism. Prereq., CSCI 5573. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

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## CSCI-7135 (3) Topics in Programming Languages

Topics selected by instructor. Possible topics are syntax, semantics, metacompilers, compiler design, and translator writing systems. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Programming Languages](#)

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## CSCI-7143 (3) Topics in Computer Systems

Topics selected by instructor. Possible topics are online systems, multiprocessing, microprogramming, architecture, data communications, and computing networks. May be repeated up to 6 total credit hours. Instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Operating Systems and Hardware](#)

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## CSCI-7154 (3) Topics in Theory of Computation

Selected topics of current interest in theory of computation. Prereq., CSCI 5454. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Theory of Computation](#)

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## CSCI-7176 (3) Topics in Numerical Computation

Topics selected by instructor. Possible topics are numerical linear algebra, solution of differential equations, nonlinear algebra and optimization, data fitting, linear and nonlinear programming, and solution of large problems. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Numerical Computation](#)

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## CSCI-7212 (3) Topics in Symbolic Artificial Intelligence

Topics vary from year to year. Possible topics include search; knowledge representation and natural language understanding; deduction, planning, problem solving, and automatic programming; instruction and cognitive models; vision and speech; and learning, induction, and concept formation. Prereq., CSCI 5582 or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-7222 (3) Topics in Nonsymbolic Artificial Intelligence

Topics vary from year to year. Possible topics include human and machine vision, signal and speech processing, artificial life, mathematical foundations of connectionism, and computational learning theory. Prereq., CSCI 5622 or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-7412 (2) Cognitive Science Research Practicum

Independent, interdisciplinary research project in cognitive science for graduate students pursuing a joint Ph.D in an approved core discipline and cognitive science. Projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students should obtain commitments from two mentors for their project. Prereqs., CSCI 6402 or EDUC 6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereqs., CSCI7762 or EDUC 6505 or LING 7762 or PSYC 7765. Same as LING 7415, PSYC 7415, PHIL 7415, and EDUC 6506. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-7422 (2) Cognitive Science Research Practicum 2

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint Ph.D in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., LING 7415 or PSYC 7415 or CSCI 7412 or EDUC 6506. Same as PSYC 7425, LING 7425, PHIL 7425, and EDUC 6516. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Computer Science](#) [Artificial Intelligence](#)

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## CSCI-7717 (3) Topics in Database Systems

Studies topics such as distributed databases, database interfaces, data models, database theory, and performance measurement in depth. Prereq., CSCI 5817 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Computer Science | Database Systems

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## CSCI-7762 (1-2) Readings and Research in Cognitive Science

Interdisciplinary reading of innovative theories and methodologies of cognitive science. Participants share interdisciplinary perspectives through in-class and online discussion and analysis of controversial texts and of their own research in cognitive science. Required for joint Ph.D in cognitive science. Prereq., graduate standing. Same as EDUC 6505, LING 7762, and PSYC 7765. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-7772 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the ICS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in ICS Cognitive Science Academic Programs. Same as LING 7775, PSYC 7775, EDUC 7775, SLHS 7775, and PHIL 7810. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-7782 (3) Topics in Cognitive Science

Addresses a different set of one to three topics each year. For each topic, one or two faculty members of the Institute of Cognitive Science present background material and current research. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Computer Science | Artificial Intelligence

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## CSCI-7818 (3) Topics in Software Engineering

Studies selected topics of current interest in software engineering. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Computer Science | Software Engineering

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## CSCI-7900 (1-6) Doctoral Level Independent Study

For doctoral students.

## CSCI-8990 (1-10) Doctoral Dissertation

Investigates some specialized field of computer science. Approved and supervised by faculty members. Prerequisites: Restricted to Graduate Students only.

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# Courses

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CSVC

## CSVC-1000 (1) Work Internship

a one credit pass/fail course, opened to students in good academic standing, whose internship employers require that they receive course credit. The student must first seek to obtain academic credit through their major department. Will not count toward degree requirements in any UCB school or college. No appeals for credit toward degrees or for letter grades in the course will be entertained.

[College of Arts & Sciences](#)

[Career Services](#)

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# Courses

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CVEN

## CVEN-1317 (2) Introduction to Civil and Environmental Engineering

Surveys the broad subject of civil and environmental engineering and professional practice. Includes the subdisciplines of structures, water resources, geotechnics, transportation, environment, and construction. Discusses professional ethics, important skills for engineers, and the engineering design process as it fulfills multiple objectives.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Miscellaneous](#)

## CVEN-2012 (3) Introduction to Geomatics

Observes, analyzes, and presents basic linear, angular, area, and volume field measurements common to civil engineering endeavors with application of GPS and GIS technology. Prereq., APPM 1350 or equivalent. Prerequisites: Restricted to Architectural or Civil Engineering majors only.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Surveying and Transportation](#)

## CVEN-2121 (3) Analytical Mechanics 1

Covers forces acting on rigid bodies at rest. Equilibrium is the central concept that will be applied repeatedly to different situations. In each case, the object of interest will be isolated along with all the forces acting on it; a free body diagram. Equilibrium will be applied to analyze trusses, frames, machines, cables and hydrostatic forces on dams. Prereq., PHYS 1110. Prereq. or coreq., APPM 2350. Same as GEEN 3851. Restricted to freshmen or sophomore Civil, Environmental, or Architectural Engineering majors only. Prerequisites: Restricted to freshmen or sophomore Civil, Environmental, or Architectural Engineering majors only.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Mechanics](#)

## CVEN-3022 (3) Construction Surveying

Studies construction and highway surveying, horizontal and vertical curves, earthwork, and analysis of data. Prereq., CVEN 2012.

College of Engineering & Applied Science Civil Engineering Surveying and Transportation

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## CVEN-3032 (3) Photogrammetry

Familiarizes students with characteristics of aerial photographs. Measures and interprets aerial photos for planimetric, topographic, hydrological, soil, and land use surveys. Analyzes and presents field measurements over extensive reaches. Prereq., instructor consent.

College of Engineering & Applied Science Civil Engineering Surveying and Transportation

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## CVEN-3111 (3) Analytical Mechanics 2

Studies the motion (kinematics) of particles and rigid bodies, and the forces that cause the motion (kinetics). Newton's laws as well as energy methods are used to study the motion of particles and rigid bodies in two and three dimensions. Prereqs., CVEN 2121 and APPM 2360. Same as MCEN 3043.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-3161 (3) Mechanics of Materials 1

Addresses concepts of stress and strain; material properties, axial loading, torsion, simple bending, and transverse shear; analysis of stress and strain; and deflections of beams. Includes selected experimental and computational laboratories. Prereq., CVEN 2121. Coreq., APPM 2360. Restricted to Architectural or Civil Engineering majors only. Prerequisites: Restricted to Architectural or Civil Engineering majors only.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-3227 (3) Probability, Statistics and Decision

Introduces uncertainty based analysis concepts and applications in the planning and design of civil engineering systems emphasizing probabilistic, statistics, and design concepts and methods. Restricted to juniors/seniors.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-3246 (3) Introduction to Construction

Broad view of concerns, activities, and objectives of people involved in construction: the owner, architect/engineer, contractor, labor, and inspector. Interactive gaming situation relates these people to the construction contract, plans/specifications, estimates/bids, scheduling, law, and financial management. Restricted to junior or senior Civil or Architectural Engineering majors only. Prerequisites: Restricted to

junior or senior Civil or Architectural Engineering majors only.

College of Engineering & Applied Science Civil Engineering Construction

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## CVEN-3256 (3) Construction Equipment and Methods

Integrated study of construction equipment, methods, and economics. Topics include equipment productivity, equipment selection, and construction engineering design within economic constraints. Examples include earthmoving, concrete formwork, and temporary construction. Recommended prereq., CVEN 3246. Restricted to Architectural or Civil Engineering majors only. Prerequisites: Restricted to Architectural or Civil Engineering majors only.

College of Engineering & Applied Science Civil Engineering Construction

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## CVEN-3313 (3) Theoretical Fluid Mechanics

Basic principles of fluid mechanics. Covers fluid properties, hydrostatics, fluid flow concepts, including continuity, energy, momentum, dimensional analysis and similitude, and flow in closed conduits. Prereq., CVEN 2121. Prerequisites: Requires pre-requisite course of CVEN 2121 (or GEEN 3851, or ASEN 2001, or MCEN 2023).

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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## CVEN-3323 (3) Hydraulic Engineering

Studies hydraulic engineering theory and applications. Topics include incompressible flow in conduits, pipe system analysis and design, open channel flow, flow measurement, analysis and design of hydraulic machinery. Prereq., CVEN 3313 (or MCEN 3021, or GEEN 3853, or AREN 2120). Restricted to Civil, Environmental, or Architectural Engineering majors only. Prerequisites: Requires pre-requisite courses of CVEN 3313 (or MCEN 3021, or GEEN 3853, or AREN 2120). Restricted to Civil, Environmental, or Architectural Engineering majors only.

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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## CVEN-3414 (3) Fundamentals of Environmental Engineering

Emphasizes chemical, ecological, and hydrological fundamentals and importance of mass and energy balances in solving environmental engineering problems related to water quality, water and wastewater treatment, air pollution, solid and hazardous waste management, sustainability, and risk assessment. Prereqs., CHEN 1211 and APPM 1360. Restricted to Civil, Environmental, Architectural, Chemical, or Mechanical Engineering majors only. Others admitted space permitting--contact CEAE. Prerequisites: Restricted to Civil, Environmental, Architectural, Mechanical or Chemical Engineering majors only.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-3424 (3) Water and Wastewater Treatment

Introduces design and operation of facilities for treatment of municipal water supplies and wastewater. Provides an engineering application of physical, chemical, and biological unit processes and operations for removal of impurities and pollutants. Involves an

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integrated design of whole treatment systems combining process elements. Prereq., CVEN 3414.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-3434 (3) Introduction to Applied Ecology

Emphasizes the integration of physical, chemical, and biological processes in controlling terrestrial and aquatic ecosystems. Ecosystem concepts are applied to current environmental and water quality problems. Includes field trips and a group project. Prereq., CHEM 1111 or CHEN 1211 and 1221. Restricted to junior/senior CVEN, EVEN, or AREN majors. Same as ENVS 3434. Prerequisites: Restricted to Civil, Environmental, or Architectural Engineering majors only.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-3525 (3) Structural Analysis

Studies structural analysis of statically determinate and indeterminate systems, deflections, energy methods, and force method. Prereq., CVEN 3161 or MCEN 2063. Restricted to Architectural or Civil Engineering majors only. Prerequisites: Requires pre-requisite course of CVEN 3161 or MCEN 2063. Restricted to Civil, Environmental, or Architectural Engineering majors only.

College of Engineering & Applied Science Civil Engineering Structures

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## CVEN-3602 (3) Transportation Systems

Introduces technology, operating characteristics, and relative merits of highway, airway, waterway, railroad, pipeline, and convey or transportation systems. Focuses on evaluation of urban transportation systems and recent transportation innovations. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Civil Engineering Surveying and Transportation

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## CVEN-3698 (3) Engineering Geology

Highlights the role of geology in engineering minerals; rocks; surficial deposits; rocks and soils as engineering materials; distribution of rocks at and below the surface; hydrologic influences; geologic exploration of engineering sites; mapping; and geology of underground excavations, slopes, reservoirs, and dam sites. Includes field trips.

College of Engineering & Applied Science Civil Engineering Geotechnical

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## CVEN-3708 (3) Geotechnical Engineering 1

Studies basic characteristics of geological materials; soil and rock classifications; site investigation; physical, mechanical, and hydraulic properties of geologic materials; the effective stress principle; soil and rock improvement; seepage analysis; stress distribution; and consolidation and settlement analyses. Selected experimental and computational laboratories. Prereq., CVEN 3161 or MCEN 2063. Prerequisites: Requires pre-requisite course of CVEN 3161 or MCEN 2063. Restricted to Civil, Environmental, or Architectural

Engineering majors only.

College of Engineering & Applied Science Civil Engineering Geotechnical

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## CVEN-3718 (3) Geotechnical Engineering 2

Discusses shear strength, bearing capacity, lateral earth pressures, slope stability, and underground construction. Analyzes and looks at the design of shallow and deep foundations, retaining walls, tunnels, and other earth and rock structures. Selected experimental and computational laboratories. Prereq., CVEN 3708. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Civil Engineering Geotechnical

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## CVEN-4087 (3) Construction Contract Administration

Students will develop a working understanding of the various types of contracts, key contract provisions, how to evaluate contract risk, ethical requirements, and most importantly explore effective contract administration. Construction and engineering contracts are at the core of all project relationships. Through lecture, group dialog and case studies students will develop confidence in their ability to assess, understand and deploy contract administration in a construction setting. Prereq., senior standing in civil or architectural engineering or instructor consent.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-4147 (3) Civil Engineering Systems

Theory and application of the principles of engineering economics, and classical and metaheuristic optimization techniques for evaluating problems in civil and environmental engineering. Same as CVEN 5147. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-4161 (3) Mechanics of Materials 2

Covers advanced topics in the mechanics of solids. Some topics such as asymmetric bending of beams, torsion of non-circular cross-sections etc. are extensions of topics seen in CVEN 3161. Others like buckling and plate bending theory are new. The course presents unifying themes that underlie the study of mechanics. The course includes selected laboratory experiments. Prereq., CVEN 3161.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-4323 (3) Water Resource Engineering Design

Design of urban water supply, wastewater, and supply stormwater management system, with demand management as an option. Exploration of the feasibility of recycling and reuse of treated wastewater and stormwater. Prereqs., CVEN 3227 and 4147. Same as CVEN 5423.

## CVEN-4333 (3) Engineering Hydrology

Studies engineering applications of principles of hydrology, including hydrologic cycle, rainfall and runoff, groundwater, storm frequency and duration studies, stream hydrography, flood frequency, and flood routing. Prereqs., CVEN 3227 and 3323.

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CVEN

### CVEN-4353 (3) Groundwater Engineering

Studies the occurrence, movement, extraction for use, and quantity and quality aspects of groundwater. Introduces and uses basic concepts to solve engineering and geohydrologic problems. Prereq., Cven 3313. Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Fluid Mechanics & Water Resour](#)

### CVEN-4383 (3) Groundwater Modeling

Studies mathematical and numerical techniques needed to develop models to solve problems in water flow and chemical transport in aquifers. Emphasizes the learning of modeling techniques from fundamentals and the application of models to solve problems in groundwater engineering. Recommended prereq., CVEN 4353. Same as CVEN 5383.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Fluid Mechanics & Water Resour](#)

### CVEN-4404 (3) Water Chemistry

Introduces chemical fundamentals of inorganic aqueous compounds and contaminants in lecture and laboratory. Lecture topics include thermodynamics and kinetics of acids and base reactions, carbonate chemistry, air-water exchange, precipitation, dissolution, complexation, oxidation-reduction, and sorption. Prereqs., CHEN 1211 and CVEN 3414, or CHEM 1111 and 1131 for non-engineers. Restricted to CVEN and EVEN majors only. Formerly CVEN 3454. Prerequisites: Restricted to Civil or Environmental Engineering majors only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Environmental](#)

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## CVEN-4414 (1) Water Chemistry Laboratory

Reinforces chemical fundamentals of inorganic aqueous compounds and contaminants from CVEN 4404 Water Chemistry in laboratory experiments and reports. Topics include acids and bases, carbonate chemistry (alkalinity), and other water chemistry characteristics (hardness, dissolved oxygen); precipitation, complexation, and oxidation-reduction reactions; and laboratory techniques and reporting. Prereqs., CHEN 1211 and CVEN 3414 or CHEN 1111 and 1131 for non-engineers. Coreq., CVEN 4404. Restricted to CVEN or EVEN majors only. Prerequisites: Restricted to Civil or Environmental Engineering majors only.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-4424 (3) Environmental Organic Chemistry

Examines the fundamental physical and chemical transformations affecting the fate and transport of organic contaminants in natural and treated waters. Emphasizes quantitative approach to solubility, vapor pressure, air-water exchange, sorption, hydrolysis and redox reactions, and photodegradation. Prereq., CHEN 1211 or equivalent.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-4434 (4) Environmental Engineering Design

Examines the design of facilities for the treatment of municipal water and wastewater, hazardous industrial waste, contaminated environmental sites, and sustainable sanitation in developing countries. Economic, societal, and site specific criteria impacting designs are emphasized. Prereq., CVEN 3414. Restricted to seniors.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-4474 (3) Hazardous and Industrial Waste Management

Evaluates processes used for treatment of wastes requiring special handling and disposal: toxic organic chemicals, heavy metals, and acidic, caustic, and radioactive waste material. Discusses techniques for destruction, immobilization, and resource recovery and assessment of environmental impact of treatment process end products. Prereq., CVEN 3414. Same as CVEN 5474. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-4484 (3) Introduction to Environmental Microbiology

Surveys microbiology topics germane to modern civil and environmental engineering. Provides fundamentals needed to understand microbial processes and ecology in engineered and natural systems and reviews applications emphasizing the interface between molecular biology and classical civil engineering. Prereq., CHEM 1211, CHEN 1221, APPM 1350, 1360, and 2350.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-4511 (3) Introduction to Finite Element Analysis

Systematic formulation of finite element approximation and isoparametric interpolation (weighted residual and energy methods, triangular and quadrilateral elements). Includes computation applications to the solution of one- and two-dimensional stress-deformation problems, steady and transient heat conduction, and viscous flow. Prereqs., CVEN 3161, 3525, and Appm 2360. Same as CVEN 5511.

College of Engineering & Applied Science   Civil Engineering   Mechanics

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## CVEN-4525 (3) Analysis of Framed Structures

Studies matrix formulation of principles of structural analysis and development of direct stiffness and flexibility methods for analysis of frame and truss structures. Topics include support settlements, thermal loads, and energy formulations of force-displacement relationships. Prereq., CVEN 3525. Same as CVEN 5525.

College of Engineering & Applied Science   Civil Engineering   Structures

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## CVEN-4537 (3) Numerical Methods in Civil Engineering

Introduces the use of numerical methods in the solution of civil engineering problems, emphasizing obtaining solutions with high-speed electronic computers. Applies methods to all types of civil engineering problems. Prereq., senior standing. Same as CVEN 5537.

College of Engineering & Applied Science   Civil Engineering   Miscellaneous

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## CVEN-4545 (3) Steel Design

Applies basic principles to design of steel structures; design of tension members, columns, beams, open-web joists, steel decks, bolts, bolted connections, welding processes, and welded connections. Prereq., CVEN 3525.

College of Engineering & Applied Science   Civil Engineering   Structures

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## CVEN-4555 (3) Reinforced Concrete Design

Focuses on applications to the design of reinforced concrete structures, including design of beams, columns, slabs, and footings; continuous beams and frames; cast-in-place buildings. Prereq., CVEN 3525.

College of Engineering & Applied Science   Civil Engineering   Structures

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## CVEN-4565 (2) Timber Design

Applies design methods to beams, columns, trusses, and connections using timber and glued, laminated members. Prereq. or coreq.,

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-4700 (3) Sustainability and the Built Environment

Introduces fundamental concepts of sustainability and sustainable development. Special emphasis on understanding the interaction of the built environment with natural systems and the role of technical and non-technical issues in engineering decisions. Open to engineering and non-engineering students. Same as CVEN 5700.

College of Engineering & Applied Science | Civil Engineering | Building Systems

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## CVEN-4718 (3) Mechanics and Dynamics of Glaciers

Focuses on geotechnical design of shallow and deep foundations, including spread footings, mats, driven piles, and drilled piers. Coverage includes bearing capacity, settlement, group effects, and lateral load capacity of the various foundation types. Additional topics include subsurface exploration, construction of deep foundations, and analysis of pile behavior using wave equation and dynamic monitoring methods. Prereqs., CVEN 3718 or instructor consent. Same as CVEN 5728.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-4728 (3) Foundation Engineering

Focuses on geotechnical design of shallow and deep foundations, including spread footings, mats, driven piles, and drilled piers. Coverage includes bearing capacity, settlement, group effects, and lateral load capacity of the various foundation types. Additional topics include subsurface exploration, construction of deep foundations, and analysis of pile behavior using wave equation and dynamic monitoring methods. Prereqs., CVEN 3718 or instructor consent. Same as CVEN 5728.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-4822 (3) Geographical Information Systems for Civil and Environmental Systems

Theory and use of geographical information systems in civil engineering, environmental studies, natural resources, and other related disciplines. Topics include spatial data models, data capture, global positioning system, database linkage, use in design, analysis and implementation. Laboratory work includes applications of Arc-View and Arc-GIS software. Prereq., CVEN 2012 or instructor consent. Same as CVEN 5822.

College of Engineering & Applied Science | Civil Engineering | Surveying and Transportation

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## CVEN-4834 (1-3) Special Topics

Prereq., instructor consent. May be repeated up to 6 total credit hours provided topics are different.

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-4837 (1-3) Special Topics

College of Engineering & Applied Science | Civil Engineering | Miscellaneous

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## CVEN-4839 (3-6) Special Topics for Seniors

Offers a supervised study of special topics, under instructor guidance. May be repeated up to 6 total credit hours. Prereq., instructor consent.

College of Engineering & Applied Science | Civil Engineering | Special Topics

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## CVEN-4878 (1-3) Independent Study

Involves an independent, in-depth study, research, or design in a selected area of civil or environmental engineering. Offerings are coordinated with individual faculty. Students should consult the Department of Civil, Environmental, and Architectural Engineering. Numbered CVEN 4840 through CVEN 4878.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-4899 (4) Civil Engineering Senior Project Design

Provides a simulated real world design and construction planning experience with multiple constraints including budget, schedule, technical, regulatory, and societal. Teams integrate the multiple civil engineering sub-disciplines. Requires gathering relevant data, understanding client needs, identifying constraints, and applying applicable regulations, codes and standards. Final deliverables include: detailed design drawings, specifications, cost estimate, project schedule, construction plan, oral and written presentation. Prereq., senior standing.

College of Engineering & Applied Science | Civil Engineering | Special Topics

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## CVEN-5010 (3) HVAC System Modeling and Control

Treats the theoretical and practical design of control systems for heating, ventilating, and air conditioning of both residential and commercial buildings. Discusses computer energy management system design. Prereq., AREN 3010 or equivalent. Same as AREN 4010.

## CVEN-5020 (3) Building Energy Audits

Analyzes and measures performance of HVAC systems, envelopes, lighting and hot water systems, and modifications to reduce energy use. Emphasizes existing buildings. Prereq., AREN 3010 or equivalent. Prerequisites: Restricted to Graduate Students only.

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject    Number**

CVEN

## CVEN-5030 (3) Architectural Lighting Equipment Design

Covers the specification and design of nonimaging optical systems for architectural lighting equipment reflector design. Develops and uses computer software to design optics that are prototyped and tested in the laboratory. Prereq., AREN 3540 or CVEN 5830. Taught intermittently.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems](#)

## CVEN-5040 (3) Lighting Systems Engineering

Introduces architectural lighting, including vision and perception, lighting equipment and its characteristics, calculations and analysis, and the process of lighting design.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems](#)

## CVEN-5050 (3) Advanced Solar Design

Predicts performance and analyzes economics of high temperature, photovoltaic, and other innovative solar systems. Also includes performance prediction methods for solar processes. Prereqs., AREN 2120, coursework in thermodynamics, fluid mechanics and heat transfer. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems](#)

## CVEN-5070 (3) Thermal Analysis of Building

Examines response factors, conduction transfer functions, and weighting factors for dynamic analysis of building envelopes. Also studies

radiative and convective exchange in buildings, internal gains, and infiltration analysis as modeled in hourly simulations. Prereq., AREN 3010 or equivalent.

College of Engineering & Applied Science Civil Engineering Building Systems

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## CVEN-5080 (3) Computer Simulation of Building Energy Systems

Introduces major simulation programs for analysis of building energy loads and system performance. Focuses on one hourly simulation program to develop capability for analysis of multizone structure. Prereq., AREN 4110 or CVEN 5110. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Civil Engineering Building Systems

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## CVEN-5110 (3) HVAC Design 1

Explores design of heating, ventilating, and air conditioning (HVAC) systems for buildings. Covers HVAC systems description, load estimating, code compliance, duct design, fan systems, applied psychrometrics, cooling and heating coils, filters, hydronic systems, piping, and pumps. Prereq., AREN 3010 or equivalent. Same as AREN 4110.

College of Engineering & Applied Science Civil Engineering Building Systems

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## CVEN-5111 (3) Structural Dynamics

Introduces dynamic response of linear elastic single and multiple degree of freedom systems. Includes time and frequency domain analysis. Also analyzes building structures. Prereq., instructor consent.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-5131 (3) Continuum Mechanics and Elasticity

Provides foundation for advanced study of structural and material behavior and continuum theories in mechanics. Topics include Cartesian tensors, elements of continuum mechanics, constitutive laws for elastic solids, energy principles, methods of potentials, formulations of 2D and 3D elastostatic problems, and general analytical and numerical solutions.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-5147 (3) Civil Engineering Systems

Same as CVEN 4147. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-5161 (3) Advanced Mechanics of Materials I

Covers 3-D stress and strain, failure theories, torsion of open and noncircular sections, thick-wall pressure vessels, non-symmetric bending, shell in thin-walled sections, stability of frames and beam-column behavior. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Mechanics

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## CVEN-5206 (3) Design Development

Investigates the interrelationship between design decisions and building costs, and the impact of each major building system and building trade on project budgets and schedules. Gives students the opportunity to prepare technical, marketing, and financial packages for investors as well as regulatory and financial institutions. Culminates with detailed presentations of student-developed project prospectuses. Instructor consent required. Restricted to graduate student Civil Engineering (CVEN) or Civil Engineering Concurrent Degree majors only. Taught intermittently. Prerequisites: Restricted to graduate student Civil Engineering (CVEN) or Civil Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5216 (3) Applied Construction Financial Management

Interpreting commonly used financial reports in the construction engineering industry sector will be taught. Skills developed in this course will better prepare students to become competent consumers of financial information utilizing the same to influence future results the construction business. Models for financing public and private sector projects will also be explored. Taught intermittently. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5226 (3) Safety and Quality

Comprehensively studies quality and safety in the construction industry. Statistical techniques for quality assurance and control will be reviewed and applied. The course also extensively focuses on advanced safety management issues such as accident causation theory, economic modeling, safety risk quantification and analysis, design for safety, and emerging technologies. Skills developed in this course will prepare graduate students to be effective quality and safety managers or researchers.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5246 (3) Legal Aspects of Construction

Applies law in engineering practice; contracts, construction contract documents, construction specification writing, agency, partnership, and property; types of construction contracts; and legal responsibilities and ethical requirements of the professional engineer. Prereq., graduate standing or instructor consent required. Same as CVEN 4087. Taught intermittently. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5276 (3) Engineering Risk and Decision Analysis

Acquaints students with the fundamental principles and techniques of risk and decision analysis. Oriented toward project-level decisions in which risk or uncertainty plays a central role. Introduces students to Monte Carlo analyses, influence diagrams, and various types of multicriteria decision analyses. Culminates in a larger term project. Recommended prereq., CVEN 3227. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5313 (3) Environmental Fluid Mechanics

Analysis of viscous incompressible flows, with first-principle solutions for environmental fluid flows in oceans, rivers, lakes and the atmosphere. Topics include the Navier-Stokes equations, kinematics, vorticity dynamics, geophysical fluid dynamics, and density stratification. Prereqs., APPM 2350, 2360, CVEN 3313, or equivalents. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Fluid Mechanics & Water Resour

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## CVEN-5323 (3) Applied Stream Ecology

Emphasizes the integration of hydrologic, chemical, and biological processes in controlling river, stream, and reservoir ecosystems at several spatial scales. Students apply ecosystem concepts to current environmental and water quality problems and learn field methods in field trips and a team project. Prereqs., general chemistry, physics. Recommended prereqs., hydrology, ecology, or environmental chemistry. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Environmental

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## CVEN-5326 (3) Construction Project Controls

Examines tools and techniques employed to control design processes and construction operations. Students apply advanced scheduling and estimating techniques, culminating in the concept of earned value project management. Introduces high tech project control tools. Recommended prereqs., AREN 4420 and 4466. Taught intermittently.

College of Engineering & Applied Science   Civil Engineering   Construction

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## CVEN-5333 (3) Multiscale Hydrology

Observations show that peak flows in rainfall-runoff events, and the quantities of annual peak flows, have a power-law dependence on basin area. Physical basis of power laws in peak flows will be explained from mass and momentum conservation equations governing stream flows in self-similar channel networks. Potential engineering applications to predicting floods under a changing climate will be covered. Prereqs., CVEN 4333, 5454 and 5537. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Fluid Mechanics & Water Resour

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## CVEN-5343 (3) Transport and Dispersion in Surface Water

Studies transport and dispersion of introduced contaminants in turbulent surface water flows. Emphasizes developing a physical understanding of fluid processes responsible for turbulent dispersion. Includes analytical development, numerical modeling, and experimental approaches to the problem.

College of Engineering & Applied Science | Civil Engineering | Fluid Mechanics & Water Resour

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## CVEN-5346 (3) Managing Construction and Engineering Projects and Organizations

Explores organizational and managerial issues and concerns facing executives in engineering and construction organizations. Through readings, case studies, simulation exercises, and projects, students are introduced to and apply concepts of strategy, core competencies, vision, innovation, team dynamics, interpersonal influence, organizational design issues, and global projects to engineering and construction organizations. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Construction

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## CVEN-5353 (3) Groundwater Hydrology

Studies the occurrence, movement, extraction for use, and quantity and quality aspects of groundwater. Introduces and uses basic concepts to solve engineering and geohydrologic problems. Prereqs., CVEN 3313 and APPM 2360, or equivalent, or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Fluid Mechanics & Water Resour

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## CVEN-5363 (3) Modeling of Hydrologic Systems

Introduces students to the techniques used in modeling various processes in the hydrologic cycle. Helps students develop numeric models and computer programs for use in conjunction with existing simulation modes such as HEC1 and HEC2 in a design project. Prereqs., CVEN 3313 and instructor consent.

College of Engineering & Applied Science | Civil Engineering | Fluid Mechanics & Water Resour

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## CVEN-5373 (3) Water Law, Policy, and Institutions

Discusses contemporary issues in water management based on legal doctrine. Identifies legal issues in water resources problems and discusses in close relationship with technical, economic, and political considerations. Prereq., senior or graduate standing.

College of Engineering & Applied Science | Civil Engineering | Fluid Mechanics & Water Resour

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## CVEN-5383 (3) Applied Groundwater Modeling

Studies mathematical and numerical techniques needed to develop models to solve problems in water flow and chemical transport in the saturated and unsaturated zones of aquifers. Not only emphasizes the learning of modeling techniques from fundamentals, but also the application of models and modeling methods to solve problems in groundwater engineering, geo-environmental engineering, hazardous waste management, aquifer remediation design, and aquifer clean-up. Prereqs., CVEN 5353, 5454, or equivalent, and APPM 2360 or equivalent. Same as CVEN 4383.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Fluid Mechanics & Water Resour](#)

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# Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

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CVEN

## CVEN-5393 (3) Water Resources Development and Management

Explores the principles governing water resources planning and development. Emphasizes the sciences of water (physical, engineering, chemical, biological, and social) and their interrelationships. Prereq., senior or graduate standing. Same as ECON 6555.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Fluid Mechanics & Water Resour](#)

## CVEN-5404 (3) Water Chemistry

Introduces chemical fundamentals governing the chemistry of natural and treated waters in lecture and laboratory. Lecture topics include thermodynamics and kinetics of acids and base reactions, carbonate chemistry, air-water exchange, precipitation, dissolution, complexation, oxidation-reduction, and sorption. Laboratory experiments emphasize lecture concepts with measurements on local waters. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Environmental](#)

## CVEN-5414 (3) Water Chemistry Laboratory

Uses experimental and analytical laboratory techniques to develop a better understanding of the concepts of aquatic chemistry and to investigate water chemistry in treated and natural water systems. Techniques include titration, spectrophotometry, gas chromatography, other advanced instrumentation, sampling, portable analyses, and basic statistics and experimental design. Course focuses on water chemistry of Boulder Creek and other local waters. Prereq., CVEN 5404 or GEOL 5280. Coreq., CVEN 5424.

[College of Engineering & Applied Science](#)
[Civil Engineering](#)
[Environmental](#)

## CVEN-5423 (3) Water Resource Engineering Design

Same as CVEN 4323.

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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## CVEN-5424 (3) Environmental Organic Chemistry

Examines the fundamental physical and chemical transformations affecting the fate and transport of organic contaminants in natural and treated waters. Emphasizes solubility, vapor pressure, air-water exchange, sorption, abiotic and biotic reactions, and photodegradation.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5434 (3) Environmental Engineering Design

Team-based design of facilities or processes for water or wastewater or solid waste treatment or remediation under multiple real-world constraints. Prereq., instructor consent. Recommended prereq., CVEN 5524, 5534, or 5474.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5454 (3) Quantitative Methods

Introduces the use of digital simulation in the analysis of water resources and environmental systems. Develops computer programs for the simulation of reservoir operations, watershed runoff, stream quality, and lake quality, and uses existing software to analyze more complex problems. Prereq., instructor consent.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5474 (3) Hazardous and Industrial Waste Management

Same as CVEN 4474. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5484 (3) Introduction to Environmental Microbiology

Same as CVEN 4484.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5494 (3) Surface Water Quality Modeling

Examines the relationships among air, water, and landpollution, water quality, and beneficial uses. Using models, develops the ability to quantify and predict the impacts of pollutants in the aquatic environment, and to develop approaches to minimize unfavorablewater quality conditions. Prereq., instructor consent.

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-5511 (3) Introduction to Finite Element Analysis

Prereq., graduate standing. Same as Cven 4511. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-5514 (3) Bioremediation

Advanced study on biological processes used to treat toxic organic and inorganic compounds contained in contaminated water, air, and soil; design and evaluation of in situ toxic compound biotransformation; fundamentals of phytoremediation; critical reviews of current literature on bioremediation. Prereq., CVEN 4484 or 5484 or instructor consent. Recommended prereq., CVEN 5424.

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-5524 (3) Drinking Water Treatment

Provides advanced study on theory-of-treatment processes, including design and operation of municipal water supplies. Prereq., environmental engineering processes, graduate standing, or instructor consent required.

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-5525 (3) Analysis of Framed Structures

Same as CVEN 4525. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-5534 (3) Wastewater Treatment

Offers an advanced analysis of wastewater treatment systems; design and operation of treatment process reactors; factors affecting performance of facilities used for physical separation; and chemical and biological conversion of wastewater compounds, including nitrogen and phosphorus. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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College of Engineering & Applied Science | Civil Engineering | Environmental

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5537 (3) Numerical Methods in Civil Engineering

Prereq., graduate standing. Same as CVEN 4537. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-5540 (3) Exterior Lighting Systems

Engages students in exploring and solving lighting problems for exterior environments. Provides an understanding of the design criteria and lighting equipment used in three primary exterior applications: parking lots and roadways, floodlighting of buildings, and sports facilities. Prereq., AREN 3540. Recommended prereqs., AREN 3140 and 4550. Same as AREN 4540. Taught intermittently.

College of Engineering & Applied Science Civil Engineering Building Systems

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## CVEN-5544 (3) Solid Waste Management and Resource Recovery

Covers the scope of the nonhazardous solid waste problem and regulations that drive its management; discussions of nonengineering factors that impact waste management and recycling; design of incinerators, composting facilities, and landfills used to treat and dispose of solid waste. Recommended prereq., CVEN 3414.

College of Engineering & Applied Science Civil Engineering Environmental

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## CVEN-5555 (3) Structural Reliability

Explores principles and methods of structural reliability, and formulates bases for design to insure adequate safety and performance of elements and structural systems. Prereq., CVEN 3535, 4525, or instructor consent.

College of Engineering & Applied Science Civil Engineering Structures

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## CVEN-5565 (3) Life-Cycle Engineering of Civil Infrastructure Systems

Philosophical and analytical issues for lifetime design and operation of civil systems. Optimization tradeoffs of construction, management, and sustainability. Utility of operation and service, including present-value economic analysis. Decision-making alternatives of safety and performance, including hazards consideration. Recommended prereq., CVEN 3227 or equivalent.

College of Engineering & Applied Science Civil Engineering Structures

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## CVEN-5575 (3) Advanced Topics in Steel Design

Covers steel structure design and analysis. Includes plate girders, moment connections for beams, design of multistory frames, and other topics determined by class interest. Prereq., CVEN 4545 or equivalent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Structures

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## CVEN-5585 (3) Advanced Topics in Reinforced Concrete Design

Covers design and analysis topics for prestressed concrete and/or reinforced concrete structures. Includes review of the current ACI design code, slabs, prestressed concrete, seismic design, folded plates and shells, finite element analysis, and other topics determined by class interest. Prereq., CVEN 4555 or equivalent.

College of Engineering & Applied Science   Civil Engineering   Structures

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## CVEN-5628 (3) Seepage and Slopes

Covers fundamental principles of seepage in soils under both saturated and unsaturated conditions and limit equilibrium solution to slope stability problems. The seepage effects on slope stability are analyzed in detail and both conventional slope stability method and the finite element technique are applied to solving the engineering problems. Prereqs., CVEN 3708 and 3718 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science   Civil Engineering   Geotechnical

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## CVEN-5678 (3) Soil Improvement and Reinforcement

Provides students with principles and working knowledge of design and construction procedures in soil stabilization, retaining structures, geosynthetics, and soil reinforcement. Prereq., CVEN 3718 or instructor consent.

College of Engineering & Applied Science   Civil Engineering   Geotechnical

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## CVEN-5688 (3) Environmental Geotechnics

Provides an understanding of the use of geotechnical concepts in the analysis and design of environmental systems. Focus is placed on the evaluation of waste containment facilities. Including relevant saturated, unsaturated, and multiphase flow mechanisms in cover and liner systems. Includes stability analyses for landfills and geosynthetic interface shear strength. Covers relevant aspects of mining geotechnics and remediation technologies of contaminated sites.

College of Engineering & Applied Science   Civil Engineering   Geotechnical

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

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CVEN

## CVEN-5700 (3) Sustainability and the Built Environment

Same as CVEN 4700.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Building Systems](#)

## CVEN-5708 (3) Soil Mechanics

Offers an advanced course in principles of soil mechanics. Coverage includes topics in continuum mechanics; elasticity, viscoelasticity, and plasticity theories applied to soils; the effective stress principle; consolidation; shear strength; critical state concepts; and constitutive, numerical, and centrifuge modeling. Prereq., CVEN 3718. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Geotechnical](#)

## CVEN-5718 (3) Mechanics and Dynamics of Glaciers

Same as CVEN 4718.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Geotechnical](#)

## CVEN-5728 (3) Foundation Engineering

Same as CVEN 4728. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Geotechnical](#)

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## CVEN-5738 (3) Applied Geotechnical Analysis

Studies applications of limiting equilibrium and limit plasticity analysis methods to stability problems in geotechnical engineering, such as slopes, lateral earth pressures on retaining structures, and bearing capacities of foundations. Also includes elastic and consolidation analysis of deformations in soil structures. Prereq., CVEN 5708 or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5748 (3) Design of Earth Structures

Covers theory, design, and construction of earth embankments and waste facilities, including isolation systems. Uses published data, field exploration, and laboratory tests on soils and rock in investigating foundations and construction materials. Involves principles of compaction and settlement, permeability analysis, landslide recognition and control, use of composite clay, and liner systems. Prereq., CVEN 5708 or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5758 (3) Flow Processes in Soils

Examines fundamental principles of flow through porous media and related engineering problems. Topics include the saturated seepage theory and flow nets; the unsaturated flow theory; suction-saturation and saturation-hydraulic conductivity relationships; nonlinear finite strain consolidation and desiccation theory; laboratory and field testing methods for determining material characteristics; and numerical models for flow-related engineering problems. Prereq., CVEN 3718 or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5768 (3) Introduction to Rock Mechanics

Nature of rocks and rock masses; engineering properties of rock and rock mass; rock mass classifications; planes of weakness; application of rock mechanics to design of rock slopes, underground excavations, and foundations. Prereqs., CVEN 3708 and 3718, or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5788 (3) Computational Modeling in Geotechnical Engineering

Introduces computational modeling for geotechnical engineering applications such as the Discrete Element Method (DEM) for granular materials, nonlinear Finite Element Analysis (FEA) of seepage, coupled soil elastoplastic consolidation, elastoplasticity models for soil and rock, and advanced computational methods for failure in soil and rock. Uses DEM, FEA, and other software programs for analysis. Prereq., CVEN 5708, or instructor consent.

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College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5798 (3) Dynamics of Soils and Foundations

Examines the behavior of soils and foundations subjected to self-excited vibrations and earthquake ground motions. Looks at principles of wave propagation in geologic media; in situ and laboratory determination of engineering properties for dynamic analysis; and applications of these principles and properties in design and analysis of foundations and earth structures subjected to dynamic loading. Prereq., CVEN 5708 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5818 (3) Geotechnical Earthquake Engineering

Familiarizes students with the fundamentals of engineering seismology, soil and structural dynamics, and the modern practice of geotechnical earthquake engineering. Focuses on describing earthquake hazards and methods for seismic analysis and design. Recommended prereq., CVEN 5798. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-5822 (3) Geographical Information Systems for Civil and Environmental Systems

Same as CVEN 4822.

College of Engineering & Applied Science | Civil Engineering | Surveying and Transportation

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## CVEN-5830 (3) Special Topics for Seniors/Grads

Prereq., instructor consent. May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Building Systems

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## CVEN-5834 (1-3) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-5835 (3) Special Topics for Seniors/Grads

Supervised study of special topics of interest to students under instructor guidance. Prereq., instructor consent.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-5836 (1-3) Special Topics for Seniors/Grads

Supervised study of special topics of interest to students under instructor guidance. May be repeated up to 6 total credit hours. Prereq., Instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Construction

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## CVEN-5837 (3) Special Topics for Seniors/Grads

Supervised study of special topics of interest to students under instructor guidance. Prereq., instructor consent.

College of Engineering & Applied Science | Civil Engineering | Miscellaneous

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## CVEN-5849 (1-3) Independent Study

Available only through approval of graduate advisor. Subject arranged to fit needs of student. May be repeated up to 6 total credit hours.

College of Engineering & Applied Science | Civil Engineering | Special Topics

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## CVEN-5919 (3) Sustainable Community Development 1

Focuses on the fundamental tools necessary to address sustainable community development projects in low-income communities (LICs). Topics include: human development, sustainable development, and presentation of an integrative and participatory framework for development projects in LICs. The framework consists of a combination of development and engineering project management tools. Framework is illustrated through case studies and student-driven team projects. Restricted to senior or graduate students. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Special Topics

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## CVEN-5929 (3) Sustainable Community Development 2

Covers the principles, practices and strategies of appropriate technology as part of an integrated and systems approach to community-based development. Course content areas include technical issues in development, environmental health and communicable disease, appropriate and sustainable technologies with hands-on workshops, and global cooperation in development. Prereq., CVEN 5919. Restricted to seniors and graduate students.

College of Engineering & Applied Science | Civil Engineering | Special Topics

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## CVEN-5939 (3) Sustainable Community Development Field Practicum

Provides a supervised in-field practicum experience in which the student applies theories and concepts learned in Sustainable Community Development I and II (CVEN 5919 and 5929). Prereqs., CVEN 5919 and 5929 or instructor consent. Restricted to students with EDC sub-plan. Prerequisites: Restricted to students with EDC Sub-Plan.

College of Engineering & Applied Science Civil Engineering Miscellaneous

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## CVEN-6161 (3) Advanced Mechanics of Materials 2

Fundamentals of continuum mechanics, finite deformations, Lagrangian finite strains, Cauchy and Piola Kirchoff stress tensors, plasticity and thermo-elasticity, elements of damage mechanics, elements of fracture mechanics, rheological and viscoelastic theories, and modern experimental techniques. Recommended prereq., CVEN 5161.

College of Engineering & Applied Science Civil Engineering Mechanics

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## CVEN-6323 (3) Urban Stormwater Infrastructure Systems

Evaluation and design of more sustainable urban stormwater infrastructure systems including street inlets, on-line and off-line surface storage and infiltration systems. Integrated design for major, minor, and micro storms to provide flood control and drainage as well as control of pollution from stormwater runoff. Simulation and optimization models will be used.

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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## CVEN-6333 (3) Introduction to Multi-Scale Variability and Scaling in Hydrology

Provides a foundational physical understanding of channel networks, runoff, precipitation, and evapotranspiration at multiple spatial scales of drainage basins using modern analytical concepts for understanding non-linear phenomena, e.g., fractals, multifractals, statistical scaling, criticality, and renormalization. Prereq., CVEN 3313, 5333, 5454, and an upper-division course in probability, or equivalents.

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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## CVEN-6383 (3) Flow and Transport through Porous Media

Studies basic physics of flow and transport of water, air, and other fluid mixtures through a porous medium. Course topics are relevant to applications in contaminant hydrology, contaminant transport in aquifers, hazardous waste management, geohydrology, soil physics, and geoenvironmental engineering.

College of Engineering & Applied Science Civil Engineering Fluid Mechanics & Water Resour

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# Courses

Search by College, Department & Category

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Search by Course Number

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CVEN

## CVEN-6393 (1) Hydrologic Sciences and Water Resources Engineering Seminar

Provides a broad introduction to a variety of research topics from hydrologic sciences and water resources engineering. Offered as a one-hour weekly seminar by the departmental water faculty, graduate students, and external speakers. Restricted to graduate students in engineering. Prerequisites: Restricted to graduate student Civil Engineering (CVEN) students only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Fluid Mechanics & Water Resour](#)

## CVEN-6404 (3) Advanced Aquatic Chemistry

Examines aquatic equilibria, corrosion, colloid and polymer chemistry, behavior of natural organic matter in engineered systems, and application of personal computers to model aquatic equilibria. Requires a term project. Prereq., CVEN 5402. Offered in the spring every other year. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Environmental](#)

## CVEN-6414 (3) Aquatic Surfaces and Particles

Examines the role of surfaces and particles in the fate and transport of contaminants in the aquatic environment. Emphasizes modeling of absorption, dissolution, precipitation, surface-catalyzed reactions, and coagulation and filtration kinetics. Prereqs., CVEN 5404 or GEOL 5280.

[College of Engineering & Applied Science](#) [Civil Engineering](#) [Environmental](#)

## CVEN-6511 (3) Nonlinear Finite Element Analysis of Solids and Porous

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## Media

Explores fundamental principles of thermodynamics, including first and second law of thermodynamics, thermophysical properties, power and refrigeration cycles, gas mixtures and psychrometrics. Prereq., PHYS 1110. coreq., APPM1360.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-6525 (3) Nonlinear Analysis of Framed Structures

Motivated by Performance Based Engineering, this course provides students with the proper theoretical underpinnings of nonlinear static and dynamic analysis of framed structures along with, exposure to the corresponding programming techniques in Matlab. First part covers traditional topics related to plasticity; second part focuses on the finite element formulation ( with emphasis on flexibility based ones) for geometric and Material nonlinearities; nonlinear pushover and transient analysis of frame structures. Prereq., CVEN 4525/5525 or equivalent; proficiency in Matlab.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-6595 (3) Earthquake Engineering

Analyzes and designs structures for earthquake loadings. Gives attention to earthquake ground motions, attenuation laws, and seismic hazard analysis. Also involves numerical methods for time-domain and frequency-domain analysis, response of linear and nonlinear structures, elastic and inelastic response spectra, construction of design spectra, soil-structure interaction analysis, and seismic design methods and building code requirements. Prereq., CVEN 5111 or equivalent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-6834 (1-3) Special Topics

College of Engineering & Applied Science | Civil Engineering | Environmental

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## CVEN-6940 (1) Master's Degree Candidate

College of Engineering & Applied Science | Civil Engineering | Building Systems

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## CVEN-7111 (3) Advanced Structural Dynamics

Includes general vibrations of civil engineering structures and their response to various types of time-dependent loads. Prereq., CVEN 5111.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-7141 (3) Plates and Shells

Teaches mathematical theories of plate and shell structures and their applications. Involves numerical finite element solutions of plates and shells of various shapes under static and dynamic loadings. Prereq., CVEN 5121 or 7131.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-7161 (3) Fracture Mechanics

This course has three parts. The first covers fundamentals through rigorous mathematical formulations of linear and nonlinear elastic fracture mechanics. The second focuses on materials: theoretical strength, metals, granular materials, polymers, and steel. The third covers numerical (finite element) methods in fracture mechanics. Heavy emphasis is placed on project and independent work. Prereq., CVEN 5121.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-7206 (1) CEM PhD Seminar

Examines emerging research in construction engineering and management. Students will consider and comment on research methods and designs based on their own work and that of CU faculty and other leading researchers. Aims to make CEM Ph.D students better researchers and evaluators of research methods and processes.

College of Engineering & Applied Science | Civil Engineering | Construction

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## CVEN-7511 (3) Computational Mechanics of Solids and Structures

Looks at finite element methodology for geometric and material nonlinearities. Involves incremental formulations and iterative solution strategies for truly finite increments and quasistatic and dynamic applications to large deformation and inelastic problems. Prereqs., CVEN 5511 or 6525.

College of Engineering & Applied Science | Civil Engineering | Mechanics

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## CVEN-7545 (3) Structural Optimization

Studies fundamental propositions for the design of skeletal structures, automatic design of optimal structures, life-cycle cost design of deteriorating structures, problem-oriented computer languages, and linear and nonlinear programming methods for structural design. Prereq., CVEN 4525 or equivalent.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-7565 (3) Inelastic Theory of Structures

Examines inelastic behavior of materials, including calculation of ultimate capacity of perfectly plastic structures by use of upper- and lower-bound theorems. Looks at theories of inelastic action as applied to structural design in steel and concrete and elements of theory of plasticity with applications in ultimate analysis of plates, shells, and continuous bodies. Prereq., CVEN 3505.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-7595 (3) Earthquake Engineering

Analysis and design of structures for earthquake loadings. Earthquake ground motions, attenuation laws, and seismic hazard analysis. Numerical methods for time-domain and frequency-domain analysis response of linear and nonlinear structures. Elastic and inelastic response spectra, and construction of design spectra. Soil-structure interaction analysis. Seismic design methods and building code requirements. Prereq., CVEN 5111 or equivalent.

College of Engineering & Applied Science | Civil Engineering | Structures

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## CVEN-7718 (3) Engineering Properties of Soils

Considers constitutive behavior of cohesive and cohesionless soils including stress-strain, strength, pore water pressure, and volume change behavior under drained and undrained loading conditions. Also includes linear and nonlinear analysis techniques and determination of constitutive properties in the laboratory. Prereq., CVEN 5708 or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-7788 (3) Soil Behavior

Topics include soil mineralogy, formation of soils through sedimentary processes and weathering, determination of soil composition, soil water, colloidal phenomena in soils, fabric property relationships, analysis of mechanical behavior including compressibility, strength and deformation, and conduction phenomena in terms of physicochemical principles. Involves applications for stabilization and improvement of soils, and disposal of waste materials. Prereq., CVEN 3718 or instructor consent.

College of Engineering & Applied Science | Civil Engineering | Geotechnical

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## CVEN-8990 (1-10) Doctoral Thesis

A minimum of 30 credit hours is required.

College of Engineering & Applied Science | Civil Engineering | Building Systems

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# Courses

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CWCV

## CWCV-2000 (3) The Western Tradition

Encourages a historical and critical investigation into the formative influences on what is often called Western culture, including religious, political, social and economic factors, and contemporary interpretations and critiques of these developments and concepts. Designed as the foundation course for the Center for Western Civilization. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#)

[Arts & Sciences Special Courses](#)

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# Courses

Search by College, Department & Category

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DNCE

## DNCE-1000 (2) Beginning Technique

Introduces basic concepts and skills of various contemporary dance forms, such as Afro-modern, Release Technique, Limon-based modern, etc. Classwork develops muscle strength, flexibility, coordination, rhythm, and dynamic and spatial awareness. Lectures focus on various aspects of dance including history, composition, anatomy and criticism. Limited amount of written work is required. May be repeated up to 4 credit hours.

[College of Arts & Sciences](#) [Theater & Dance](#) [Nonmajor Technique](#)

## DNCE-1012 (2) Dance Production 1

Provides the dancer with an introduction to the types of performance venues available today, and their technical systems and equipment. It will also establish an awareness of how technical theatre design arts may be utilized by a choreographer. Restricted to dance majors. Credit not granted for this course and DNCE 2012. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Production](#)

## DNCE-1013 (2) Dance Improvisation

An opportunity for students to develop skills of dance improvisation through the exploration of structured movement problems. Students study selected contemporary dance artists whose work stresses improvisation in performance and/or as a training vehicle. Restricted to dance majors. Formerly DNCE 2013. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Creative Process](#)

## DNCE-1017 (3) Dance and Popular Culture

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Explores and contextualizes contemporary popular culture and dance. Introduces methods of critical analysis that reveal the rich heritage hidden within and around the dances students commonly encounter at the club, on the street, on television, on the big screen and elsewhere in everyday life. Through watching, reading, and discussion, students discover new meaning in their lived cultural experience. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-1020 (1) Beginning Modern Dance with Experience

Studio course that continues the work from the beginning level on basic concepts and skills in modern dance technique to increase strength, flexibility, and coordination. May be repeated up to 2 total credit hours. Prereq., DNCE 1000.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1027 (3) Introduction to Dance and Culture

Explores dance's relationship to broad cultural realities such as food getting, sexuality, rites of passage, work, and religion. Topics are explored by looking at several different cultural groups and how their dance functions in relation to the specific topic. (For example, dance as a function of religion could be studied through explorations into Afro-Cuban orisha dances, Bharata Natyam, and Hopi Ghost dancing.) Formerly DNCE 1029. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-1091 (1) Modern 1

Introduces basic skills of modern dance. In-class technique work increases muscle strength, flexibility, and coordination. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-1100 (1) Beginning Ballet

Ballet for beginners; no previous experience required. Stretching, basic barre, simple terre a terre, and jumping steps are learned, as well as alignment and basic extended positions such as arabesque and attitude. Mastery of simple enchainements and rhythmic patterns. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1120 (1) Beginning Ballet with Experience

Extension of beginning ballet, when basic concepts of ballet have been mastered. Enchainements are of greater complication and variety. Dance vocabulary is more extensive. Pirouettes and more complex musical phrases are expected. May be repeated up to 2 total credit hours. Prereq., DNCE 1100.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1190 (1) Ballet 1

Beginning ballet covering the basic vocabulary of classical ballet technique. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1200 (1) Beginning Jazz Dance

Introduces various styles of movement unique to jazz dance. Students learn fundamental technical dance skills as well as specific jazz vocabulary. Designed for students with little or no dance experience. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1220 (1) Beginning Jazz with Experience

Further develops work begun in Beginning Jazz. Exercises and jazz dance phrases are more complex. May be repeated up to 2 total credit hours. Prereq., DNCE 1200.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1290 (1) Jazz 1

Introduces jazz dance, consisting of a technique warm-up, locomotion across the floor, and a series of dance phrases developed into a short dance combination. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-1849 (1-3) Independent Study

Involves creative or scholarly investigation of an area of interest to the student not addressed in the curriculum. Work must be arranged with and advised by a faculty member. Freshman level course. May be repeated up to 7 total credit hours. Same as DNCE 2849, 3849, 4849, 5849.

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College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-1901 (1-3) Technique Practicum

Offers special courses in the technique series. Includes world dance and/or social dance forms. May be repeated up to 6 total credit hours.

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College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-1908 (1) Performance Practicum

Students learn and perform a dance choreographed by a faculty member or graduate student for an informal and/or formal presentation. May be repeated up to 3 total credit hours. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

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College of Arts & Sciences Theater & Dance Performance

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## DNCE-2005 (3) Movement Awareness and Injury Prevention for the Dancer

Helps dancers understand the prevention and care of common injuries associated with their art. Through various somatic methods, techniques, anatomy, and kinesiology, students learn to reduce tension, improve body usage, and enhance their performance. Prereqs., DNCE 2021, 3041, or 4061. Restricted to dance majors. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

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College of Arts & Sciences Theater & Dance Movement Analysis

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## DNCE-2014 (2) Rhythmic Analysis and Accompaniment

Emphasizes elements of rhythm in relation to dance. Experiences with rhythmic drills, rhythmic notation, and percussion accompaniment for the modern dance class comprise the body of the course. Prereqs., DNCE 2021, 3041, or 4061. Restricted to dance majors. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

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College of Arts & Sciences Theater & Dance Music

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## DNCE-2021 (2) Major Technique

Enrollment by audition only. May be repeated up to 16 total credit hours.

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College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-2033 (3) Beginning Composition

Introduces the basic elements of dance composition through compositional studies evolved from readings, discussion, and improvisation.

Prereq., DNCE 1013 and DNCE 2021, 3041, or 4061. Restricted to dance majors. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-2091 (1) Modern 2

Continuation of Modern 1. a developmental sequence of modern dance technique designed to refine the technical/expressive skills required of the professional dancer. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-2098 (1) Performance/Repertory

Students learn and perform dances from the repertory of guest artists. Offered summers only. May be repeated up to 3 total credit hours.

College of Arts & Sciences Theater & Dance Performance

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## DNCE-2101 (1) Pointe

Addresses the basic training for the art of dancing "Sur les pointes." Students will learn how to prepare technically, how to take care of the foot and ankle, and will be encouraged to address their personal alignment issues. An historical survey of the development of the pointe technique from the Romantic Age to the present will be discussed and students will be encouraged to attend local ballet performances and/or watch videos of works of both classical and contemporary ballets. May be repeated up to 4 total credit hours. Recommended prereqs., DNCE 3161 or DNCE 4181.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-2141 (1) Low Intermediate Ballet

All basic ballet steps should have been mastered, including pirouettes en d'hors and en dedans, knowledge of the principles and placement, and the ability to master simple enchainements. May be repeated up to 2 total credit hours. Prereq., DNCE 1120.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-2191 (1) Ballet 2

Intermediate ballet, covering the complete vocabulary of classical ballet technique. Enchainements are of complex structure. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.



# Courses

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**Subject**    **Number**

DNCE

## DNCE-2290 (1) Jazz 2

Continuation of Jazz 1. Studies coordination, rhythm, style, and advanced body part isolation in depth. Offered summers only at Perry-Mansfield Performing Arts Camp. May be repeated up to 2 total credit hours.

[College of Arts & Sciences](#) [Theater & Dance](#) [Nonmajor Technique](#)

## DNCE-2501 (2) African Dance

Explores the technique, style, and rhythms of various African, Caribbean, and dance forms of the Americas. Music, history, anthropology, and folklore help to enhance the dance and provide a cultural experience. May be repeated up to 6 total credit hours within a term. Same as ETHN 2502.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

## DNCE-2701 (2) Contact Improvisation 1

Contact Improvisation is the practice of spontaneously generating movement guided by moment-to-moment physical contact and sharing of weight between two or more dancers. Fundamental skills of contact improvisation will be introduced; rolling, falling, giving and taking weight, use of momentum, and gravity. Skills are developed in both duets and larger groups. Similar to DNCE 4013.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

## DNCE-2849 (1-3) Independent Study

Same as DNCE 1849, at the sophomore level.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-2901 (1-3) Technique Practicum 2

Offers second level classes in the world dance forms technique series. Topics or forms of dance include world dance forms and/or social dance forms. May be repeated up to 6 total credit hours. Credit not granted for this course and DNCE 1901 or DNCE 3901.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-2909 (1-4) Special Topics

Explores topics and research in relation to areas such as technology, environment, teaching methods, performance, world dance, arts in society, and/or criticism that the normal sequence of offerings may not allow. May be repeated up to 7 total credit hours. Same as DNCE 4909 and 5909 at the sophomore level.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-3024 (2) Musical Resources for Dance

Surveys basic musical notation and terminology, elements and forms of music, and historical styles, supported by guided listening to representative works within western musical tradition. Special emphasis on 20th century techniques and on the relationship of various music to dance. Prereq., DNCE 2014. Restricted to dance majors. Prerequisites: Restricted to Dance (DBFA) majors only.

College of Arts & Sciences Theater & Dance Music

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## DNCE-3040 (2) Intermediate/Advanced Modern Dance

See DNCE 1020. More in-depth study of modern dance concepts. Class technique work more advanced. May be repeated up to 4 total credit hours. Prereq., DNCE 1000 or 1020. Formerly DNCE 2040.

College of Arts & Sciences Theater & Dance Nonmajor Technique

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## DNCE-3041 (2) Major Technique

Designed for dance majors. Enrollment by audition only. May be repeated up to 16 total credit hours.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3043 (3) Intermediate Dance Composition

Opportunity for students to increase knowledge and understanding of dance composition elements as they relate to group forms, theme, development, and phrase manipulation. Prereqs., DNCE 2033 and DNCE 2021, 3041 or 4061. Restricted to dance majors. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-3101 (1-3) Ballet Practicum

Practical studio training in ballet at the advanced/professional level with a professional company. May be repeated up to 4 total credit hours. Prereq., DNCE 2141, 3161, or 4181. Designed for dance majors. Enrollment by audition only.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3161 (1) Intermediate Ballet

Covers the general vocabulary of classical ballet technique and enchainements of medium complexity. Multiple pirouettes in all positions are required. Audition required. May be repeated up to 8 total credit hours.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3241 (1) Intermediate Jazz

Designed for the experienced jazz dancer. Includes dance techniques that further improve alignment, strength, flexibility, and coordination within the jazz idiom. Greater emphasis on style and rhythm and challenging dance combinations. May be repeated up to 2 total credit hours. Prereqs., DNCE 1200 and 1220. Formerly DNCE 2241.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3601 (2) Alexander Technique for Actors and Dancers

The Alexander Technique is a method for changing habits that impede the performance of movement and speech. Through class discussions, movement exploration, and individualized hands-on lessons, actors and dancers gain understanding of the technique and its benefits to performance. Restricted to theatre and dance majors. Prerequisites: Restricted to Dance (DNCE or DBFA) or Theatre (THTR or TBFA) majors only.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3801 (2) Major Technique: Multiple Accompanists

Designed for dance majors. Encompasses range of dance forms that require multiple accompanists. Enrollment by audition only. May be repeated up to 16 total credit hours.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-3849 (1-3) Independent Study

Same as DNCE 1849, at the junior level.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-3901 (1-3) Technique Practicum

Offers special courses in the technique series. Topics or forms of dance will include world dance forms and/or social dance forms. May be repeated up to 6 total credit hours. Instructor consent required. Credit not granted for this course and DNCE 1901 or DNCE 2901.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-4012 (1) Concert Production

Provides practical experience in producing formal and informal dance concerts. Introduces basic familiarity with production and promotional responsibilities, backstage and front-of-house duties and procedures. Prereq., DNCE 1012 or equivalent. Restricted to DNCE and DBFA majors. Same as DNCE 5012. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-4015 (3) Movement Analysis

Introduces Rudolf Laban's theories of movement and exposes several body therapies to heighten students' awareness of movement as a multifaceted (neuromuscular/spatial/dynamic) event. Emphasizes refinement of movement, observation skills, and improvement of performance. Prereq., DNCE 2005. Restricted to dance majors. Same as DNCE 5015.

College of Arts & Sciences Theater & Dance Movement Analysis

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## DNCE-4016 (3) Creative Dance for Children

Methods course for prospective teachers of creative dance for children. Lectures, readings, and laboratory experiences are followed by observation and teaching in primary grades. Prereqs., DNCE 1013 and 2033. Restricted to dance majors. Same as DNCE 5016. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

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College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-4017 (3) History and Philosophy of Dance

Follows the specific history and narrative of some dance forms (including African, Ballet, Flamenco, Hip Hop, Jazz, and Modern) and traces their development over time. Gives attention to the effect of social, political, economic, and environmental conditions as well as the influence of other dance forms and the impact of specific dance artists and teachers. Restricted to juniors and seniors. Same as DNCE 5017. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-4023 (2) Performance Improvisation Techniques

Explores movement and vocal improvisational techniques to enhance creative and performance skills. Helps individuals discover and make accessible the diversity of the human instrument and develops practical tools to broaden expressive range. Same as DNCE 5023. Formerly DNCE 4018.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-4036 (3) Methods of Teaching Dance

Practical experience in teaching modern dance to the young adult follows theoretical grounding in specific teaching methods. Examines values and goals of dance in education and fundamental movement principles as related to the teaching of technique and improvisation. Prereqs., DNCE 1013 and 2033. Restricted to dance majors. Same as DNCE 5036. Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-4037 (3) Looking at Dance

Focuses on the development of perceptual, descriptive, and analytical skills as well as the ability to apply cultural and critical theory to 20th and 21st century concert dance. Specific pieces of choreography are looked at from a broad range of perspectives. Formerly DNCE 3027. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-4038 (1-3) Dance Repertory

Learning and performing dances from the repertory of current faculty members, artists-in-residence, and upon occasion from the repertory of historic modern dancers. Dance majors may repeat up to 9 total credit hours with different instructors. Enrollment by audition only. Same as DNCE 5038.



## Courses

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DNCE

### DNCE-4053 (3) Advanced Dance Composition

In-depth approach to composition emphasizing personal invention, solo and group forms; styles based on historical art forms; exploration of the evaluative process. Prereqs., DNCE 3043 and DNCE 2021, 3041, or 4061. Restricted to dance majors. Same as DNCE 5053.

Prerequisites: Restricted to Dance (DNCE or DBFA) majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Creative Process](#)

### DNCE-4061 (2) Major Technique

Designed for dance majors. Enrollment by audition only. May be repeated up to 16 total credit hours.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

### DNCE-4128 (1) Pointe and Variation

For the more advanced classical ballet student. Entails working on pointe and learning dances from Classical, Romantic, and Neo-Classical ballets. Enrollment by audition only. May be repeated up to 2 total credit hours. Same as DNCE 5128.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

### DNCE-4181 (1) Advanced Ballet

Advanced professional-level classical ballet, covering the complete vocabulary. Enchainements are of complex structure. Audition is required. May be repeated up to 8 total credit hours.

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College of Arts & Sciences	Theater & Dance	Major Technique
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## DNCE-4261 (1) Advanced Jazz Dance Technique

Opportunity for advanced dancers who want to expand their technical skills in the jazz form. Each class includes a standing warm up, floor work for strength and flexibility, adagio combination for line and balance, and a locomotor combination for turns, leaps, rhythm, and fast footwork. Emphasis is placed on technique, musicality, style, and performance. May be repeated up to 4 total credit hours. Same as DNCE 5261.

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College of Arts & Sciences	Theater & Dance	Major Technique
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## DNCE-4701 (2) Contact Improvisation 2

Build upon skills introduced in Beginning Contact Improvisation as we explore the creative possibilities of interacting with the weight of a partner. Emphasis will be placed upon ease and efficiency in partnering, and integrating this work into choreography and performance. Prereq., DNCE 2701. Same as DNCE 5701.

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College of Arts & Sciences	Theater & Dance	Major Technique
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## DNCE-4849 (1-3) Independent Study

Same as DNCE 1849, at the senior level.

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College of Arts & Sciences	Theater & Dance	Independent Study
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## DNCE-4909 (1-4) Special Topics

Same as DNCE 2909 and 5909.

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College of Arts & Sciences	Theater & Dance	Independent Study
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## DNCE-4919 (1-3) Dance Practicum

Project in dance under supervision of senior faculty. May be repeated up to 6 total credit hours. Same as DNCE 5919.

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College of Arts & Sciences	Theater & Dance	Independent Study
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## DNCE-4939 (1-3) Dance Internship

Provides an opportunity for upper-division dance majors to serve apprenticeships in the community in work areas related to their major interests and career goals. Internships are available in areas such as arts administration, dance therapy, and technical production. Prereqs., 30 credit hours in dance.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-5001 (2) Graduate Technique

Open only to graduate dance majors. May be repeated up to 12 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-5012 (1) Concert Production

Same as DNCE 4012.

College of Arts & Sciences Theater & Dance Production

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## DNCE-5015 (3) Movement Analysis

Restricted to graduate students. Same as DNCE 4015. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Movement Analysis

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## DNCE-5016 (3) Creative Dance for Children

Restricted to graduate students. Same as DNCE 4016 with addition of readings and a paper. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-5017 (3) History and Philosophy of Dance

Restricted to graduate students. Same as DNCE 4017 with addition of graduate papers and/or a project. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-5023 (2) Performance Improvisation Techniques

Restricted to graduate students. Same as DNCE 4023 with the addition of written analysis and creative assignments. Formerly DNCE 5018. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-5036 (3) Methods of Teaching Dance

Restricted to graduate students in dance. Same as DNCE 4036 with addition of readings and a paper. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-5038 (1-3) Dance Repertory

Same as DNCE 4038 except graduate students are required to keep a log of the learning process involved in repertory to document and analyze each work in terms of stylistic differences, musical/sound accompaniment and trends. Dance majors may repeat up to 9 total credit hours with different instructors. Enrollment by audition only. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Performance

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## DNCE-5048 (1-4) Touring Dance Ensemble

May be repeated up to 8 total credit hours. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Performance

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## DNCE-5052 (1-3) Studio Concert

Restricted to dance majors with 87 credit hours or more. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Production

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## DNCE-5053 (3) Advanced Dance Composition

Same as DNCE 4053. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-5056 (2) Graduate Teaching Seminar

Examines practical and philosophical issues in dance education. The goals and content of professional and recreational dance training

are considered and strategies for effective teaching practice are discussed. Opportunity for practical application of theoretical material is provided. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Pedagogy](#)

## DNCE-5064 (3) Music and Dance Seminar: Collaboration

Investigates selected aspects of rhythm, accompaniment, and musical resources for dance and applications to performance, choreography, and teaching. Topics may include movement analysis and rhythmic clarity, self-accompaniment, working with accompanist/composers, relationship of music to dance, and survey of 20th century compositional techniques. Prereq., dance/music experience, or instructor consent. Restricted to graduate students in dance. Prerequisites: Restricted to Dance graduate students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Music](#)

## DNCE-5101 (1) Intermediate Graduate Ballet

Open only to graduate dance majors. May be repeated up to 6 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

## DNCE-5128 (1) Pointe and Variation

By audition only. Students should have previous experience. Restricted to graduate students. May be repeated up to 2 total credit hours. Same as DNCE 4128.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

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## Courses

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DNCE

### DNCE-5261 (1) Advanced Jazz Dance Technique

Same as DNCE 4261. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

### DNCE-5601 (2) Alexander Technique for Graduate Students

Learn the principles of the Alexander Technique through class discussions, movement exploration, and individualized hands-on-lessons. Discover how to improve their overall functioning and learn to apply the technique to performance and teaching. Prerequisites: Restricted to Dance (DNCE-MFA) or Theatre (THTR or TBFA) graduate students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

### DNCE-5701 (2) Contact Improvisation 2

Same as DNCE 4701.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

### DNCE-5801 (2) Grad Technque: Multiple Accompanists

Open only to graduate dance majors. Encompasses range of dance forms that require multiple accompanists. May be repeated up to 12 total units. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Major Technique](#)

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## DNCE-5849 (1-3) Independent Study

Same as DNCE 1849 and DNCE 6849, at the graduate level.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-5901 (1-3) Graduate Technique Practicum

Offers special topics and styles in the graduate technique curriculum. Rotating foci include a variety of traditional dance forms from around the world as well as vernacular, recreational, and social dance phenomena indigenous to the U.S. Course meets simultaneously with an undergraduate studio course, and includes both the practical movement experience and scholarly study of specially-chosen issues in dance. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-5909 (1-4) Special Topics

Same as DNCE 2909 and 4909. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-5919 (1-3) Dance Practicum

Project in dance under supervision of senior faculty. May be repeated up to 6 total credit hours. Same as DNCE 4919. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-6009 (1) Research Strategies and Techniques

Restricted to graduate students. Same as THTR 6009. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Independent Study

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## DNCE-6016 (2) Teaching Lab: Modern Dance

Provides opportunity to apply principles and skills introduced in DNCE 5036. Participating students share the responsibility for teaching a lab class that meets twice a week. Focuses on analysis and evaluation of teaching skills. Restricted to graduate students.

College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-6017 (3) Readings in Dance

Surveys dance literature including an opportunity for graduate students to familiarize themselves with resources, current publications, theoretical materials, and professional organizations in dance. Restricted to graduate students in dance. Formerly DNCE 6019.

Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-6047 (3) Seminar: Dance

Intensive study of selected topics related to the art of dance, dance criticism, dance aesthetics, and dance in relationship to historical, social, and cultural environments with an emphasis on contemporary American forms and their roots. Restricted to graduate students in dance.

College of Arts & Sciences Theater & Dance Dance and Cultural Studies

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## DNCE-6056 (2) Professional Development

Examines current trends, issues, and problems of dance at colleges, in secondary education, in the community, and in professional dance. Explores curriculum development and educational dance trends along with other topics such as freelance work, grant writing, and dance advocacy. Restricted to graduate students in dance. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Pedagogy

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## DNCE-6073 (3) Choreography

Covers in-depth practical and theoretical approaches to dance composition for graduate students; solo and group forms; and analysis of historical and contemporary dance works. May be repeated up to 6 total credit hours with different instructors. Restricted to graduate students in dance.

College of Arts & Sciences Theater & Dance Creative Process

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## DNCE-6101 (1) Advanced Graduate Ballet

Open only to graduate dance majors. May be repeated up to 6 total credit hours. Restricted to graduate students.

College of Arts & Sciences Theater & Dance Major Technique

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## DNCE-6849 (1-3) Independent Study

Involves creative or scholarly investigation of an area of interest to the student not addressed in the curriculum. Work must be arranged

with and advised by a faculty member. Graduate level course. Same as DNCE 5849.

College of Arts & Sciences Theater & Dance Independent Study

## DNCE-6919 (1-3) Directed Studies

Explores advanced topics in dance not regularly covered in the curriculum of the graduate program. May be repeated up to 6 total credit hours. Restricted to graduate students.

College of Arts & Sciences Theater & Dance Independent Study

## DNCE-6949 (1) Candidate for Degree

Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Independent Study

## DNCE-6959 (1-6) Master's Thesis

Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Independent Study

## DNCE-6969 (3-6) The Graduate Project

Provides the opportunity for synthesizing the graduate experience through the execution of a project related to the student's major area of interest. Project must be approved by the graduate faculty advisor. Prerequisites: Restricted to Dance graduate students only.

College of Arts & Sciences Theater & Dance Independent Study

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

EALC

## EALC-4911 (3) Practicum in Asian Languages 1

Introduces elementary or intermediate East Asian language, culture, and language pedagogy. Prereq., department approval.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

## EALC-4912 (3) Practicum in Asian Languages 2

Introduces elementary or intermediate East Asian language, culture, and language pedagogy. Prereq., department approval.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

## EALC-4913 (3) Practicum in Asian Languages 3

Introduces elementary or intermediate East Asian language, culture, and language pedagogy. Prereq., department approval.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

## EALC-4914 (3) Practicum in Asian Languages 4

Introduces elementary or intermediate East Asian language, culture, and language pedagogy. Prereq., department approval.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

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## EALC-4930 (1-6) Internship

Selected students are matched with supervised internships in business, public and private service organizations, and educational institutions. Internships focus on opportunities to apply language and cultural skills. Students meet regularly with instructor and supervisor, keep a journal, and submit a final paper. May be repeated up to 6 total credit hours. Prereq., JPNS 2120 or CHIN 2120. Recommended prereq., JPNS 3120 or CHIN 3120.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**    **Number**

EBIO

## EBIO-1030 (3) Biology: A Human Approach 1

Lect. Studies the principles of biology and their implications. Central theme is humans and the environment, emphasizing ecology, natural resource conservation, and the interrelatedness of a growing human population. Recommended for nonscience majors. Meets Maps requirement for natural science: non-lab. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-1040 (3) Biology: A Human Approach 2

Lect. Continues EBIO 1030, focusing on the function of the human body, and maintenance of dynamic equilibrium in the internal environment in the face of a continually changing external environment. Discusses factors influencing these homeostatic conditions and how and why they change. Recommended for nonscience majors. Prereq., EBIO 1030. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-1050 (1) Biology: A Human Approach Laboratory

One two-hour lab per week. Provides experiments and exercises relating to concepts presented in EBIO 1030 and 1040. Biology: a Human Approach 1 and 2. This course uses animals and/or animal tissues. Recommended for nonscience majors. When taken with EBIO 1030, meets Maps requirement for natural science: lab. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

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## EBIO-1210 (3) General Biology 1

Lect. Provides a concentrated introduction to molecular, cellular, genetic, and evolutionary biology. Emphasizes fundamental principles, concepts, facts, and questions. Intended for science majors. Credit not granted for this course and EPOB 2060,2660 or KAPH 2060. Meets Maps requirement for natural science. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1220 (3) General Biology 2

Provides a concentrated introduction to organisms, homeostasis, development, behavior, and ecology. Emphasizes fundamental principles, concepts, facts, and questions. Intended for science majors. Prereq., EBIO 1210 or equivalent. Credit not granted for this course and EPOB 2050 or 2650. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1230 (1) General Biology Laboratory 1

One 3-hour lab per week. Consists of experiments and exercises to provide an extension of basic concepts and scientific approaches presented in General Biology 1. Intended for science majors. Prereq. or coreq., EBIO 1210. Credit not granted for this course and EPOB 2060, 2660 or KAPH 2060. Meets Maps requirement for natural science. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1240 (1) General Biology Laboratory 2

One 3-hour lab per week. Consists of experiments and exercises to provide an extension of basic concepts and scientific approaches presented in General Biology 2. Intended for science majors. Prereq. or coreq., EBIO 1220 or equivalent. Credit not granted for this course and EPOB 2050 or 2650. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1300 (1-3) Topics in Biological Sciences

Covers special topics in biology for freshmen or nonmajors. Introduces scientific methods and principles in biology, as well as issues of current interest in biology. Does not count toward the major in EBIO.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1840 (1-6) Independent Study (Freshman)

May be repeated up to 6 total credit hours.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-1950 (3) Introduction to Scientific and Academic Writing

Introduces students to academic writing and the associated discipline-specific conventions, styles, and qualities that are part of this type of writing. Classes lead students to think rhetorically, to understand the process of composing written text, to employ a variety of writing strategies, to conduct research, and to interpret, critique, summarize, and paraphrase scholarly texts. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2010 (1-3) Environmental Issues and Biology

Lect. Describes how the natural environment is currently stressed by a variety of human actions. Examines the nature of these environmental problems and their impact on living organisms, both human and nonhuman species.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2040 (4) Principles of Ecology

Lect. and lab. Introduces principles of ecology, emphasizing patterns and processes at various levels of biological organization. Scope global, but examples often from local environment. Laboratory emphasizes techniques of field biology. Uses animals and/or animal tissues. Prereqs., EBIO 1030, 1040, and 1050, or EBIO 1210, 1220, 1230, and 1240. Credit not granted for this course and EPOB 2050 or EPOB 2650 or EPOB 3020 or EBIO 2640.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2070 (4) Genetics: Molecules to Populations

Lect. and rec. Covers principles of genetics and developmental biology at levels of molecules, cellular organelles, individuals, and populations; asexual and sexual life cycles; and heredity. Recitations allow discussion of genetics problems and implications of genetic principles, and provide demonstrations and simulations of genetic processes. Intended for sophomore majors in EBIO. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Credit not granted for this course and EBIO 2670.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2590 (3) Plants and Society

Acquaints students with the plants that are both essential and desirable to human survival, well-being, and quality of life. Topics include plants and world cultures, food plants, commercial products (beverages, extracts, herbs, and spices, etc.), cosmetics, textiles, wood products, medicinal plants, psychoactive plants, poisonous plants, plants used in horticulture and landscape architecture, wood products, musical instruments, etc.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2640 (5) Honors Principles of Ecology

Lect., lab, and rec. Introduces principles of ecology, emphasizing patterns and processes at various levels of biological organization. Scope global, but examples often from local environment. Lab emphasizes techniques of field biology. Uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240; or 1030, 1040, and 1050. Credit not granted for this course and EPOB 2050 or 2650 or 3020 or EBIO 2040.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-2840 (1-6) Independent Study (Sophomore)

May be repeated up to 6 total credit hours.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3010 (1-2) Teaching Biology

Provides an opportunity to assist in teaching of specific laboratory section in EBIO under direct faculty supervision. Students must make arrangements with the faculty member responsible for the course in which they plan to assist. May be repeated up to 4 total credit hours. Formerly EPOB 3010.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3040 (4) Conservation Biology

Applies principles of population ecology, population genetics, biogeography, animal behavior, and paleobiology to the maintenance of biodiversity and natural systems. The resulting theory is then applied to conservation policy and management techniques. Prereq., EBIO 2040 or 2640. Same as ENVS 3040.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3080 (4) Evolutionary Biology

Lect. and lab. Emphasizes the fundamental evolutionary concepts that provide explanations for the diversification of life on Earth. Specific topics include the evidence for evolution, adaptation by natural selection, speciation, systematics, molecular and genome evolution, and macroevolutionary patterns and processes. Recitations allow students to explore specific topics in more depth and smaller groups.

Prereq., EBIO 1210 and 1220 or equivalent. Credit not granted for this course and EBIO 3680 or EPOB 2080 or 2680.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3110 (3) Population and Community Ecology

Presents principles of ecology that relate to the niche, population growth, metapopulations, population interactions (within and between trophic levels), community structure and development, landscape ecology and species diversity. Prereq., EBIO 2040 or 2640 or equivalent.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3170 (3-4) Arctic and Alpine Ecology

Lect. and field trips. Focuses on the biology of arctic and alpine environments, limiting physical factors (such as geomorphology and climatic history), and human interaction with cold-stressed environments, especially the arctic. Prereqs., EBIO 1210 and 1220, or EPOB 2050 and 2060.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3175 (1) Arctic and Alpine Ecology Lab

Examines alpine ecosystems and treeline relative to global change. Weekend (one-day) field trips into the Rocky Mountains, visits to Denver Museum of Nature and Science, and to CU herbarium/plant lab for experiential learning connected to EBIO 3170. Coreq., EBIO 3170. Formerly EPOB 3175. Pass/fail only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3180 (3) Global Ecology

Lect. Involves study of ecological principles and problems at the biosphere level. Presents a worldwide approach to populations, biotic resources, ecologic interactions, land use, deforestation, desertification, species extinctions, pollution, environmental quality, global change, and environmental ethics. Prereqs., EBIO 1210 and 1220 or equivalent. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3190 (3) Tropical Marine Ecology

Lect. Examines the biology and ecology of marine ecosystems, emphasizing those occurring in tropical regions such as coral reefs. Studies how these ecosystems are changing and the future impact of human stress on the marine environment. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-3240 (4) Animal Behavior

Lect. and lab. Topics include basic concepts and history, methods of study, ethical issues, neurobiology, behavior, the development of behavior, predator-prey relationships, communication, aggression and dominance, mating systems, cognitive ethology, and parental care. When possible, life-history strategies, the evolution of behavior, and behavioral ecology are stressed. Uses animals and animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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# Courses

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EBIO

## EBIO-3270 (3) Ecosystem Ecology

Integrates information from physics (e.g., energetics), chemistry (the behavior of basic elements), and biology (evolutionary traits of species, multiple photosynthetic pathways, etc.) to understand the structure and functioning of ecosystems. Provides the background and necessary information to understand controls on photosynthesis, decomposition, and nutrient cycling across diverse terrestrial and aquatic landscapes. Prereqs., EBIO 1210, 1220, 1230, 1240, and 2040, or EPOB 2050 and 2060, or EBIO 3020.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-3400 (4) Microbiology

Lect. and lab. Surveys distinguishing characteristics of microorganisms based on structural-functional relationships, taxonomy, growth, and physical-chemical agents of control including antibiotics, metabolism, and genetics. Introduces applied microbiology emphasizing infectious diseases, basic concepts of immunology, and microbial ecology. Uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-3630 (4) Parasitology

Lect. and lab. Surveys animal parasites, including life histories; emphasizes parasites of humans. Uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240 or EPOB 2050 and 2060.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

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## EBIO-3680 (5) Honors Evolutionary Biology

Lect., rec., and co-sem. Emphasizes the fundamental evolutionary concepts that provide explanation for the diversification of life on Earth. Specific topics include the evidence for evolution, adaptation by natural selection speciation, systematics, molecular and genome evolution, and macroevolutionary patterns and process. Recitations allow students to explore specific topics in more depth and smaller groups. Prereqs., EBIO 1210, 1220, 1230, 1240, 2070 or 2670. Credit not granted for this course and EBIO 3080 or EPOB 2080 or 2680.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3770 (4) Animal Diversity: Vertebrates

Lect. and lab. Provides a broad overview of the biology of vertebrates: evolution and systematics, morphology, physiology, behavior, ecology, and biogeography. Laboratories focus on the diversity of vertebrates, including adaptations and diagnostic features of major groups. Uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240, or equivalent.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3840 (1-6) Independent Study (Junior)

May be repeated up to 6 total credit hours.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3850 (4) Animal Diversity: Invertebrates

Lect. and lab. Offers a broad study of the biology of the most diverse group of organisms on Earth. Areas include ecology, physiology, evolution and morphology of aquatic and terrestrial forms. This course uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240, or equivalent, or EPOB 2050 and 2060.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3870 (1-6) Independent Research (Junior)

May be repeated up to 6 total credit hours.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3930 (1-6) Internship

Provides an academically supervised opportunity for upper-division students to work in public or private organizations. Projects are

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usually related to students' career goals. Each project has both academic and work components. May be repeated up to 6 total credit hours. Pass/fail only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3940 (3) Argument in Scientific Writing

Emphasizes argumentative strategies used in scientific writing. Reviews essential writing skills to prepare students for academic and professional communication. Restricted to juniors and seniors. No biology credit for majors in EBIO. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3980 (1) Seminar: Introduction to EBIO Honors

Presents an introduction to the departmental Honors program. Consists of a lecture component on Honors research, thesis, and defense, as well as a seminar component where students present the findings of their library research, conducted under guidance of a faculty mentor, and hear presentations by graduating Honors candidates on their thesis research. Prereq., 3.2 or better GPA, declared EBIO major, and approval by departmental Honors program. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-3990 (1-3) Introduction to EBIO Honors

Provides an introduction to the departmental Honors program. Consists of individual library research on a potential Honors thesis topic under the guidance of a faculty mentor. Prereqs., 3.2 or better GPA declared EBIO major, and approval by departmental Honors committee. Prerequisites: Restricted to Ecology and Evolutionary Biology (EBIO) majors only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4020 (3) Stream Biology

Offers a geological, physical, chemical, and biological study of flowing water with special reference to streams and rivers as ecosystems. A laboratory course is offered (see EBIO 4150). Prereqs., EBIO 1210, 1220, 1230, 1240, and 2040, or EPOB 2050 and 2060. Same as EBIO 5020.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4030 (3) Limnology

Examines the ecology of inland waters, including a detailed consideration of physical, chemical, and biological properties of freshwater ecosystems: origins and major characteristics of lakes and streams, survey of chemical and nutrient cycles in freshwater habitats, and survey of biotic composition of freshwater environments. Important themes in modern freshwater ecology are considered, including

energy flow, trophic structure, eutrophication, and management of freshwater ecosystems. Prereqs., EBIO 1210 and 1220. Same as EBIO 5030.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4060 (3) Landscape Ecology

Studies distributional patterns of communities and ecosystems, ecological processes that affect those patterns, and changes in pattern and process over time. Consideration of spatial and temporal scales in ecological analyses is required to understand and predict response to broad-scale environmental change. Prereqs., EBIO 1210, 1220, 1230, 1240, and EBIO 2040 or 2640, or EPOB 2050 and 2060. Same as EBIO 5070.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4090 (2) Coral Reef Ecology

Includes one week of lectures in Boulder and one week of field studies on one of the most complex and beautiful ecosystems in the world, the Caribbean reefs at Cozumel, Mexico. Two week, fall-semester course beginning after Christmas. Prereqs., EBIO 2040 and Scuba certification. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4100 (3) Advanced Ecology

Emphasizes specific aspects of ecology based on specialties of faculty. One or more courses are offered most semesters. Topics have included dynamics of mountain ecosystems, tundra ecology, ethnoecology, population dynamics, tropical and insular biology, ecology of fishes, quantitative plant ecology, and arctic and alpine environments. May use animals and/or animal tissues. May be repeated twice provided the topics vary. Prereqs., EBIO 1210, 1220, 1230, 1240, and EBIO 2040 or 2640, or EPOB 2050 and 2060. Same as EBIO 5100.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4120 (2-4) Advanced Ecology

See EBIO 4100 for description. May use animals and/or animal tissues. Prereq., EBIO 1210, 1220, 1230, 1240, and EBIO 2040 or 2640, or EPOB 2050 and 2060. Same as EBIO 5120.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4140 (3) Plant Ecology

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Examines the relationships between plants and their physical and biological environments, encompassing physiology, competition, plant-soil and plant-animal interactions, population dynamics, diversity, and influence on ecosystem function. Prereqs., EBIO 1210, 1220, 1230, and 1240.

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## EBIO-4150 (1-2) Techniques in Ecology

Emphasizes application of modern ecological techniques, such as stream biology, aquatic biology, environmental measurement and control, and techniques in geocology. May be repeated up to 7 total credit hours. Prereqs., EBIO 1210, 1220, 1230, 1240, and EBIO 2040 or 2640, or EPOB 2050 and 2060. Same as EBIO 5150.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4160 (3) Introduction to Biogeochemistry

Covers fundamentals of biogeochemical cycling, emphasizing water, carbon, and nutrient dynamics in terrestrial ecosystems; chemical interactions of atmosphere, biosphere, lithosphere, and hydrosphere; and natural and human-managed environments. Prereqs., GEOL 3320 or EBIO 3270, and CHEM 1011 or higher. Same as ENV5 4160 and GEOL 4160.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4175 (3) The Scientific Basis for Ecosystem Management of Public Lands

An advanced field ecology course emphasizing measurements, statistical procedures, and biotic data information management relevant to land management issues. Develops concepts of adaptive ecosystem management using ongoing field studies on public land in the Colorado Front Range. Prereqs., EBIO 3270 and 3500.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4290 (3) Molecular Systematics and Evolution

Reviews principles and theoretical foundations of molecular evolution and molecular systematics. Emphasizes hypothesis testing and using various methods of analysis for interpreting molecular variation in nature. Prereq., EBIO 3080 or instructor consent. Same as EBIO 5290.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4350 (1-4) Biological Field Studies

Stresses broad areas of biology and employs field approaches. Uses animals and/or animal tissues. May be repeated up to 4 total credit hours. Prereqs., EBIO1210, 1220, 1230, and 1240, or E 2050 and 2060. Same as EBIO 5350.

College of Arts & Sciences Ecology & Evolutionary Biology

## EBIO-4410 (4) Biometry

Lect. and lab. Offers a demanding, problems-oriented methods course in statistical inference procedures, assumptions, limitations, and applications emphasizing techniques appropriate to realistic biological problems. Includes data file management using interactive computing techniques. Prereqs., EBIO1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Restricted to juniors/seniors. Same as EBIO 5410. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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# Courses

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EBIO

## EBIO-4440 (4) Animal Developmental Diversity

Surveys development in a range of vertebrate and invertebrate systems to reconstruct the common bilaterian ancestor, and elucidate the developmental genetic changes underlying animal diversification. Lab focuses on vertebrate embryos and explores key methods in evolutionary developmental biology including in situ hybridization, embryo microinjection, and transgenesis. Prereqs., EBIO 1210, 1220 and 2070, or MCDB 1150 and 2150. EBIO 4440, EBIO 5440, MCDB 4441, and MCDB 5441 are all the same course.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-4460 (1-5) Special Topics

Familiarizes students with specialized areas of biology. May be repeated up to 9 total credit hours. Prereqs., EBIO 1210, 1220, 1230, and 1240, or equivalent. Same as EBIO 5460.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

## EBIO-4500 (4) Plant Biodiversity and Evolution

Lect. and lab. Surveys plant types emphasizing diagnostic features of plants in general and major taxa in particular. Focuses on identity, morphology, anatomy, reproduction, ecology, geography, evolution, fossil record, and economic use of taxa. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Formerly EBIO 3500.

[College of Arts & Sciences](#) [Ecology & Evolutionary Biology](#)

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## EBIO-4510 (4) Plant Anatomy and Development

Lect. and lab. Introduces structures of seed plants, especially angiosperms, and developmental history of these structures. Studies cell types, and their location and function in plant tissues and organs. The laboratory provides an opportunity to examine plant tissues and to prepare tissues for examination by the light microscope. Stresses role of plant structures in the living plant. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Formerly EBIO 3510 .

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4520 (4) Plant Systematics

Lect. and lab. Studies the principles and techniques of modern systematics of organisms, illustrated with examples from the plant kingdom, usually the angiosperms. Framework of course is evolutionary and ecological, as well as taxonomic. Prereq., EBIO 2070. Restricted to sophomores/juniors/seniors. Formerly EBIO 3520.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4530 (4) Functional Plant Biology

Lect. and lab. Explores mechanisms of plant functioning and how such functioning relates to the performance of the plant under different environmental conditions. Phenomena include water relations, growth and development, and metabolic processes including photosynthesis, respiration, and responses to stress. Prereqs., EBIO 1210, 1220, 1230, and 1240, or equivalent. Restricted to sophomores/juniors/seniors. Formerly EBIO 3530.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4550 (4) Plant Eco-Evo-Devo

Explores the fundamental principles of plant form from the perspectives of ecological function, evolutionary origin, and developmental dynamics. Students are presented with conceptual and analytical tools to interpret the vast diversity of growth form-function relationships that exist among plants. Laboratory sessions apply concepts presented in lecture and students will engage in original research using light and scanning electron microscopy. Prereqs., EBIO 1210, 1220, 1230 and 1240.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4640 (2-4) Plant Field Studies

Includes field-oriented courses offered at irregular intervals during the academic year or during summer sessions. May be repeated up to 7 total credit hours. Prereq., EBIO 2040 and 2640 or equivalent.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4660 (4) Insect Biology

Lect. and lab. Introduction to evolution, ecology, physiology, and behavior of insects. Emphasizes how insects have solved problems, such as maintaining water balance or finding food, that are shared by all animals but for which there may be unique solutions among the insects. Agricultural and human health problems relative to entomology are discussed. Uses animals and/or animal tissues. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Same as EBIO 5660.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4740 (3) Biology of Amphibians and Reptiles

Comparative morphology, taxonomy, ecology, behavior, and geographic distribution of amphibians and reptiles. This course uses animals and animal tissue. Prereqs., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Same as EBIO 5740 and PSYC 4740.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4750 (4) Ornithology

Lect., lab, and field trips. Presents origin, evolution, ecology, physical and behavioral characteristics, and taxonomy of orders and families of birds of North America; field work with local species emphasizing avian ecology. Uses animals and/or animal tissues. Prereq., EBIO 1210, 1220, 1230, and 1240, or EPOB 2050 and 2060. Same as EBIO 5750.

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## EBIO-4760 (4) Mammalogy

Lect., lab, and field studies. Discusses origin, evolution and adaptation, geographic distribution, ecology, and taxonomy of mammals; field and laboratory study of Colorado species. Uses animals and/or animal tissues. Prereq., EBIO 1210, 1220 and 2040 or 2640. Same as EBIO 5760.

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## EBIO-4795 (3) Field Methods in Zoology and Botany

Class covers research and field methods for biological disciplines associated with natural history museums: vertebrates, invertebrates, and plants. Emphasis is on field research techniques: observations, sampling, collection and preservation methods, and comparisons among elevation zones. Includes 5 field labs, 2 weekend trips, 5 lab practica, experience with several taxonomic experts, and individual research projects. Same as EBIO 5795, MUSM 4795 and ENVS 4795.

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## EBIO-4800 (3) Critical Thinking in Biology

Lect. and discussion. Explores controversial issues, historical themes, or emerging developments in biology. Consult the EBIO Undergraduate Advising Center for current listings. Different course sections on different topics may be repeated up to 12 total credit hours. Prereq., minimum of 14 hours of EBIO course work. Same as EBIO 5800. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## EBIO-4840 (1-6) Independent Study (Senior)

May be repeated up to 6 total credit hours. .

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4860 (1-2) Critical Thinking in Biology - Lab

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## EBIO-4870 (1-6) Independent Research (Senior)

May be repeated up to 6 total credit hours.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4980 (1) Seminar: EBIO Honors Thesis

To be taken during the final academic year prior to graduation. Consists of a lecture component on honors thesis writing and defense, as well as a seminar component where honors candidates present their thesis research in a practice defense talk. Prereq., 3.30 or better GPA, declared EBIO major, and approval by departmental honors committee.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-4990 (1-3) EBIO Honors Thesis

To be taken during the final academic year prior to graduation. Consists of the final phase of honors research and thesis preparation under the guidance of a faculty mentor. Prereq., 3.30 or better GPA, declared EBIO major, and approval by departmental honors committee. Prerequisites: Restricted to Ecology and Evolutionary Biology (EBIO) majors only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5000 (1) EBIO Colloquia

All first year EBIO graduate students are required to attend the EBIO Colloquia Series. Speakers from around the world and within the department cover topics in all areas of biology. May be repeated up to 2 total credit hours.

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## EBIO-5020 (3) Stream Biology

Same as EBIO 4020.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5030 (3) Limnology

Same as EBIO 4030.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5060 (3) Landscape Ecology

Same as EBIO 4060. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5100 (3) Advanced Ecology

Same as EBIO 4100. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5120 (2-4) Advanced Ecology

Same as EBIO 4120.

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EBIO

### EBIO-5150 (1-2) Techniques in Ecology

Same as EBIO 4150.

College of Arts & Sciences Ecology & Evolutionary Biology

### EBIO-5240 (3) Advanced Topics in Animal Behavior

Covers special areas of ethology such as sociobiology, animal communication, cognitive ethology, human ethology, moral and ethical issues. Prereq., EBIO 3240.

College of Arts & Sciences Ecology & Evolutionary Biology

### EBIO-5290 (3) Molecular Systematics and Evolution

Same as EBIO 4290. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

### EBIO-5310 (3) Ecology and Conservation

Reviews current research activities in the various fields of environmental biology, including population, community, behavioral, ecosystem, and landscape ecology, plus conservation biology and global change. Prereq., graduate standing.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5320 (3) Current Topics in Evolutionary Biology

Examines six major themes on contemporary evolutionary research: population genetics, natural selection and adaptation, molecular evolution, evolution and development, phylogenetic systematics, and macroevolution. Emphasizes recent primary literature and sophisticated mastery. Prereq., graduate standing in EBIO.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5350 (1-4) Biological Field Studies

Same as EBIO 4350.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5410 (4) Biometry

Same as EBIO 4410.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5440 (4) Animal Developmental Diversity

Surveys development in a range of vertebrate and invertebrate systems to reconstruct the common bilaterian ancestor, and elucidate the developmental genetic changes underlying animal diversification. Lab focuses on vertebrate embryos and explores key methods in evolutionary developmental biology including in situ hybridization, embryo microinjection, and transgenesis. Prereqs., EBIO 1210, 1220 and 2070, or MCDB 1150 and 2150. EBIO 4440, EBIO 5440, MCDB 4441, and MCDB 5441 are all the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5460 (1-5) Special Topics

Same as EBIO 4460. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5570 (3) Advanced Plant Physiology

Same as EBIO 4570.

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College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5660 (4) Insect Biology

Same as EBIO 4660. . Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5740 (3) Biology of Amphibians and Reptiles

Same as EBIO 4740 and PSYC 5740.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5750 (4) Ornithology

Same as EBIO 4750.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5760 (4) Mammalogy

Same as EBIO 4760. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5795 (3) Field Methods in Zoology and Botany

Same as EBIO 4795 and MUSM 5795. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5800 (3) Critical Thinking in Biology

Same as EBIO 4800. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5820 (2-3) Graduate Writing Seminar

Enhances writing proficiency, using graduate writing projects to implement the course concepts. Offers understanding of conventions and strategies used in scientific writing to prepare students for academic and professional communication. Prereqs., graduate standing and basic proficiency in English as a written language.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-5840 (1-6) Independent Study (Master's Level)

Instructor consent required. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-6000 (1) Seminar: Introduction to Biological Research

Discusses areas of biological research represented in EBIO. Required of all first-year graduate students in EBIO. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-6100 (1-3) Seminar in Environmental Biology

Instructor consent required. Restricted to graduate students. May be repeated up to 7 total credit hours. Same as EBIO 6120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-6120 (1-3) Seminar in Environmental Biology

Same as EBIO 6100.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-6200 (1-3) Seminar in Population Biology

May be repeated up to 7 total credit hours. Same as EBIO 6210. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-6210 (1-3) Seminar in Population Biology

May be repeated up to 7 total credit hours. Same as EBIO 6200.

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## EBIO-6300 (1-3) Seminar in Organismic Biology

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

## EBIO-6330 (2) Seminar in Organismic Biology

May be repeated up to 7 total credit hours.

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EBIO

## EBIO-6440 (2) Remote Sensing Field Methods

Explores theory and practical field measurements for validation of airborne and spaceborne spectral image acquisition. Emphasizes radiative scattering properties of soil, vegetation, cryosphere, and atmosphere. Characterization and calibration of instrumentation used to measure these properties. Prereq., GEOL/GEOG 4093/5093. Recommended prereq., GEOL 5240. Same as GEOG 6443.

College of Arts & Sciences Ecology & Evolutionary Biology

## EBIO-6840 (1-7) Independent Research (Master's Level)

Instructor consent required. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

## EBIO-6940 (1) Master's Degree Candidate---Plan II

Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

## EBIO-6950 (1-6) Master's Thesis

May be repeated up to 7 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-7840 (1-6) Independent Study (Doctoral Level)

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-8840 (1-6) Independent Research (Doctoral Level)

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ecology & Evolutionary Biology

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## EBIO-8990 (1-10) Doctoral Dissertation

Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

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# Courses

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ECEN

## ECEN-1100 (1) Freshman Seminar

Introduces students to areas of emphasis with the ECE department through seminars presented by faculty and outside speakers. Emphasizes career opportunities, professional ethics and practices, history of the profession, and resources for academic success. Several sessions promote team building and problem solving, and provide opportunities for freshmen to meet their classmates. Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) | [Electrical & Computer Engineering](#) | [General](#)

## ECEN-1400 (3) Introduction to Digital and Analog Electronics

Introduces fundamental concepts in electrical and computer engineering such as Ohm's Law, capacitors, Leds and 7-segment displays, transformers and rectifiers, digital logic, Fourier decomposition, frequency analysis. Lab work exposes students to commonly used instrumentation. Includes a final project. Skills in wiring, soldering and wire-wrapping are developed. Coreq., APPM 1350.

[College of Engineering & Applied Science](#) | [Electrical & Computer Engineering](#) | [General](#)

## ECEN-1500 (3) Sustainable Energy

Explores how energy is created and used in today's society. Through collaborative discussion and hands-on data collection, students will analyze the engineering challenges, fundamental limits, and potential solutions to meeting our energy needs sustainably. Students will learn to analyze numerical data, estimate orders, of magnitude, and apply mathematical methods in their own lives and in the ongoing energy debate. Basic algebra required. Restricted to non-engineering majors. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

[College of Engineering & Applied Science](#) | [Electrical & Computer Engineering](#) | [General](#)

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## ECEN-1840 (1-6) Independent Study

Provides an opportunity for freshmen to do independent, creative work. Numbered ECEN 1840 through ECEN 1849. Prereq., instructor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2010 (1-5) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2020 (1-5) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2050 (1-5) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2060 (1-5) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2250 (3) Introduction to Circuits and Electronics

Introduces linear circuit analysis and design, including extensive use of OP amps. Presents DC networks, including node and mesh analysis with controlled sources. Analysis of RL and RC circuits for both transient and sinusoidal steady-state responses using phasors. Prereq., APPM 1360. Coreq., APPM 2360. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2260 (3) Circuits as Systems

Continues basic circuit analysis of ECEN 2250: Laplace transform techniques, transfer functions, frequency response, Bode diagrams, resonant circuits, Fourier series expansions, and convolution. Prereq., ECEN 2250. Coreq., Electronics Design Laboratory. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2350 (3) Digital Logic

Covers the design and applications of digital logic circuits, including combinational and sequential logic circuits. Laboratory component introduces simulation and synthesis software and hands-on hardware design. Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) College of Engineering students only. Prereq., ECEN 1030 or CSCI 1300. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) College of Engineering students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2420 (3) Wireless Electronics for Communication

Explores fundamental principles behind the operation of a radio, including a practical introduction to circuit elements. The course covers the components and operation of a radio (transmitter and receiver) with simple signals. Students learn through demos the practical basic properties of all needed components with an introduction to principles of operation. Prereqs., PHYS 1120, and APPM 1360 or MATH 2300. Restricted to EN majors. Prerequisites: Restricted to Electrical and Computer Engineering or Electrical Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2703 (3) Discrete Mathematics for Computer Engineers

Emphasizes elements of discrete mathematics appropriate for computer engineering. Topics: logic, proof techniques, algorithms, complexity, relations, and graph theory. Prereqs., ECEN 1030/CSCI 1300 and APPM 1360.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-2830 (1-5) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-2840 (1-6) Independent Study

Offers an opportunity for sophomores to do independent, creative work. Numbered ECEN 2840 through ECEN 2849. Prereq., instructor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-3002 (3-5) Special Topics

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## ECEN-3003 (3-5) Special Topics

## ECEN-3004 (3-5) Special Topics

## ECEN-3010 (3) Circuits and Electronics for Mechanical Engineers

Covers analysis of electrical circuits by use of Ohm's law, network reduction, node and loop analysis, Thevenin's and Norton's theorems, DC and AC signals, transient response of simple circuits, transfer functions, basic diode and transistor circuits, and operational amplifiers. Includes introductory digital electronics and microprocessors/microcontrollers. Prereqs., APPM 2360 and PHYS 1140. Same as MCEN 3017. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors.

## ECEN-3030 (3) Electrical/Electronic Circuits Non-Major

For students not majoring in electrical engineering. Covers analysis of electric circuits by use of Ohm's law; network reduction; super position; node and loop analysis; Thevenin's and Norton's theorems; sinusoidal signals; phasors; power in ac circuits; transient response of simple circuits; operational amplifiers; logic circuits; and flip-flops. Prereq., APPM 2360. Restricted to nonmajors. Same as GEEN 3854. Prerequisites: Electrical/Computer Engineering Majors, Electrical Engineering Majors or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree Majors are restricted from taking this course.

## ECEN-3070 (3) Edges of Science

Examines the evidence for paranormal phenomena, reasons for skepticism, and physical models that could account for the data. Reviews controversial scientific theories that overcame barriers to acceptance, and how worldviews shift. Considers the scientific method and ways uncontrolled factors might influence experiments. Develops skills in statistical analysis of data. Includes group projects testing for anomalous and parapsychological effects. Not accepted as a technical elective for engineering majors. Prereq., MATH 1011 or equivalent.

## ECEN-3170 (3) Energy Conversion 1

Introduces block diagrams, conventional/renewable energy sources, power electronics, magnetic circuits, transformers and power systems, forces/torques of electric machines. Employs a top-down approach to present applications first and then discuss components. Uses Pspice, Mathematica, Matlab. Prereq., PHYS 1120. Coreq., ECEN 3250. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Electrical & Computer Engineering General

## ECEN-3250 (3) Microelectronics

Develops a basic understanding of active semiconductor devices. Focuses on building an understanding of BJT and CMOS devices in both digital and analog application. Prereq., ECEN 2260. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science Electrical & Computer Engineering General

## ECEN-3300 (3) Linear Systems

Characterization of linear and time-invariant systems in time and frequency domains. Continuous time systems are analyzed using differential equations and Laplace and Fourier transforms. Discrete time systems, which can be implemented using a modern digital signal processing framework, use difference equations, z-transforms and discrete time Fourier transforms for their analysis and design. Applications of linear systems include communications, signal processing, and control systems. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science Electrical & Computer Engineering General

## ECEN-3303 (3) Introduction to Robotics

Introduces students to fundamental concepts in autonomous, mobile robotics: mechanisms, locomotion, kinematics, control, perception and planning. The course consists of lectures and lab sessions that are geared toward developing a complex robot controller in a realistic, physics-based multi-robot simulator. Prereqs., CSCI 2270 and 2824. CSCI 3302 and ECEN 3303 are the same course.

College of Engineering & Applied Science Electrical & Computer Engineering Artificial Intelligence

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ECEN

### ECEN-3320 (3) Semiconductor Devices

Highlights the fundamentals of semiconductor materials and devices. Topics include the electrical and optical properties of semiconductors, the theory of Pn junctions, bipolar and field-effect transistors, and optoelectronic devices. Prereq., ECEN 3250.

Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

### ECEN-3350 (3) Programming Digital Systems

Covers computer usage in system implementation, central processor capabilities, and managing concurrency. Includes computer architecture, instruction sets, programming, input/output, interrupts, block transfers, semaphores, shared procedures, multiple processors, and memory management. Prereq., ECEN 2350. Formerly ECEN 2120. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) College of Engineering students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

### ECEN-3400 (3) Electromagnetic Fields and Waves

Electromagnetic fields are covered at an introductory level, starting with electrostatics and continuing with DC current, magnetostatics, time-varying magnetic fields, waves on transmission lines, Maxwell's equations and the basics of plane waves. The use of fields in inductors, capacitors, resistors, transformers, and energy and power concepts are studied. Prereqs., APPM 2350, PHYS 1110, and ECEN 2250. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

### ECEN-3410 (3) Electromagnetic Waves and Transmission

Covers reflected and transmitted plane waves in layered media, Poynting's theorem of electromagnetic power, two-conductor transmission line theory and practice, Smith chart usage and impedance matching, and elements of antenna theory. Prereq., ECEN 3400. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-3810 (3) Introduction to Probability Theory

Covers the fundamentals of probability theory, and treats the random variables and random processes of greatest importance in electrical engineering. Provides a foundation for study of communication theory, control theory, reliability theory, optics, and portfolio analysis. Prereqs., APPM 2350 and 2360. Credit not granted for this course and MATH 4510 or APPM 3570. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-3840 (1-6) Independent Study

Offers an opportunity for juniors to do independent, creative work. Numbered ECEN 3840-3849. Prereq., instructor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-3930 (6) ECE Co-op Education

Participate in a cooperative education program working with a corporate or government entity. Individual assignments are arranged between the department and the outside employer. This course is offered only through Continuing Education. May be repeated up to 24 credit hours. Prereq., ECEN 2120, 2260, minimum GPA of 2.85 required. Restricted to sophomore, junior and senior EEEN and ECEN majors.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-4000 (3) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-4001 (1-4) Special Topics

Credit and subject matter to be arranged. Numbered ECEN 4001-4049. Prerequisites vary.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-4002 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4006 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-4009 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | VLSI CAD Methods

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## ECEN-4011 (1-4) Special Topics

Same as ECEN 5011.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-4012 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4013 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4016 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-4017 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-4018 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-4021 (1-4) Special Topics

Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-4023 (1-4) Special Topics

Same as ECEN 5023.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4024 (1-4) Special Topics

Same as ECEN 5024.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-4028 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-4049 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | VLSI CAD Methods

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## ECEN-4053 (1-4) Special Topics

Same as ECEN 5053.

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## ECEN-4106 (3) Photonics

Deals with the generation, transmission, modification and detection of light. Applications include fiber optics communications, data storage, sensing, and imaging. Leads to understanding of fundamental physical principles used in the analysis and design of modern photonic systems. Prereqs., ECEN 3400. Coreq., ECEN 3300. Restricted to seniors. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

ECEN

## ECEN-4116 (3) Introduction to Optical Communications

Given data rates, distance, reliability or bit error rates, the information required to specify the type of fiber, the source, the wave length, type of modulation, repeater or optical amplifiers, and detectors will be presented. Prereq., ECEN 3400 or equivalent. Same as TLEN 5480.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Optics](#)

## ECEN-4120 (3) Neural Network Design

Introduces basic (artificial) neural network architectures and learning rules. Emphasizes mathematical analysis of these networks, methods of training them, and application to practical problems such as pattern recognition, signal processing, and control systems. Shows how to construct a network of "Neurons" and train them to serve a useful function. Prereqs., APPM 2360 or MATH 3130, and CSCI 1300 or equivalent. Same as ECEN 5120.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

## ECEN-4138 (3) Control Systems Analysis

Analysis and design of continuous time control systems using classical and state space methods. Laplace transforms, transfer functions and block diagrams. Stability, dynamic response, and steady-state analysis. Analysis and design of control systems using root locus and frequency response methods. Computer aided design and analysis. Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only. Prereq., ECEN 3300, background in Laplace transforms, linear algebra, and ordinary differential equations. Same as ECEN 5138. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Dynamical Systems and Control](#)

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## ECEN-4167 (3) Energy Conversion 2

Studies the derivation of the dynamic equations of motion of electromechanical systems, linear and rotary motion machines based on variational principles and basic force laws. Looks at equivalent circuits in abc and dqo coordinates for Ac and Dc machines. Discusses conditions under which an electromagnetic torque can be produced. Applies theory to the most important modes of steady-state and transient operation of electrical energy converters. Prereq., ECEN 3170.

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-4224 (3) High Speed Digital Design

Covers fundamentals of high-speed properties of: logic gates, measurement techniques, transmission lines, ground planes and layer stacking, terminations, vias, power systems, connectors, ribbon cables, clock distribution and clock oscillators. Prereq., ECEN 3400. Recommended prereq., ECEN 3410. Same as ECEN 5224.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-4242 (3) Communication Theory

Covers modern digital and analog communication systems, Fourier analysis of signals and systems, signal transmission, amplitude modulation, angle modulation, digital communication systems, and behavior of communication systems in the presence of noise, including both analog and digital systems. Prereqs., ECEN 3300 and ECEN 3810 or equivalent. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4324 (3) Fundamentals of Microsystem Packaging

Introduction to the fundamentals of microsystems packaging. This is a seminar style course which surveys topics in microsystem packaging such as: electrical package design, design for reliability, thermal management, multichip packaging, IC Assembly, sealing and encapsulation, and board assembly. Coreq., ECEN 3410 or instructor consent. Same as ECEN 5324. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-4375 (3) Microstructures Laboratory

Offers experience in monolithic silicon integrated circuit fabrication techniques, including Ic layout, pattern compiling and generation, mask making, oxidation, photolithography, diffusion, implantation, metallization, bonding, process analysis, and testing. Includes design project. Prereq., ECEN 3320. Same as ECEN 5375.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-4423 (3) Chaotic Dynamics

Explores chaotic dynamics theoretically and through computer simulations. Covers the standard computational and analytical tools used in nonlinear dynamics and concludes with an overview of leading-edge chaos research. Topics include time and phase-space dynamics, surfaces of section, bifurcation diagrams, fractal dimension, and Lyapunov exponents. Prereqs., two semesters calculus, ECEN 1030 or CSCI 1300 or equivalent, and PHYS 1110. Recommended prereqs., PHYS 1120, CSCI 3656, and MATH 3130. Same as CSCI 4446 and ECEN 5423.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4517 (3) Power Electronics and Photovoltaic Power Systems Laboratory

Focuses on analysis, modeling, design, and testing of electrical energy processing systems in a practical laboratory setting. Studies power electronics converters for efficient utilization of available energy sources, including solar panels and utility. The experimental projects involve design, fabrication, and testing of a solar power system. Prereq., ECEN 4797. Restricted to seniors. Same as ECEN 5517.

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-4532 (3) Digital Signal Processing Laboratory

Develops experience in code development, debugging, and testing of real-time digital signal processing algorithms using dedicated hardware. Applications include filtering, signal synthesis, audio special effects, and frequency domain techniques based on the Fast Fourier Transform. Prereq., ECEN 3300. Coreq., ECEN 4632. Same as ECEN 5532.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4553 (3) Compiler Construction

Introduces the principles and techniques for compiling high-level programming languages to assembly code. Topics include parsing, instruction selection, register allocation, and compiling high-level features such as polymorphism, first-class functions, and objects. Students build a complete compiler for a simple language. Prereqs., ECEN 2703 and ECEN 3350. Same as CSCI 4555 and ECEN 5523. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4555 (3) Principles of Energy Systems & Devices

Develops principles underlying electronic, optical and thermal devices, materials and nanostructures for renewable energy. Course provides a foundation in statistical thermodynamics, and uses it to analyze the operation and efficiency limits of devices for photovoltaics, energy storage (batteries & ultra-capacitors), chemical conversion (fuel cells and engines), solid state lighting, heat pumps, cooling, and potentially harvesting zero-point energy from the vacuum. Prereq., ECEN 3810. Prereq. or coreq., PHYS 2130 or 2170 or instructor

consent. Same as ECEN 5555.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-4583 (3) Software System Development

Lectures deal with techniques for product requirements definition, project planning, coding, verification, validation, performance evaluation, and maintenance of medium-scale (2-3000 line) systems. Primary emphasis is on practical application of these techniques to a specified software project. Students work in teams to produce appropriate documents for each phase and are responsible for project completion according to specification and schedule. Course project is written in C on a Unix look-alike system; prior knowledge of C or Unix is not required. Prereq., CSCI 2270 or instructor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4593 (3) Computer Organization

Studies computer design at the gate level. Discusses instruction set architecture design, arithmetic and logic unit design, control logic, memory design and caches, simple pipelining, I/O, and peripheral devices. Briefly covers aspects of modern computer architecture, such as multicore processors and cache coherence for these. Prereq., ECEN 2350, and ECEN 3350 or CSCI 2400. Same as CSCI 4593. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4606 (3) Undergraduate Optics Laboratory

Introduces fundamental concepts, techniques, and technology of modern optical and photonic systems. Individual labs cover particular fields of optical technology, including light sources such as lasers and LEDs, interferometers, fiber-optic communications, photodetection, spectrometers, and holography. Practical skills such as how to align an optical system will also be emphasized. Prereq. ECEN 3400. Coreq. ECEN 4106 or equivalent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-4610 (2) Capstone Laboratory Part 1

Hands-on laboratory experience utilizing teams in the systematic proposal, design, integration, and testing of an electronic/computer based system. The result will be the prototype of a stand-alone analog/digital system. Must taken ECEN 4620 to complete the sequence. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Electrical and Computer Engineering (ECEN), Electrical Engineering (EEEN) majors or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only. Prereqs., ECEN 2260, 2270, 3350, 3360 and 3810. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Electrical and Computer Engineering (ECEN), Electrical Engineering (EEEN) majors or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-4613 (3) Embedded System Design

Introduces system hardware and firmware design for embedded applications. Students independently design and develop a hardware platform encompassing a microcontroller and peripherals. Firmware is developed in C and assembly. A significant final project is designed, developed, documented, and presented. Prereqs., ECEN 2350 and 3350, or instructor consent. Recommended prereqs., ECEN 3250 and 4593. Same as ECEN 5613. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4616 (3) Optoelectronic System Design

Examines optical components and electro-optic devices with the goal of integrating into well design optoelectronic systems. Sample systems include optical storage, zoom lenses, and telescopes. Prereq. ECEN 3400.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-4623 (3) Real-Time Embedded Systems

Design and build a microprocessor-based embedded system application requiring integration of sensor/actuator devices, a real-time operating system and application firmware and software. Real-time rate monotonic theory and embedded architecture are covered. Prereq., ECEN 2350 and ECEN 3350, or instructor consent. Recommended prereq., ECEN 4613. Same as ECEN 5623. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4632 (3) Introduction to Digital Filtering

Covers both the analysis and design of FIR and IIR digital filters. Discusses implementations in both software and hardware. Emphasizes use of the FFT as an analysis tool. Includes examples in speech processing, noise canceling, and communications. Prereq., ECEN 3300. Restricted to seniors.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-4633 (3) Hybrid Embedded Systems

Introduces system hardware and design techniques for embedded and hybrid reconfigurable systems. Intended for those interested in developing projects using hardware description languages to build application-specific computing systems. Industry standards are used for design, development, and debugging. Prereqs., ECEN 2350, 3350, and 4593, or equivalent. Same as ECEN 5633. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-4634 (3) Microwave and RF Laboratory

Introduce RF and microwave measurement methods. A laboratory course whose experiments build on material learned in ECEN 3410 (Electromagnetic Waves and Transmission): electromagnetic waves, transmission lines, waveguides, time-domain reflection, frequency-domain measurement, microwave networks, impedance matching, antenna pattern measurement, radar, and simple nonlinear concepts such as harmonics, square-law detection, mixing and transmitter/receiver applications. Prereq., ECEN 3410. Same as ECEN 5634. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Electromagnetics](#)

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## ECEN-4638 (2) Control Systems Laboratory

Provides experience in control system design and analysis, using both real hardware and computer simulation. Covers the entire control system design cycle: modeling the system, synthesizing a controller, conducting simulations, analyzing the design to suggest modifications and improvements, and implementing the design for actual testing. Prereq., ECEN 3300. Coreq., ECEN 4138. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Dynamical Systems and Control](#)

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## ECEN-4643 (3) SW Engineering of Concurrent Systems

Addresses engineering of applications requiring multiple software processes running concurrently, sharing data, and communicating as a system in a single environment. Topics include performance analysis of architecture design; analysis of requirements, design and testing of synchronization and communication; the interplay of system design and performance with the impact of memory management, input/output, and file system support. Prereq., ECEN 4583 or 5543. ECEN 4643 and 5643 are the same course. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Computer and Digital Systems](#)

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# Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

**Subject**    **Number**

ECEN

## ECEN-4652 (3) Communication Laboratory

Involves laboratory experiments demonstrating material taught in ECEN 4242. Uses spectrum analysis to study baseband signals and signal processors. Topics include noise, AM, FM, PM, sampling, quantizing/encoding, TDM, FDM, equalizers, and a complete communication system. Prereq. or coreq., ECEN 4242. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

[College of Engineering & Applied Science](#)
[Electrical & Computer Engineering](#)
[Communications](#)

## ECEN-4653 (3) Real-Time Digital Media

Learn how to design and build Linux-based real-time system applications for digital media encode/decode and transport. Course focus is on the process as well as fundamentals of designing, coding, and testing Linux-based real-time systems often used in industry for digital media systems. Students use POSIX kernel-mapped threads and drivers to implement real-time digital media solutions. Prereqs., ECEN 1030 or CSCI 1300, and CSCI 3753 or equivalent. Restricted to engineering students. ECEN 4653 and 5653 are the same course.

[College of Engineering & Applied Science](#)
[Electrical & Computer Engineering](#)
[Computer and Digital Systems](#)

## ECEN-4743 (3) SW Engineering of Distributed Systems

Addresses engineering of networked applications and self-contained embedded system products involving multiple processors. The fundamental concepts of software engineering are complicated by an application running simultaneously and asynchronously on multiple processors over a network. Topics: specification, analysis, design, and testing of distributed components including concerns of security, synchronization, transaction coordination, data replication, web services, and service oriented architectures. Prereq., ECEN 4583 or 5543 or CSCI 5548. Recommended prereq., ECEN 5643. ECEN 4743 and 5743 are the same course. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

[College of Engineering & Applied Science](#)
[Electrical & Computer Engineering](#)
[Computer and Digital Systems](#)

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## ECEN-4753 (3) Computer Performance Modeling

Presents a broad range of system modeling techniques, emphasizing applications to computer systems. Covers stochastic processes, queuing network models, stochastic Petri nets, and simulation (including parallel processing techniques). Prereq., CSCI 3753 or equivalent and second-semester calculus. Recommended prereq., a course in statistics. Same as CSCI 4753, 5753, and ECEN 5753.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-4797 (3) Introduction to Power Electronics

An introduction to switched-mode converters. Includes steady-state converter modeling and analysis, switch realization, discontinuous conduction mode, and transformer-isolated converters. Ac modeling of converters using averaged methods, small-signal transfer functions, feedback loop design, and transformer design. Prereq., ECEN 3250. Same as ECEN 5797. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science Electrical & Computer Engineering Power

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## ECEN-4811 (3) Neural Signals and Functional Brain Imaging

Explores bioelectric and metabolic signals generated by the nervous system from two standpoints: 1) their biophysical genesis and role in neural integration and 2) neurotechnologies such as electroencephalography, magnetoencephalography, deep brain stimulation, and functional magnetic resonance imaging. Prereqs., ECEN 2260 or 3030, ASEN 3300, or instructor consent. Same as ECEN 5811 and ASEN 4216.

College of Engineering & Applied Science Electrical & Computer Engineering Bioengineering

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## ECEN-4821 (3) Neural Systems and Physiological Control

A biophysical exploration of human physiology from the standpoints of control systems and neural information processing. Topics include: neural control of movement and cardiovascular performance, tissue growth and repair, carcinogenesis, and physiological responses to microgravity. Prereqs., ECEN 2260 or 3030, ASEN 3300, or instructor consent. Same as ECEN 5821 and ASEN 4426/5426.

College of Engineering & Applied Science Electrical & Computer Engineering Bioengineering

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## ECEN-4827 (3) Analog IC Design

Covers the fundamentals of transistor-level analog integrated circuit design. Starting with motivations from application circuits, the course develops principles of dc biasing, device models, amplifier stages, frequency response analysis and feedback and compensation techniques for multi-stage operational amplifiers. Prereq., ECEN 3250. Same as ECEN 5827. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Electrical & Computer Engineering Power

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## ECEN-4831 (3) Brains, Minds, and Computers

Provides background for the design of artificially intelligent systems based upon our present knowledge of the human brain. Includes similarities and differences between the brain and computers, robots, and common computer models of brain and mind. Emphasizes the neuron as an information processor, and organization of natural as well as synthetic neural networks. Prereq., ECEN 2260 or 3030, or instructor consent. Same as ECEN 5831, ASEN 4436/5436.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-4840 (1-6) Independent Study

Offers an opportunity for seniors to do independent, creative work. Numbered ECEN 4840-4849. Prereq., instructor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-5005 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5008 (1-4) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-5011 (1-4) Special Topics

Same as ECEN 4011. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-5012 (3) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-5016 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5018 (1-4) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-5021 (1-4) Special Topics

Prerequisites: Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-5023 (1-4) Special Topics

Same as ECEN 4023.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5024 (1-4) Special Topics

Same as ECEN 4024.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-5028 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-5032 (3) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-5049 (1-4) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | VLSI CAD Methods

## ECEN-5053 (1-4) Special Topics

Same as ECEN 4053.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

## ECEN-5104 (3) Computer-Aided Microwave Circuit Design

Emphasizes the design of strip-line and microstrip circuits, using a CAD package. Discusses design of impedance transformers, amplifiers, switches, phase-shifters, etc. Assignments include design of typical circuits and their analysis using a microwave circuit analysis program. Laboratory includes measurements using a network analyzer facility on a typical circuit designed and fabricated by students. Prereq., ECEN 3410. Prerequisites: Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

## ECEN-5114 (3) Waveguides and Transmission Lines

Intermediate course dealing with guided-wave systems at HF, microwave, and optical frequencies. Modern waveguiding structures, including circular metallic waveguides, microstrip transmission lines, and optical waveguides are treated. Additional material may include waveguide losses, excitation of waveguides, microwave network theory, coupled-mode theory, resonators, and pulse propagation in waveguides. Prereq., ECEN 3410.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## Courses

Search by College, Department & Category

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ECEN

### ECEN-5120 (3) Neural Network Design

Same as ECEN 4120.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

### ECEN-5134 (3) Electromagnetic Radiation and Antennas

Covers elementary sources and antennas, cylindrical wire antennas, loop antennas, radiation patterns and antenna gain, aperture sources such as horns and dishes, specialized antennas such as microstrip patches, linear and circular arrays, mutual coupling and ground effects, ray and numerical formulations, transmission formulas, and antenna applications. Prereq., ECEN 3410. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Electromagnetics](#)

### ECEN-5138 (3) Control Systems Analysis

Topics covered in ECEN 4138 will be investigated in more depth, require external readings, additional homework will be assigned and the exams will be more difficult. Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only. Prereq., ECEN 3300 or equivalent. Same as ECEN 4138. Prerequisites: Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Dynamical Systems and Control](#)

### ECEN-5139 (3) Formal Verification of VLSI Systems

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Covers two-level and multilevel minimization, optimization via expert systems, algebraic and Boolean decomposition, layout methodologies, state assignment, encoding and minimization, silicon compilation. Prereqs., ECEN 2703 and general proficiency in discrete mathematics and programming.

College of Engineering & Applied Science | Electrical & Computer Engineering | VLSI CAD Methods

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## ECEN-5154 (3) Computational Electromagnetics

Provides a computational study of microwave circuits and antennas, using finite-difference, finite-element, and moment methods. Requires students to develop algorithms, write and execute programs, and prepare reports analyzing results. Circuits include waveguides, microstrip lines, and center-fed dipole antennas. Prereq., ECEN 3410.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-5156 (3) Physical Optics

Covers the application of Maxwell's equations to optical wave propagation in free space and in media. Topics include polarization, dispersion, geometrical optics, interference, partial coherence, and diffraction. Prereq. ECEN 3410.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5166 (3) Guided Wave Optics

Builds up the concepts necessary to understand guided wave optical systems. Topics include slab wave-guides, semiconductor lasers, fiber optics, and integrated optics. Prereqs., ECEN 4645 or 5645, and ECEN 5156.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5224 (3) High Speed Digital Design

Same as ECEN 4224.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-5254 (3) Remote Sensing Signals and Systems

Examines passive and active techniques for remote sensing with emphasis on fundamental noise and detection issues from radio to optical frequencies. Emphasis is placed on electromagnetic wave detection, statistical signal and noise analysis, remote sensing system architecture, and hardware for remote sensing systems. Systems studied include radiometers, radars (real and synthetic aperture), interferometers, and lidars. Applications to detection and surveillance, Earth remote sensing, astronomy, and imaging systems are

covered. Prereqs., ECEN 3300 and 3400, or instructor consent.

College of Engineering & Applied Science Electrical & Computer Engineering Electromagnetics

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## ECEN-5264 (3) Electromagnetic Absorption, Scattering, and Propagation

Electromagnetic waves in communication, navigation, and remote sensing systems from radio to optical frequencies, including propagation in deterministic and random media. Topics include absorption and refraction by gases, discrete scattering by precipitation, clouds, and aerosols, continuous scattering by refractivity fluctuations, earth-space propagation and Faraday rotation in plasmas, and radiative transfer theory.

College of Engineering & Applied Science Electrical & Computer Engineering Electromagnetics

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## ECEN-5274 (3) Radar Science and Techniques

Studies atmospheric radar fundamentals. Examines scattering by precipitation and atmospheric turbulence; long-wavelength radars and the dynamics of the middle and upper atmosphere; design of meteorological and clear-air radars; profiling tropospheric winds, temperature, and humidity by radar and radiometry; and ionospheric sounding using ionosondes and incoherent-scatter radars. Prereq., ECEN 5254 or instructor consent.

College of Engineering & Applied Science Electrical & Computer Engineering Electromagnetics

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## ECEN-5322 (3) Search Engine & Analysis of High-dimensional Dataset

Provides students with an exposition of the most recent methods for searching and analyzing high dimensional datasets. The class includes a project: students will design and implement a content-based music information retrieval, such as the ones used by Gracenote, Shazam, or Pandora. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5324 (3) Fundamentals of Microsystem Packaging

Same as ECEN 4324. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Electrical & Computer Engineering Electromagnetics

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## ECEN-5345 (3) Introduction to Solid State Physics

Course provides an introduction to the electronic, photonic and phononic properties of solid state materials and devices. Covers optical constants, free electron gas, plasmons, energy bands, semiconductors and doping, excitons, quantum wells, phonons, and electrooptical effects. The course makes use of quantum mechanical methods. Prereqs., ECEN 3400 and basic quantum mechanics or instructor

consent. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5355 (3) Principles of Electronic Devices 1

Relates performance and limitations of solid state devices to their structures and technology. Examines semiconductor physics and technology. Includes Pn-junction, Mos, and optoelectronic devices. For both advance circuit and device engineers. Prereq., ECEN 3320 or instructor consent. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5358 (3) Optimization and Optimal Control

Introduces the theory and practice of optimization and optimal control. Topics include basic theory, nonlinear system trajectories and regulation, function space operators and derivatives, optimality conditions, barrier functionals, and Newton's method in function space. Recommended prereq., ECEN 5448. Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only. Prerequisites: Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Dynamical Systems and Control

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## ECEN-5365 (3) Semiconductor Materials and Devices 1

Includes an introduction to time-independent quantum mechanics and perturbation theory, tunneling, application to quantum-well electronic and optical devices, electrons in a crystalline solid, Bloch's theorem, energy bands and energy gaps, the effective mass approximation, a survey of energy bands for real crystals: Si, Ge, GaAs, InP, AlGaAs, etc., band structure engineering, and the electrical and optical properties of compound semiconductors. Prereq., ECEN 3320 and 5345.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5375 (3) Microstructures Laboratory

Same as ECEN 4375.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5418 (3) Automatic Control Systems 1

Coverage of principles of control systems with Multiple Inputs and Multiple Outputs (MIMO). Topics include MIMO state-space theory,

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applications of the singular value decomposition (SVD), coprime factorization methods, frequency domain topics, and an introduction to H-infinity design. Prereqs., ECEN 3300, 4138, and 5448, or equivalents.

College of Engineering & Applied Science    Electrical & Computer Engineering    Dynamical Systems and Control

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## ECEN-5423 (3) Chaotic Dynamics

Same as ECEN 4423 and CSCI 5446.

College of Engineering & Applied Science    Electrical & Computer Engineering    Computer and Digital Systems

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## ECEN-5438 (3) Robot Control

Provides a comprehensive treatment of the mathematical modeling of robot mechanisms and the analysis methods used to design control laws for these mechanisms. Prereqs., ECEN 4138 and PHYS 1110.

College of Engineering & Applied Science    Electrical & Computer Engineering    Dynamical Systems and Control

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## ECEN-5448 (3) Advanced Linear Systems

Offers a state space approach to analysis and synthesis of linear systems, state transition matrix, controllability and observability, system transformation, minimal realization, and analysis and synthesis of multi-input and multi-output systems. Prereq., ECEN 3300 and 4138. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science    Electrical & Computer Engineering    Dynamical Systems and Control

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## ECEN-5458 (3) Sampled Data and Digital Control Systems

Provides an analysis and synthesis of discrete-time systems. Studies sampling theorem and sampling process characterization, z-transform theory and z-transferfunction, and stability theory. Involves data converters (A/D and D/A), dead-beat design, and digital controller design. Prereqs., ECEN 3300 and 4138. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science    Electrical & Computer Engineering    Dynamical Systems and Control

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## ECEN-5503 (3) Computer Systems Design and Architecture

Covers digital logic circuits, assembly language programming, and gate-level computer design and architecture. Also discusses computer arithmetic algorithms, I/O, peripheral device performance, networking, and the Internet. Limited to graduate students. For ECE/CS majors with nontraditional backgrounds.

College of Engineering & Applied Science    Electrical & Computer Engineering    Computer and Digital Systems

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# ECEN-5517 (3) Power Electronics and Photovoltaic Power Systems Laboratory

Prereq., ECEN 5797. Same as ECEN 4517.

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[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Power](#)

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## Courses

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ECEN

### ECEN-5523 (3) Compiler Construction

Same as ECEN 4553 and CSCI 5525. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Computer and Digital Systems](#)

### ECEN-5532 (3) Digital Signal Processing Laboratory

Same as ECEN 4532.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Communications](#)

### ECEN-5533 (3) Fundamental Concepts of Programming Languages

Considers concepts common to a variety of programming languages--how they are described (both formally and informally) and how they are implemented. Provides a firm basis for comprehending new languages and gives insight into the relationship between languages and machines. Prereq., CSCI 3155 or instructor consent. Same as CSCI 5535.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Computer and Digital Systems](#)

### ECEN-5543 (3) Software Engineering of Standalone Programs

Applies engineering principles to phases of software product development, project planning, requirements definition, design, design patterns, validation, and maintenance. Emphasizes practical methods for communicating and verifying definitions and designs--- prototyping, inspections, and modeling (primarily UML). Includes relation to embedded systems and object-oriented design. Prereqs.,

ECEN 1030/CSCI 1300, CSCI 2270, or instructor consent. Same as CSCI 5548. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5553 (3) Parallel Processing

Examines a range of topics involved in using parallel operations to improve computational performance. Discusses parallel architectures, parallel algorithms and parallel programming languages. Architectures covered include vector computers, multiprocessors, network computers, and data flow machines. Prereq., background in computer organization, introduction to programming languages, elementary numerical analysis, ECEN 4593 and CSCI 3656, or instructor consent. Same as CSCI 5551.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5555 (3) Principles of Energy Systems & Devices

Same as ECEN 4555. Prerequisites: Restricted to students with 57-180 credits (Juniors or Seniors) or Graduate students only.

College of Engineering & Applied Science Electrical & Computer Engineering Nanostructures and Devices

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## ECEN-5573 (3) Advanced Operating Systems

Same as CSCI 5573.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5583 (3) Artificial Intelligence

Prereq., CSCI 3245 or equivalent. Same as CSCI 5582.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5593 (3) Advanced Computer Architecture

Provides a broad-scope treatment of important concepts in the design and implementation of high-performance computer systems. Discusses important issues in the pipelining of a processor, out-of-order instruction issue and superscalar designs, design of cache memory systems for such systems, and architectural features required for multicore processor designs. Also studies current and historically important computer architectures. Prereq., ECEN 4593 or instructor consent. Same as CSCI 5593. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Electrical & Computer Engineering Computer and Digital Systems

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## ECEN-5603 (3) Software Project Management

Presents topics and techniques critical to the management of software product development, including estimating, planning, quality, tracking, reporting, team organization, people management, and legal issues. Gives special attention to problems unique to software projects. Prereqs., ECEN 4583, 5543, and CSCI 4318, or equivalent industrial experience. Same as CSCI 5608 and EMEN 5031.

Prerequisites: Restricted to graduate students with a plan of Electrical/Computer Engineering.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5606 (3) Optics Laboratory

Provides advanced training in experimental optics. Consists of optics experiments that introduce the techniques and devices essential to modern optics, including characterization of sources, photodetectors, modulators, use of interferometers, spectrometers, and holograms, and experimentation of fiber optics and Fourier optics. Prereq., undergraduate optics course such as PHYS 4510. Same as PHYS 5606.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5612 (3) Noise and Random Processes

Reviews probability theory, convergence and probability bounds, multivariable normal theory, sequences of random variables and stochastic processes, Bernoulli and Poisson processes, wide-sense stationary processes, and correlation functions and power spectra. Also includes linear systems with random inputs and Gauss-Markov processes, first- and second-order properties of Arma processes, and Markov chains. Prereqs., ECEN 3300 and 3810 or MATH 4510. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-5613 (3) Embedded System Design

Same as ECEN 4613. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5616 (3) Optoelectric System Design

Same as ECEN 4616. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5622 (3) Information Theory and Coding

Entropy rates of information sources, fundamental limits of data compression, Huffman and arithmetic codes; mutual information,

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fundamental limits of information transmission over noisy communication channels with/without feedback. Selected topics in information storage, lossy data compression, and network information theory. Prereqs., ECEN 3810 or equivalent, or instructor consent. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-5623 (3) Real-Time Embedded Systems

Same as ECEN 4623. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5626 (3) Active Optical Devices

Analysis of active optical devices such as semiconductor laser, detector and flat panel display by clearly defining and interconnecting the fundamental physical mechanism, device design and operating principles and device performance. Recommended prereq., ECEN 5355.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5632 (3) Theory and Application of Digital Filtering

Digital signal processing and its applications are of interest to a wide variety of scientists and engineers. The course covers such topics as characterization of linear discrete-time circuits by unit pulse response, transfer functions, and difference equations, use of z-transforms and Fourier analysis, discrete Fourier transform and fast algorithms (FFT), design of finite and infinite impulse response filters, frequency transformations, study of optimized filters for deterministic signals. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-5633 (3) Hybrid Embedded Systems

Same as ECEN 4633. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5634 (3) Graduate Microwave and RF Laboratory

Introduce RF and microwave measurement methods. A laboratory course whose experiments build on material learned in ECEN 3410 (Electromagnetic Waves and Transmission): electromagnetic waves, transmission lines, waveguides, time-domain reflection, frequency-domain measurement, microwave networks, impedance matching, antenna pattern measurement, radar, and simple nonlinear concepts such as harmonics, square-law detection, mixing and transmitter/receiver applications. Prereq., ECEN 3410. Restricted to graduate

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students. Same as ECEN 4634. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Electromagnetics

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## ECEN-5643 (3) SW Engineering of Concurrent Systems

Addresses engineering of applications requiring multiple software processes running concurrently, sharing data, and communicating as a system in a single environment. Topics include performance analysis of architecture design; analysis of requirements, design and testing of synchronization and communication; the interplay of system design and performance with the impact of memory management, input/output, and file system support. Prereq., ECEN 4583 or 5543. ECEN 4643 and 5643 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5645 (3) Introduction to Optical Electronics

Introduces lasers, Gaussian optics, modulators, nonlinear optics, optical detectors, and other related devices. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Nanostructures and Devices

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## ECEN-5652 (3) Detection and Extraction of Signals from Noise

Introduces detection, estimation, and time series analysis. Topics include hypothesis testing, detection of known form and random signals, least squares parameter estimation, maximum likelihood theory, minimum mean-squared error estimation, Kalman-Wiener filtering, prediction in stationary time series, and modal analysis. Applications include studies in communications, control, and experimental modeling. Prereq., ECEN 5612.

College of Engineering & Applied Science | Electrical & Computer Engineering | Communications

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## ECEN-5653 (3) Real-Time Digital Media

Learn how to design and build Linux-based real-time system applications for digital media encode/decode and transport. Course focus is on the process as well as fundamentals of designing, coding, and testing Linux-based real-time systems often used in industry for digital media systems. Students use POSIX kernel-mapped threads and drivers to implement real-time digital media solutions. Prereqs., ECEN 1030 or CSCI 1300, and CSCI 3753 or equivalent. Restricted to engineering students. ECEN 4653 and 5653 are the same course.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5672 (3) Digital Image Processing

Course objective is to present the fundamental techniques available for image representation and compression (e.g., wavelets), filtering

(e.g., Wiener and nonlinear filter), and segmentation (e.g., anisotropic diffusion). Prereq., ECEN 5632 or instructor consent.

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## Courses

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ECEN

### ECEN-5673 (3) Distributed Systems

Examines systems that span multiple autonomous computers. Topics include system structuring techniques, scalability, heterogeneity, fault tolerance, load sharing, distributed file and information systems, naming, directory services, resource discovery, resource and network management, security, privacy, ethics, and social issues. Recommended prereq., CSCI 5573 or a course in computer networks. Same as CSCI 5673.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Computer and Digital Systems](#)

### ECEN-5682 (3) Theory and Practice of Error Control Codes

Block and convolutional codes for reliable transmission of digital data over unreliable noisy channels. Algebraic and dsp characterizations of cyclic codes such as Bch/Rs codes. Decoding algorithms for block codes and the Viterbi algorithm. Graph codes and iterative decoding. Prereq., ECEN 3300.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Communications](#)

### ECEN-5692 (3) Principles of Digital Communication

Techniques for efficient and reliable transmission of information over bandwidth and power constrained communication channels; digital modulation methods, power spectral density calculations, optimum receiver principles, error rate analysis, channel coding potential in wired/wireless media, trellis coded modulation, and equalization. Prereqs., ECEN 3300 and 5612 or equivalents. Recommended prereqs., ECEN 5622 and 5632.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Communications](#)

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## ECEN-5696 (3) Fourier Optics

Introduces a system level approach to the analysis and design of optical systems. Topics include holography, Fourier transform properties of lenses, two-dimensional convolution and correlation functions, spatial filtering, and optical computing techniques. Also covers coherent and incoherent imaging techniques, tomography, and synthetic aperture imaging. Prereqs., ECEN 3300 and 3410, or instructor consent. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-5743 (3) SW Engineering of Distributed Systems

Addresses engineering of networked applications and self-contained embedded system products involving multiple processors. The fundamental concepts of software engineering are complicated by an application running simultaneously and asynchronously on multiple processors over a network. Topics: specification, analysis, design, and testing of distributed components including concerns of security, synchronization, transaction coordination, data replication, web services, and service oriented architectures. Prereq., ECEN 4583 or 5543 or CSCI 5548. Recommended prereq., ECEN 5643. ECEN 4743 and 5743 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5753 (3) Computer Performance Modeling

Same as ECEN 4753 and CSCI 4753/5753.

College of Engineering & Applied Science | Electrical & Computer Engineering | Computer and Digital Systems

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## ECEN-5787 (3) Power Quality Phenomena Power Systems

Single-time and periodic disturbances of power systems and their causes and effects on sensitive (electronic) end-use devices and power system components are studied and modeled. Measurement techniques of the impact of such disturbances (power quality phenomena) on devices as well as prevention and mitigating techniques are addressed. Prereq., ECEN 3170.

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-5797 (3) Introduction to Power Electronics

Same as ECEN 4797. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-5807 (3) Modeling and Control of Power Electronic Systems

Studies modeling and control topics in power electronics. Averaged switch modeling of converters, computer simulation, ac modeling of the discontinuous conduction mode, the current programmed mode, nulldouble injection techniques in linear circuits, input filter design, and low-harmonic rectifiers. Prereq., ECEN 5797.

College of Engineering & Applied Science   Electrical & Computer Engineering   Power

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## ECEN-5811 (3) Neural Signals and Functional Brain Imaging

Same as ECEN 4811 and ASEN 4216

College of Engineering & Applied Science   Electrical & Computer Engineering   Bioengineering

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## ECEN-5817 (3) Resonant and Soft-Switching Techniques in Power Electronics

Covers resonant converters and inverters, and soft switching; sinusoidal approximations in analysis of series, parallel, Lcc, and other resonant dc-dc and dc-ac converters; state-plane analysis of resonant circuits; switching transitions in hard-switched and soft-switched Pwm converters; zero-voltage switching techniques, including resonant, quasi resonant, zero voltage transition, and auxiliary switch circuits. Prereq., ECEN 5797 or instructor consent required.

College of Engineering & Applied Science   Electrical & Computer Engineering   Power

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## ECEN-5821 (3) Neural Systems and Physiological Control

Same as ECEN 4821 and ASEN 4426/5426.

College of Engineering & Applied Science   Electrical & Computer Engineering   Bioengineering

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## ECEN-5827 (3) Analog IC Design

Same as ECEN 4827. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science   Electrical & Computer Engineering   Power

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## ECEN-5830 (3) Special Topics

College of Engineering & Applied Science   Electrical & Computer Engineering   General

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## ECEN-5831 (3) Brains, Minds, and Computers

Same as ECEN 4831, and ASEN 4436/5436. Prerequisites: Restricted to any graduate students or Electrical/Computer Engineering or Electrical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science | Electrical & Computer Engineering | Bioengineering

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## ECEN-5837 (3) Mixed-Signal IC Design Lab

Software laboratory course extends the concepts developed in ECEN 4827 to full design and layout of mixed analog and digital custom integrated circuits. Assignments explore implementation of analog to digital and digital to analog converters, and final project develops a full custom IC for a target application. Prereq., ECEN 5827.

College of Engineering & Applied Science | Electrical & Computer Engineering | Power

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## ECEN-5840 (1-6) Independent Study

Offers an opportunity for students to do independent, creative work at the master's level. Numbered ECEN 5840-5849. Prereq., advisor consent.

College of Engineering & Applied Science | Electrical & Computer Engineering | General

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## ECEN-6016 (1-3) Special Topics

College of Engineering & Applied Science | Electrical & Computer Engineering | Optics

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## ECEN-6139 (3) Logic Synthesis of VLSI Systems

Studies synthesis and optimization of sequential circuits, including retiming transformations and don't care sequences. Gives attention to hardware description languages and their application to finite state systems. Also includes synthesis for testability and performance, algorithms for test generation, formal verification of sequential systems, and synthesis of asynchronous circuits. Prereqs., ECEN 5139 and CSCI 5454.

College of Engineering & Applied Science | Electrical & Computer Engineering | VLSI CAD Methods

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## ECEN-6144 (3) Electromagnetic Boundary Problems

Provides mathematical and physical fundamentals necessary for the systematic analysis of electromagnetic fields problems. Covers basic

properties of Maxwell's equations, potentials and jump conditions; scattering and diffraction by canonical structures; Green's functions, integral equations and approximate methods. Requires some maturity in electromagnetics. Prereq., ECEN 5114 or 5134 or instructor consent. Prerequisites: Restricted to graduate students in Electrical Engineering (EEEN) or Electrical/Computer Engineering (ECEN) or Electrical Engineering Concurrent or Electrical/Computer Engineering Concurrent Degree students only.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Electromagnetics](#)

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## ECEN-6800 (3) Master of Engineering Report

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

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## ECEN-6940 (1) Master's Degree Candidate

Numbered ECEN 6940-6949.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

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## ECEN-6950 (1-6) Master's Thesis

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

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## ECEN-7438 (3) Theory of Nonlinear Systems

Nonlinear systems and control. Introduction to nonlinear phenomena: multiple equilibria, limit cycles, bifurcations, complex dynamical behavior. Planar dynamical systems, analysis using phase plane techniques. Input-output analysis and stability. Passivity. Lyapunov stability theory. Feedback linearization. Exploration of examples and applications. Prereq., ECEN 5448.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [Dynamical Systems and Control](#)

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## ECEN-7840 (1-6) Independent Study

Offers an opportunity for students to do independent, creative work at the doctoral level. Numbered ECEN 7840-7849. Prereq., advisor consent.

[College of Engineering & Applied Science](#) [Electrical & Computer Engineering](#) [General](#)

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# Courses

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ECEN

## ECEN-7849 (1-6) Independent Study

Offers an opportunity for students to do independent, creative work at the doctoral level. Numbered ECEN 7840--7849. Prereq., advisor consent.

[College of Engineering & Applied Science](#)
[Electrical & Computer Engineering](#)
[VLSI CAD Methods](#)

## ECEN-8990 (1-10) Doctoral Thesis

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# Courses

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ECON

## ECON-1078 (3) Mathematical Tools for Economists 1

Teaches mathematical skills and logical thinking for use in economics. Topics include algebra, graphs, functions, and probability. The class includes many "Real world" examples and some illustrative computer assignments. Approved for arts and sciences CORE curriculum: quantitative reasoning and mathematical skills.

[College of Arts & Sciences](#) [Economics](#) [Quantitative Economics](#)

## ECON-1088 (3) Mathematical Tools for Economists 2

Continuation of ECON 1078. Teaches mathematical skills for use in economics. Topics include derivatives, optimization, and integration. These skills are used on "Real world" problems, and illustrated with computer assignments. Prereq., ECON 1078 or instructor consent. Similar to MATH 1080, 1081, 1090, 1100, 1300, 1310, and APPM 1350.

[College of Arts & Sciences](#) [Economics](#) [Quantitative Economics](#)

## ECON-2010 (4) Principles of Microeconomics

Examines basic concepts of microeconomics, or the behavior and the interactions of individuals, firms, and government. Topics include determining economic problems, how consumers and businesses make decisions, how markets work and how they fail, and how government actions affect markets. Credit not granted for this course and ECON 1000 and 1001. Meets MAPS requirements for social sciences: general. Approved for arts and sciences CORE curriculum: contemporary societies.

[College of Arts & Sciences](#) [Economics](#) [Theory & History Economic Thgt](#)

## ECON-2020 (4) Principles of Macroeconomics

Provides an overview of the economy, examining the flows of resources and outputs and the factors determining the levels of income and prices. Explores policy problems of inflation, unemployment, and economic growth. Prereq., ECON 2010. Credit not granted for this course and ECON 1000 and 1001. Meets MAPS requirement for social sciences: general. Approved for arts and sciences CORE curriculum: contemporary societies.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-3070 (3) Intermediate Microeconomic Theory

Explores theory and application of models of consumer choice, firm and market organization, and general equilibrium. Extensions include intertemporal decisions, decisions under uncertainty, externalities, and strategic interaction. Prereqs., ECON 1000 or 2010; and either ECON 1078 and 1088, or MATH 1300, or MATH 1310, or MATH 1081, or MATH 1080, 1090, and 1100, or APPM 1350, or equivalent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-3080 (3) Intermediate Macroeconomic Theory

Introduces theories of aggregate economic activity including the determination of income, employment, and prices; economic growth; and fluctuations. Macroeconomic policies are explored in both closed and open economy models. ECON 3070 and 3080 may be taken in any order; there is no recommended sequence. Prereqs., ECON 1000 or 2020; and either ECON 1078 and 1088, or MATH 1300, or MATH 1310, or MATH 1081, or MATH 1080, 1090, and 1100, or APPM 1350, or equivalent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-3403 (3) International Economics and Policy

Examines national and supranational policies that affect the international economy, with attention to trade barriers, economic nationalism and regionalism, international political economy, exchange market intervention, and international transmission of economic perturbations. Prereqs., ECON 1000, or ECON 2010 and 2020. Restricted to nonmajors. This course may not be taken after either ECON 4413 or ECON 4423. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Economic (ECON) majors are restricted from taking this course.

College of Arts & Sciences Economics International Trade & Finance

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## ECON-3535 (3) Natural Resource Economics

Integrates economic analysis with life science aspects of natural resource systems to develop social policies for use of natural resources. Studies economists' approaches to resources policy analysis and applies them to energy, forestry, fisheries, mineral, and water systems. Prereq., ECON 1000 or 2010. Restricted to nonmajors. Credit not granted for this course and ECON 4535. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Economic (ECON) majors are restricted from taking this course.

College of Arts & Sciences Economics Natural Resources & Environ

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## ECON-3545 (3) Environmental Economics

Highlights causes of excessive environmental pollution and tools for controlling it through economic analysis, values of preservation, and distribution of costs and benefits from environmental protection programs. Prereq., ECON 1000 or 2010. Restricted to nonmajors. Credit not granted for this course and ECON 4545. Approved for arts and sciences CORE curriculum: contemporary societies. Prerequisites: Economic (ECON) majors are restricted from taking this course.

College of Arts & Sciences | Economics | Natural Resources & Environ

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## ECON-3784 (3) Economic Development and Policy

Introductory course in Economic Development, designed for non-majors. Students are introduced to the major issues in development economics. Students will explore empirical, theoretical, and policy issues in economic development. Emphasis is placed on the controversial issues in this literature, requiring students to explore competing, and often conflicting, perspectives of these issues. Prereqs., ECON 1000 or ECON 2010 and 2020. Restricted to non-majors. Prerequisites: Economic (ECON) majors are restricted from taking this course.

College of Arts & Sciences | Economics | Economic Development

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## ECON-3818 (4) Introduction to Statistics with Computer Applications

Introduces statistical methods and their applications in quantitative economic analysis. Prereqs., ECON 1000, or 2010 and 2020; and either ECON 1078 and 1088, or MATH 1300, or MATH 1310, or MATH 1081, or MATH 1080, 1090, and 1100, or APPM 1350, or equivalent.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4070 (3) Topics in Microeconomics

Studies utility maximization under uncertainty, risk, game theory, moral hazard, and adverse selection. Applications include insurance markets and the theory of contracts. Prereqs., ECON 3070 and 4808 or equivalent, or instructor consent.

College of Arts & Sciences | Economics | Theory & History Economic Thgt

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## ECON-4111 (3) Money and Banking Systems

Discusses money, financial institutions and the monetary-financial system in a modern economy. Prereq., ECON 3080.

College of Arts & Sciences | Economics | Money and Banking

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## ECON-4211 (3) Economics of the Public Sector

Focuses on taxation and public expenditures. Topics include economic rationale for government action, economic theory of government behavior, and effects of government policies on allocation of resources and distribution of income. Prereqs., ECON 3070 and 3818.

College of Arts & Sciences Economics Public Economics

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## ECON-4221 (3) Political and Public Choice Economics

Explores decision-making in non-traditional market settings, specifically political market settings, using economic models. We investigate policy outcomes as the product of interactions among individuals in political markets, and analyze how governmental decisions are the result of rational optimizing behavior, even if they do not lead to policies that maximize national welfare. Prereqs., ECON 3070 and 3818.

College of Arts & Sciences Economics Public Economics

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## ECON-4231 (3) Practicum: Applied Economic Analysis and Public Policy

Applies economic analysis to current issues of public policy. Reviews basic public finance and economic justifications for government action. Examines structure and procedures of Colorado State Legislature. Chooses current legislative issues, reviews relevant economic literature and applies implications through briefing papers and testimony at legislative hearings. Explores the challenges of integrating informed economic analysis into legislative process. Prereqs., ECON 3070, 3080, and 3818.

College of Arts & Sciences Economics Public Economics

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## ECON-4242 (3) Urban Economics: The Economics of Cities

Considers the economic forces which drive households and jobs to congregate in metropolitan areas. It then considers the forces within the city which determine how the established cities "look" - how rents vary with location, the distribution of jobs and households within a city, urban sprawl, and the sorting of households between neighborhoods. Finally it considers some government policies relating to land use and housing. Prereqs., ECON 3070 and 3818.

College of Arts & Sciences Economics Urban & Regional Economics

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## ECON-4292 (3) Migration, Immigrant Adaptation, and Development

Examines historical and current patterns of migration with an emphasis in international movement. Looks at leading migration theories related to both origin- and destination-based explanations while critically looking at the role of development as a potential cause and consequence of population movement. Finally, covers some aspects of immigrants' social and economic adaptation to their host society. Prereq., ECON 3070. Same as GEOG 4292.

College of Arts & Sciences Economics Urban & Regional Economics

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## ECON-4309 (3) Economics Honors Seminar 1

For information consult the department's director of honors. Open only to qualified seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-4339 (3) Economics Honors Seminar 2

For information consult the department's director of honors. This course does not count toward major requirements. Prereq., ECON 4309. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-4413 (3) International Trade

Focuses on theories of international trade and its impacts on economic welfare. Analyzes commercial policy, including tariffs, non-tariff barriers, retaliation, regional integration, and factor migration. Prereq., ECON 3070.

College of Arts & Sciences | Economics | International Trade & Finance

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## ECON-4423 (3) International Finance

Covers balance of payments; foreign exchange market, income, trade, and capital flows; asset markets adjustment mechanisms; stabilization policies in an open economy; and problems of international monetary systems. Prereq., ECON 3080.

College of Arts & Sciences | Economics | International Trade & Finance

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## ECON-4504 (3) The New Institutional Economics: Institutions, Contracts and Economic Outcomes

Understand the conceptual tool kit of the New Institutional Economics. The concepts include transaction costs, property rights, credible commitment, and most importantly the roles of formal and informal institutions. We will examine the impact of institutions on contracting and organizations. The goal is to understand how the underlying institutions determine the degree to which societies improve their economic performance. Prereqs., ECON 3070, 3080 and 3818.

College of Arts & Sciences | Economics | Economic History

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## ECON-4514 (3) Economic History of Europe

Covers evolution of modern economic growth and development in Europe, emphasizing institutional change. Prereqs., ECON 3070 or

3080. Approved for arts and sciences CORE curriculum: historical context.

[College of Arts & Sciences](#) [Economics](#) [Economic History](#)

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## ECON-4524 (3) Economic History of the United States

Evolution of modern economic growth and development in the U.S. from colonial times to the present emphasizing institutional change.

Prereq., ECON 3070. Approved for arts and sciences CORE curriculum: United States context.

[College of Arts & Sciences](#) [Economics](#) [Economic History](#)

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# Courses

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**College/School**

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Search by Course Number

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ECON

## ECON-4535 (3) Natural Resource Economics

Analysis of problems associated with socially optimal use of renewable and nonrenewable natural resources over time. Problems of common property resources, irreversible forms of development, and preservation of natural areas. Prereq., ECON 3070. Credit not granted for this course and ECON 3535.

[College of Arts & Sciences](#)
[Economics](#)
[Natural Resources & Environ](#)

## ECON-4545 (3) Environmental Economics

Examines the effects of economic growth on the environment; application of economic theory of external diseconomies, cost-benefit analysis, program budgeting, and welfare economics to problems of the physical environment. Prereq., ECON 3070. Credit not granted for this course and ECON 3545.

[College of Arts & Sciences](#)
[Economics](#)
[Natural Resources & Environ](#)

## ECON-4555 (3) Transportation Economics

Provides an overview of the characteristics and structure of transportation markets including aggregate demand, vehicle and mode choice, surface freight and air travel. Explores market failures in the transportation sector including market power and externalities such as pollution, congestion and accidents as well as policies aimed at addressing these issues. Prereqs., ECON 3070 and 3818.

[College of Arts & Sciences](#)
[Economics](#)
[Natural Resources & Environ](#)

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## ECON-4616 (3) Labor Economics

Examines the influence of markets, unions, and government on labor allocation and remuneration. Analyzes human capital, discrimination, mobility and migration, productivity, unemployment, and inflation. Compares outcomes under competition with those in a world marked by shared market power and bargaining. Prereq., ECON 3070.

College of Arts & Sciences | Economics | Labor and Human Resources

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## ECON-4626 (3) The Economics of Inequality and Discrimination

Examines the unique insights available through economic analysis regarding the causes, mechanisms, and consequences of inequality and discrimination. Examines the extent of inequality, the varieties and extents of discrimination, and explores the economic models that suggest explanations. Prereq., ECON 3070. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences | Economics | Labor and Human Resources

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## ECON-4646 (3) Topics in Health Economics

Growth in health expenditures worldwide over the past three decades has led to an increase in research in health economics and its importance in public policy in developed and developing countries. The purpose of this course is to encourage students to read, think, and do research on issues in health economics. This course will cover issues that are pertinent to the US, other developed and developing countries. It will cover the basics of health economics such as health production functions and the role for government as well as touching on topical issues such as health care reform. Prereq., ECON 3070. Recommended prereq., ECON 3818.

College of Arts & Sciences | Economics | Labor and Human Resources

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## ECON-4697 (3) Industrial Organization and Regulation

Explores neoclassical theory of the firm, the determinants of industrial structure, and the purposes and institutions of public policy to control or maintain a competitive environment. Prereq., ECON 3070. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences | Economics | Industrial Organization

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## ECON-4774 (3) Economic Reform in Developing Countries

Explores competing paradigms of economic development, emphasizing the confrontation between the structuralist/dirigiste paradigm and the neoclassical public choice paradigm. Analyzes economic reforms under way in developing countries, including stabilization policy and structural adjustment. Also explores political reforms, including the pluralist revolution and the design of a constitutional framework in developing societies. Prereqs., ECON 3070 or 3080.

College of Arts & Sciences | Economics | Economic Development

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## ECON-4784 (3) Economic Development

Explores empirical, theoretical, and policy issues in economic development. Examines topics with reference to the developing countries: income distribution and poverty, demographic change, labor force employment and migration, human capital, physical capital, natural resources and the environment, industrial structure, international trade, and finance. Prereqs., ECON 3070 or 3080.

College of Arts & Sciences | Economics | Economic Development

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## ECON-4794 (3) Economic Growth

Introduces theories explaining why differences in standards of living among countries are so large. Examines a variety of data on historical experiences of economic growth. Surveys recent research on why some countries are so rich and some are so poor, and why some countries grow so quickly and others grow so slowly. Prereqs., ECON 1088 or equivalent, and ECON 3070 or 3080.

College of Arts & Sciences | Economics | Economic Development

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## ECON-4797 (3) Topics in Industrial Organization: Antitrust and Regulation

Explores two major branches of Industrial Organization--antitrust and regulation. Focus is on developing qualitative and quantitative skills for the legal-economic analysis of issues and problems across a variety of industries. Case studies are used to illustrate concepts, including mergers, collusive agreements, monopolization, and networks. Individual and group projects help develop advocacy and public speaking skills. Prereq., ECON 3070.

College of Arts & Sciences | Economics | Industrial Organization

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## ECON-4808 (3) Introduction to Mathematical Economics

Introduces the use of mathematics in economics. Topics include vectors and matrices, differential calculus, and optimization theory, with economic applications. Prereqs., ECON 3070 and ECON 3818.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4818 (3) Introduction to Econometrics

Provides undergraduate economics majors with an introduction to econometric theory and practice. Develops the multiple regression model and problems encountered in its application in lecture and individual applied projects. Prereqs., ECON 3070 and 3818.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4838 (3) Microcomputer Applications in Economics

Teaches basic concepts in Java programming applied to economic models. Development of Web pages and dynamic modeling will be introduced. Students will gain a foundation that can be applied to creating advanced applications relating to analysis of statistical data and custom projects. Prereqs., ECON 1088 or MATH 1300, ECON 3070 and ECON 3818.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4848 (3) Applied Econometrics

Introduces students to the practice of applied regression analysis. Summarizes and reviews the regression technique, explores U.S. census data sources, introduces an advanced statistical software package and provides structured exercises in regression analysis of census data. Concludes with independent research projects analyzing social and economic issues using regression analysis and census data. Prereq., ECON 3818. Recommended prereq., ECON 3070.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4858 (3) Financial Econometrics

Introduces statistical models, estimation and testing procedures used in analyzing financial data for advanced undergraduates. Topics include the modeling of returns, portfolio theory, the capital asset pricing model, options pricing and fixed income securities. Prereq., ECON 3818 or equivalent. Recommended prereq., ECON 4818.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4868 (3) Simulation Modeling in Microeconomics

Computer simulation modeling translates theory into computer code to examine questions numerically; for example, the effects of taxes or emissions permits on welfare and income distribution. We use GAMS (general algebraic modeling system); a version may be downloaded for free. Students must have access to a computer (not needed in the classroom). Prereq., ECON 3070.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-4897 (3) Economics of Organizations

Introduces students to the economic analysis of relationship between firms and incentives within firms. The first part covers classical theories of firm boundaries and contractual relationship between firms. The second part focuses on compensation and incentive issues within firms. Prereqs., ECON 3070 and 3818.

College of Arts & Sciences | Economics | Industrial Organization

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## ECON-4909 (3) Independent Study

May be repeated up to 6 total credit hours, but only 3 credit hours count for economics major. Prereqs., ECON 1000 or 2010 and 2020; completion of at least 12 hours of ECON classes and instructor and department consent required. Offered only to students with a GPA of 3.00 or better.

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-4939 (2-6) Internship/Seminar

Offers students the opportunity to integrate theoretical concepts of economics with practical experience in economics-related institutions. The theoretical portion arises from seminars and readings, the practical from activities in organizations related to the economics field. A maximum of 3 credit hours counts toward major requirements. Prereqs., ECON 3070 and 3080 and instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Economic (ECON) majors only.

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-4999 (3) Economics in Action: A Capstone Course

Students read current periodicals, picking out topics in which economics plays a role in understanding events. Background reading is assigned on topics chosen. May not be taken more than once for credit. Prereqs., ECON 3070 and 3080, and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-6209 (3) Research Methods in Economics

Trains graduate students in scientific methodology and research in economics. Culminates in a research project that normally leads directly to thesis work. Prereqs., ECON 6070, 6080, 6808, and 6818. Will not be offered academic year 2007--08.

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-6555 (3) Water Resources Development and Management: Technology, Economics, Institutions

Offers a multidisciplinary exploration of the engineering, economic, and institutional principles involved in water system development and management. Provides a background in basic hydrology, economics, water law, and institutions. Prereq., ECON 3070 or equivalent. Same as CVEN 5393.

College of Arts & Sciences | Economics | Natural Resources & Environ

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## ECON-6774 (3) Economic Reform in Developing Countries

Covers stabilization policy and structural adjustment. Specific topics include orthodox stabilization policies (fiscal, monetary, and exchange rate policies); heterodox stabilization policies (price, wage, and interest controls); trade liberalization; financial liberalization; privatization and deregulation. Prereqs., ECON 6070 and 6080.

[College of Arts & Sciences](#) [Economics](#) [Economic Development](#)

## ECON-6828 (3) Applied Time Series Analysis (Box-Jenkins) and Forecasting

Introduces first-year graduate students to time series approach of model building and forecasting. Basic topics are autoregressive integrated moving average models, nonstationarity and co-integration, vector autoregressions, and the evaluation of forecasts from such models. Emphasizes applied computer assignments. Prereqs., ECON 3818 and 4808, or equivalent.

[College of Arts & Sciences](#) [Economics](#) [Quantitative Economics](#)

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# Courses

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ECON

## ECON-6949 (1) Master's Candidate

College of Arts & Sciences | Economics | Independent Study and Other

## ECON-6959 (1-6) Master's Thesis

College of Arts & Sciences | Economics | Independent Study and Other

## ECON-7010 (3) Microeconomic Theory 1

Analyzes recent and contemporary literature on fundamentals of economic theory. Considers value theory with particular emphasis on methodology, theory of demand, theory of the firm, game theory, theory of distribution, general equilibrium theory, and welfare economics. Prereqs., ECON 3070, 3080; 6808 or MATH 1300. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Economics | Theory & History Economic Thgt

## ECON-7020 (3) Macroeconomic Theory 1

Discusses behavior of consumption, investment, employment, production, and interest rates in the context of dynamic optimization models. Also considers government, economic growth, and business cycles. Prereqs., ECON 3070 and 3080. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Economics | Theory & History Economic Thgt

## ECON-7030 (3) Microeconomic Theory 2

Continuation of ECON 7010. Prereq., ECON 7010.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-7040 (3) Macroeconomic Theory 2

Presents the theoretical and empirical application of dynamic macro programming models. Topics include consumption, investment, labor, money, and credit theories. Covers the theory of economic fluctuations and business cycles employing dynamic general equilibrium models. Prereq., ECON 7020.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-7050 (3) Advanced Economic Theory

Discusses advanced topics in game theory and general equilibrium. Prereqs., ECON 7010, 7030, 7818, 7828. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Theory & History Economic Thgt

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## ECON-7818 (3) Mathematical Statistics for Economists

Provides the mathematical foundation for Ph.D. level statistical inference in economic research. The primary topics of the course are probability theory and mathematical statistics including hypothesis testing and classical estimation with an emphasis on the method of maximum likelihood. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Quantitative Economics

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## ECON-7828 (3) Econometrics

Continuation of ECON 7818. Topics include regression analysis and extensions of the linear regression model to generalized least squares, time series data, and systems of equations. Prereq., ECON 7818.

College of Arts & Sciences Economics Quantitative Economics

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## ECON-8209 (3) Economics Research Methods Workshop 1

Assists students starting their doctoral thesis by discussing methodology and evaluation of economic research. Presents and discusses student research proposals. Prereqs., two ECON courses at the 8000 level. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Independent Study and Other

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## ECON-8211 (3) Public Economics: Fundamental Principles

Presents the fundamental principles of public goods, externalities, public choice, excess burden, optimal taxation, and tax incidence. Prereq., ECON 6211 or 7010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Public Economics

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## ECON-8219 (3) Economics Research Methods Workshop 2

Continuation of ECON 8209. Assists students starting their doctoral thesis by discussing relevant economic research. Presents and discusses research papers. Prereq., ECON 8209.

College of Arts & Sciences Economics Independent Study and Other

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## ECON-8221 (3) Public Economics: Topics in Public Expenditures and Taxation

Explores advanced topics in public economics such as decentralization, state and local government, program analysis, taxation, international tax issues, political economy issues, and market failure. Prereqs., ECON 6211 or 7010, and 8211.

College of Arts & Sciences Economics Public Economics

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## ECON-8231 (3) Local Public Economics

Examines subnational governments and systems of governments, the effects of inter-governmental competition, appropriate tax and expenditure responsibilities, and variations in governing institutions. Covers congestible public goods, Tiebout mechanisms, and tax capitalization. Prereq., ECON 6211 or 7010.

College of Arts & Sciences Economics Public Economics

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## ECON-8252 (3) Seminar: Urban and Regional Economics 1

Covers basic theories in spatial location of economic activity and land use and the survey techniques developed to analyze, measure, and predict regional and urban structure and growth, such as economic base studies, regional social accounts, and input-output analysis. Prereq., ECON 6070 or 7010.

College of Arts & Sciences Economics Urban & Regional Economics

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## ECON-8262 (3) Topics in Urban and Regional Economics

Investigates various theoretical topics in urban and regional economics, focusing on policy issues. Involves student research and presentations. Prereq., ECON 6070 or 7010.

College of Arts & Sciences Economics Urban & Regional Economics

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## ECON-8333 (3) Globalization and Democratization: An Introduction

Introduces research on globalization and democratization from an interdisciplinary perspective. Examines ongoing interdisciplinary research on the global political economy. Students learn about ongoing research, critique current efforts, and design their own research project. Prereq., graduate standing in PSCI, ECON, GEOG, or SOCY. Same as PSCI 7333, SOCY 6031, and GEOG 5332.

College of Arts & Sciences Economics International Trade & Finance

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## ECON-8413 (3) Seminar: International Trade Theory

Covers theories of comparative advantage, including the classical, factor-proportions, fixed-factor, and noncompetitive markets models. Examines trade policy including trade barriers, market distortions, strategic policy, regional integration, political economy, and factor migration. Prereq., ECON 6413 or 7010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics International Trade & Finance

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## ECON-8423 (3) Seminar: International Finance

Highlights foreign exchange markets, past and current international monetary mechanisms, and processes of adjustment. Examines the role of international financial markets for the behavior of consumption, investment, saving, and production. Also considers international transmission of business cycles. Prereq., ECON 6423 or 7020.

College of Arts & Sciences Economics International Trade & Finance

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## ECON-8433 (3) Seminar: Topics in Money and International Economics

Explores advanced work in various aspects of international economics, such as empirical trade analysis, public choice, and interactions between real and monetary phenomena in the world economy. Prereq., ECON 6413, 6423, 8413, or 8423. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics International Trade & Finance

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## ECON-8534 (3) Economic History of North America

Examines North America's past from the perspective of economics. Topics include growth and welfare in the colonial period; staple products, agricultural development, and the emerging industrialism in the antebellum period; transformation of the North American

economy to 1914; the interwar years and the Great Depression; and economic integration since 1945. Prereqs., ECON 6070 and 6080, or ECON 7010.

College of Arts & Sciences Economics Economic History

## ECON-8535 (3) Environmental Economics I

Considers the allocation of society's scarce environmental resources and government attempts to achieve more efficient and equitable allocations. It is a course in applied welfare economics with an emphasis on market failure and valuation. Prereq., ECON 6535 and 6808; or ECON 7010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Natural Resources & Environ

## ECON-8545 (3) Environmental Economics II

Provides advanced study of recent advances in environmental economics and explores opportunities for new research. Topics vary with interests of instructor and students. Prereqs., ECON 6535 and 6808, or ECON 7010 and ECON 8535. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Natural Resources & Environ

## ECON-8555 (3) Water Resources Development and Management

Offers a research seminar in joint hydrologic-economic modeling and systems analysis. Addresses problems of joint water quantity-water quality management and joint surface-ground water management. Prereq., ECON 6555.

College of Arts & Sciences Economics Natural Resources & Environ

## ECON-8666 (1-3) Economic Demography

Investigates economic determinants and consequences of demographic behavior in developing and developed countries. Issues include fertility and female labor supply interactions, the demographic transition, the effect of population growth on income distribution, family investments in children, and intergenerational mobility. Prereqs., ECON 3070 and 3080.

College of Arts & Sciences Economics Labor and Human Resources



## Courses

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ECON

### [ECON-8676 \(3\) Seminar: Labor Economics 1](#)

Focuses on the demand side of labor markets. Topics include standard static and dynamic models of labor demand, labor market discrimination, composition of compensation, labor hierarchies within enterprises, unionization, efficient contracts, and macroeconomics of labor markets. Prereq., ECON 6070 or 7010.

[College of Arts & Sciences](#) [Economics](#) [Labor and Human Resources](#)

### [ECON-8686 \(3\) Seminar: Labor Economics 2](#)

Focuses on special topics in labor economics: dynamic theories of labor supply, employment, and unemployment; labor supply in a household framework; and labor market activity and income distribution. Explores both theoretical models and empirical tests in each area. Prereq., ECON 6070 or 7010. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Economics](#) [Labor and Human Resources](#)

### [ECON-8747 \(3\) Industrial Organization Theory](#)

Highlights economics of regulation of industry and markets, industry studies, and the application of lab methods to industrial organization. Prereq., ECON 7010. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Economics](#) [Industrial Organization](#)

### [ECON-8757 \(3\) Industrial Organization and Public Policy](#)

Addresses the theory of interaction of firms within markets and industries, emphasizing importance of the number, relative size of firms, market institution, firm strategies, and nature of consumer demand. Examines neoclassical and game theoretic models, empirical industry

studies, and laboratory tests of theoretical models and policies. Prereq., ECON 7010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Industrial Organization

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## ECON-8764 (3) History of Economic Development

Covers in historical perspective the causes of economic development including why some areas develop faster than others and why development occurs more rapidly in some eras than others. Prereqs., ECON 6070 and 6080, or ECON 7010. Same as HIST 7214. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Economic History

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## ECON-8774 (3) Seminar in Transition Economies

Focuses on the problems encountered in countries evolving from planned to market economies. Emphasizes applications of new and traditional models of economic growth and analysis of problems unique to formerly planned economies. Prereq., ECON 6774 or 7010.

College of Arts & Sciences Economics Economic Development

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## ECON-8784 (3) Economic Development

Explores empirical, theoretical, and policy issues in economic development. Examines political economy, income distribution and poverty, demographic change, labor force employment and migration, human capital, physical capital, natural resources and the environment, industrial structure, international trade and finance, stabilization policy, and structural adjustment. Prereqs., ECON 6774 or 7010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Economic Development

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## ECON-8828 (3) Seminar: Econometrics 1

First semester of two-semester sequence in econometrics for PhD students. Studies least squares and generalized least squares estimation of linear econometric models. Asymptotic (large sample) theory of inference. Some topics in the estimation of microdata. Prereq., ECON 7818. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Economics Quantitative Economics

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## ECON-8838 (3) Seminar: Econometrics 2

Teaches the advanced level of econometrics theory. Topics include asymptotic theory, maximum likelihood estimation, limited dependent variables analysis and other frontier areas of econometrics such as the method of moment estimation, semiparametric and nonparametric estimation procedure. Prereq., ECON 7828.

College of Arts & Sciences Economics Quantitative Economics

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## ECON-8848 (3) Applied Microeconometrics

Presents a "User's guide" to conducting empirical research in applied microeconomics. Begins with a primer on an industry-standard econometric software package including programming techniques and data management. Introduces advanced econometric techniques including panel data methods, IV, matching models, regression discontinuity, and limited dependent variables models. Concludes with a research project requiring a replication and/or extension of an existing published paper. Prereqs., ECON 7818 and 7828. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-8858 (3) Computational and Structural Estimation Methods

Teaches students to construct a variety of applied economic models, obtain parameter values through calibration or estimation techniques, and uses the resulting models to conduct policy simulations. Prereqs., ECON 7010 and 7818. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Economics | Quantitative Economics

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## ECON-8909 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prereq., instructor and department consent.

College of Arts & Sciences | Economics | Independent Study and Other

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## ECON-8999 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Economic (ECON) graduate students are restricted from taking this course.

College of Arts & Sciences | Economics | Independent Study and Other

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

EDUC

## EDUC-2020 (1) Step 1: Inquiry Approaches to Teaching

Invites science and mathematics students to explore teaching as a career by providing first-hand experiences teaching science/math lessons in local elementary classrooms. Introduces theory and practice necessary to design and deliver excellent instruction. Master teachers provide ongoing support and feedback. Meets weekly on CU campus (1.5 hours/week) and involves additional visits to local elementary school. Prerequisites: Restricted to AMEN, ASTR, BCHM, CHEM, EBIO, GEOL, IPHY, MATH, MCDB, PHYS, Arts and Sciences Open Option majors or College of Engineering majors only.

[School of Education](#) [Education](#) [General Education](#)

## EDUC-2030 (1) Step 2: Inquiry-Based Lesson Design

Builds on EDUC 2020 and further develops lesson design and inquiry-based teaching practice. Offers opportunity to explore teaching career and learn about middle school culture. Master teacher provides support as students design and deliver lessons in middle school classrooms. Emphasizes assessment of student learning. Meets weekly on CU campus (1.5 hours/week) and involves additional visits to local middle school. Prereq., EDUC 2020.

[School of Education](#) [Education](#) [General Education](#)

## EDUC-2040 (2) Step 1 and 2 Combination

Combines critical features of EDUC 2020 and 2030. Introduces theory and practice necessary to design and deliver inquiry-based instruction. Master teachers provide ongoing support and feedback. Emphasizes assessment of student learning. Meets weekly on CU campus (2.5 hours/week) and involves additional visits to local elementary/middle schools. Prerequisites: Restricted to Education Certification or College of Engineering students with 57-180 credits (Juniors or Seniors) or Graduate students.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2050 (1) Step into Humanities Teaching

Invites students in humanities and social sciences to explore teaching as a career by providing first-hand experiences teaching in local elementary and middle schools. Introduces theory and practice necessary to design and deliver excellent instruction. Students receive ongoing support and feedback from a classroom teacher. Meets weekly on CU campus (1.5 hours/week). Involves additional visits to local schools.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2100 (1-3) Educator's Toolkit

Explores role of educator and opportunities to serve as educator in a range of settings, including k-12 schools, after-school programs, tutoring centers. Offers undergraduates interested in education practical understanding of teaching and learning processes, designing educational tasks, and providing effective feedback.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2125 (3) History of American Public Education

Provides overview to evolution of American public schools by exploring major reform efforts from the common school movement to present. Considers contentious values, important players, and roots of school structures. Examines both what intellectuals were thinking about public education and how ordinary people experienced schools. Assesses how differences in race, class, ethnicity, gender, and power shape public schools.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2150 (3) Education in Film

Provides opportunities to view and analyze how facets of education are represented (or misrepresented) in film. Considers narratives constructed about education and how those stories fuel popular conceptions of and assumptions about students, teachers, and schools. Examines how issues of race, class, and gender are embedded in how films represent schools, teachers, students, and communities.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2400 (3) Cultural Diversity and Awareness

Enhances students' self-awareness in a variety of educational and cultural settings. Investigates self within a cultural context, inviting students to engage more deeply with their cultural assumptions and lenses, as well as the cultural practices and beliefs of other distinct groups. Explores themes relating to diversity through works of fiction, cultural contexts, contemplative practices, poetry, music and experiential activities.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-2625 (3) Teaching English as a Second Language

Exposes students to strategies used to teach English as a second or foreign language. Covers both theoretical and applied aspects of language learning and teaching. Exposes students to techniques, activities, strategies and resources to plan instruction for students learning English as a second language. Emphasizes oral language development, literacy and content-area instruction for teaching K-12 students.

School of Education Education General Education

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## EDUC-2800 (1-3) Special Topics

Designed to meet needs of students with topics of interest. May be repeated up to 12 credit hours.

School of Education Education General Education

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## EDUC-2910 (1-3) Field Practicum 1

Offers supervised campus and off-campus experiences tied to course work in the Chancellor's Leadership RAP or the INVST program. See also EDUC 2920. May be repeated up to 6 total credit hours. Same as LDSP 2910.

School of Education Education General Education

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## EDUC-2919 (3) Renewing Democracy in Communities and Schools

Examines concepts of activism, citizenship, democracy, power, and diversity through classroom discussions and participation in a local high school's Public Achievement project. Through community-based partnerships, students will develop leadership skills; dialogue with diverse groups of people; identify multiple perspectives around controversial issues; and learn to use research and writing to articulate public problems and advocate for their solutions. May be repeated up to 6 total credit hours. Same as INVS 2919.

School of Education Education General Education

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## EDUC-2920 (1-3) Field Practicum 2

Offers supervised campus and off-campus experiences tied to course work in the Chancellor's Leadership RAP or the INVST program. See also EDUC 2910. May be repeated up to 6 total credit hours. Same as LDSP 2920.

School of Education Education General Education

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## EDUC-3013 (3-4) School and Society

Introduces students - both future teachers and those simply interested in education - to pressing issues surrounding education within the United States. The course reveals the complex relationship between schools and the larger society of which they are a part. Examines issues of diversity and equity from different disciplinary lenses, including history, philosophy, sociology and anthropology. Approved for arts and sciences core curriculum: contemporary societies or human diversity. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-3570 (3) Learning With Technology In and Out of School

Examines ways digital media are changing the way young people learn, play, make friends, and participate in civic life. Studies widely implemented digital tools intended to support literary, math, and science learning of children ages 4-18. May involve design projects that integrate these tools to transform in either a classroom or after-school program.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-3621 (1-3) Art for the Elementary Teacher

Introduces elementary education students to art education. Introduces many visual art techniques, art media, and processes used in art education. The class includes hands-on studio art experiences in a format that supports subjects such as literature, writing, music, and social studies. Emphasizes the role of art education and materials in supporting the artistic development and visual literacy of children. Prereq., completion of 30 hours of course work. Restricted to Education majors.

[School of Education](#) [Education](#) [Elementary Education](#)

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## EDUC-4015 (3) International / Comparative Education

Comparatively studies education in other countries, emphasizing its role in developing nations, with an emphasis on successful models in basic literacy, primary education, secondary curriculum, and teacher education. Analyzes political, social, and economic policies and ideologies for their relevance to the development process, including the role of international organizations: World Bank, UNICEF, UNESCO, Peace corps and Volunteer Agencies. Same as EDUC 5015.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-4023 (3-5) Differentiating Instruction in Diverse Secondary Classrooms

Focuses on teaching culturally and linguistically diverse secondary school students, special education students, and differentiation in the secondary classroom. Includes hands-on experiences in secondary school settings. Restricted to students admitted to the secondary or K-12 music teacher education program. Credit not granted for this course and EDUC 4351. Prerequisites: Restricted to EDEN, EDFR, EDGR, EDIT, EDJP, EDLT, EDMA, EDMU, EDSC, EDRU, EDSP, EDSS or MMED majors only.

School of Education Education Secondary Education

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## EDUC-4050 (3) Knowing and Learning in Mathematics and Science

Explores essential questions relevant to teaching and learning mathematics and science. This course expands the student's understanding of current theories of learning and conceptual development. Students examine their own assumptions about learning. They critically examine the needs of a diverse student population in the classroom. Prerequisites: Restricted to AMEN, ASTR, BCHM, CHEM, EBIO, GEOL, IPHY, MATH, MCDB, PHYS, Arts and Sciences Open Option majors or College of Engineering majors only.

School of Education Education Secondary Education

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## EDUC-4060 (3) Classroom Interactions

Students design and implement instructional activities informed by what it means to know and learn mathematics and science, and then evaluate the outcomes of those activities on the basis of classroom artifacts. Students examine how content and pedagogy combine to make effective teaching. Same as EDUC 5060. Prerequisites: Restricted to School of Education (EDUC), Mathematics-Secondary Education (EDMA) or Science-Secondary Education (EDSC) majors only.

School of Education Education Secondary Education

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## EDUC-4112 (3) Educational Psychology and Adolescent Development

Analyzes fundamental psychological concepts underlying classroom instruction, as well as adolescent growth and development. Same as PSYC 4114. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

School of Education Education Secondary Education

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## EDUC-4122 (2-3) Principles and Methods of Secondary Education

Presents and discusses issues in secondary school curriculum, instruction, assessment, and classroom management. Examines, analyzes, and evaluates a variety of teaching strategies, their effectiveness for students, and teacher dispositions to facilitate learning. Includes in-school experience. Restricted to students admitted to the secondary teacher education program. Prerequisites: Restricted to School of Education undergraduates only.

School of Education Education Secondary Education

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## EDUC-4125 (3) Secondary World Language Methods

Presents and discusses issues in secondary school curriculum, instruction, and classroom management as they play out in world language classroom. Examines, analyzes, and evaluates a variety of teaching strategies, their effectiveness for students, and teacher dispositions to facilitate learning. Includes in-school experiences. Restricted to students admitted to the secondary teacher education program. Prerequisites: Restricted to EDEN, EDFR, EDGR, EDIT, EDJP, EDLT, EDMA, EDMU, EDSC, EDRO, EDSP, EDSS or MMED majors only.

School of Education Education Secondary Education

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## EDUC-4135 (3) Story and Memoir

Examines the questions of "who I am", "where I come from", "what I might become" and "what I am called to do" in order to remember as well as make sense of our lives. Introduces and discusses narrative theory and selected memoirs. Students engage in reflection on their own narrative, and evaluate their practical and analytic understanding of narrative practice. EDUC 4135 and 5135 are the same course.

[School of Education](#) | [Education](#) | [Graduate Education](#)

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## EDUC-4161 (1-3) Children's Literature

Addresses reading and evaluation of books, children's, interests, authors and illustrators, folk literature, multicultural literature, modern fanciful tales, and trends.

[School of Education](#) | [Education](#) | [General Education](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

EDUC

## EDUC-4222 (3) Language Study for Educators

Focuses on the nature of linguistic development and performance. Examines works that reflect a range of scholarly approaches to language study, explores language use both in and out of school, takes up the relationships between language practices and power, and considers implications for classroom teaching. Same as EDUC 5222.

[School of Education](#)
[Education](#)
[General Education](#)

## EDUC-4232 (3) Language and Literacy across the Curriculum

Explores the relationship between language and learning with the goal of developing teaching practices that engage students in using language as a tool for understanding and constructing meaning across the curriculum. Explores how language/literacy take on different forms and functions in different social contexts and academic disciplines. Restricted to students admitted to the secondary teacher education program. Same as EDUC 5235. Prerequisites: Restricted to undergraduate Science-Secondary Education (EDSC) or Mathematics-Secondary Education (EDMA) majors only.

[School of Education](#)
[Education](#)
[Secondary Education](#)

## EDUC-4240 (3) African American and Latino Education in the United States

Explores development of schooling for African Americans in the U.S. and for Latinos in the American Southwest. Emphasizes parallels and points of intersection these groups experienced in their quest to access meaningful educational opportunities. Examines how social, economic, political, and judicial action defined and organized policy and practice for these two groups. EDUC 4240 and 6240 are identical courses. Prerequisites: Restricted to Graduate Students only.

[School of Education](#)
[Education](#)
[General Education](#)

## EDUC-4295 (3) Reading and Literacy in the Secondary Classroom

Examines ways in which adolescents develop literacy through reading, writing, speaking, viewing, and listening. Students learn to plan and organize literacy instruction based on ongoing assessment, to draw on and develop learner's linguistic skills related to reading, to support learner's reading comprehension skills, and to support their learning through oral language development. Prerequisites: Restricted to undergraduate English - Secondary Education (EDEN) or English - Secondary Education (EDSS) majors only.

School of Education | Education | Secondary Education

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## EDUC-4311 (3) Children's Literature and Literacy Engagement in Elementary Schools

Prepares teacher education candidates for teaching children's literature in elementary schools. Participants will understand theoretical and developmental processes associated with literary learning, methods for teaching literature in a diverse society, and the integration of classroom instruction with the Colorado Academic Content Standards that foster such processes. Restricted to students admitted to the elementary education program. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

School of Education | Education | Elementary Education

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## EDUC-4312 (3) Perspectives on Science

Explores contemporary ideas and issues in the history, philosophy, and sociology of science education and science, science as a social and cultural activity, and how contemporary issues in science relate to and impact educational practice. Same as EDUC 5315.

School of Education | Education | General Education

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## EDUC-4318 (3) The Nature of "English Language Arts"

Considers historical and ongoing controversies concerning the nature of "English" as an academic field of study and of "English Language arts" as a school subject. Integrates understandings of subject-matter specialization, of approaches to teaching this contested subject, and of the diverse learners that teachers seek to prepare for 21st century literacies. EDUC 4318 and 5318 are the same course.

School of Education | Education | General Education

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## EDUC-4321 (4-5) Integrated Reading and Writing for Elementary Schools

Participants will understand theoretical and developmental processes associated with reading and writing, methods for teaching elementary reading and writing in a diverse society, and the integration of classroom instruction with the Colorado Academic Content Standards that foster such processes. Restricted to students admitted to the elementary teacher education program. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

School of Education | Education | Elementary Education

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## EDUC-4331 (3) Elementary Social Studies Methods

Prepares teacher education candidates for teaching social studies in a social context. Participants will understand theoretical and developmental processes associated with social studies learning, methods for teaching social studies in a diverse society, and the integration of classroom instruction with the Colorado Academic Content Standards. Restricted to students admitted to the elementary teacher education program. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

School of Education | Education | Elementary Education

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## EDUC-4341 (3) Elementary Reading Assessment and Instruction

Builds on knowledge and teaching practices introduced in EDUC 4321. Addresses five critical components of reading. Refines understanding of research-based practices for diagnostic assessments and intensive intervention teaching strategies for elementary age learners. Prepares candidates to deliver a comprehensive reading curriculum in the elementary grades. Prereq., EDUC 4321. Restricted to students admitted to the elementary teacher education program. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

School of Education | Education | Elementary Education

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## EDUC-4342 (3) Composition for Teachers

Fosters understandings of diverse students' writing processes and the development of a repertoire of research-based teaching practices. Emphasizes writing as a tool for both developing and communicating understandings across a range of settings. Restricted to students admitted to the English or Social Studies teacher education program. Same as EDUC 5345. Prerequisites: Restricted to undergraduate English - Secondary Education (EDEN) or English - Secondary Education (EDSS) majors only.

School of Education | Education | Secondary Education

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## EDUC-4351 (3-5) Differentiating Instruction in Diverse Elementary Classrooms

Focuses on teaching culturally and linguistically diverse elementary school students, special education students, and differentiation in the elementary classroom. Includes hands-on experiences in elementary school settings. Restricted to students admitted to the elementary teacher education program. Coreqs., EDUC 5205 and 5215. Credit not granted for this course and EDUC 4023. Prerequisites: Restricted to Elementary (EDEL) or Music (EDMU) Education majors only.

School of Education | Education | Elementary Education

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## EDUC-4411 (3) Educational Psychology for Elementary Schools

Integrates theories and ideas from elementary school child development and educational psychology. Explores theories of learning and child development and considers implications for teaching motivation, and academic achievement. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

School of Education | Education | General Education

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## EDUC-4425 (3) Introduction to Bilingual/Multicultural Education

Provides a comprehensive survey of bilingual-multicultural education programs for language minority students. Includes an overview of the history and legislation related to bilingual education and English as a second language. Presents various models, philosophies, and theoretical underpinnings of bilingual education and ESL. Same as EDUC 5425.

School of Education Education General Education

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## EDUC-4460 (3) Teaching and Learning Physics

Learn how people understand key concepts in physics. Through examination of physics content, pedagogy and problems, through teaching, and through research in physics education, students will explore the meaning and means of teaching physics. Students will gain a deeper understanding of how education research is done and how people learn. Useful for all students, especially for those interested in physics, teaching, and education research. Prereqs., PHYS 3210 and 3310 or instructor consent. EDUC 4460 and 5460 are the same course. Same as PHYS 4460 and 5460.

School of Education Education Graduate Education

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## EDUC-4513 (2) Education and Practice

Meets during student teaching assignment. Includes topics of concern to teachers, such as classroom organization and management, lesson planning, assessment, journals, preparation of the teacher work sample, etc. Coreq., EDUC 4691, 4712, or 4722.

School of Education Education General Teacher Education

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## EDUC-4580 (3) Physics and Everyday Thinking

Engages non-physics majors in hands-on, minds-on activities and labs to investigate the physical world, the nature of science, and how science knowledge is constructed. This introductory course is especially relevant for future elementary and middle school teachers although it will meet the needs of most non-physics and non-science majors. Physics content focuses on interactions and energy. Additional assignments completed at 5000-level. Same as EDUC 5580.

School of Education Education General Education

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## EDUC-4610 (1-3) Math and Science Education

Introduces learning theory and teaching practices for mathematics and science learning assistants. Presents theoretical issues such as conceptual development, questioning techniques, cooperative learning, nature of math/science, and argumentation in mathematics and science. Restricted to students admitted to the Learning Assistant program.

School of Education Education General Education

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## EDUC-4691 (10) Student Teaching: Elementary School 1

Kindergarten through sixth grades. Prereq., completion of all education and content-specific arts and sciences requirements, and passing required licensure exam. Coreq., EDUC 4513. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

[School of Education](#) [Education](#) [General Teacher Education](#)

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## EDUC-4712 (10) Student Teaching: Secondary School

Student teacher apprentices in a middle/junior or senior high school. Must be admitted to a secondary teacher education program in English, Japanese, Latin, math, Russian, science, or social studies. Prereqs., completed all education and content-specific arts and sciences courses, and passed required licensure exam. Coreq., EDUC 4513.

[School of Education](#) [Education](#) [General Teacher Education](#)

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## EDUC-4716 (3) Basic Statistical Methods

Introduces descriptive statistics including graphic presentation of data, measures of central tendency and variability, correlation and prediction, and basic inferential statistics, including the t-test.

[School of Education](#) [Education](#) [General Education](#)

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## EDUC-4722 (5) Student Teaching: Secondary School 2

Student teacher apprentices in a middle/junior high or senior high school. Restricted to students admitted to a secondary teacher education program in French, German, or Spanish. Prereqs., completed all education and content-specific arts and sciences courses, and passed required licensure exam. Coreq., EDUC 4513. Prerequisites: Restricted to French-Secondary Education (EDFR), German-Secondary Education (EDGR), or Spanish-Secondary Education (EDSP) majors only.

[School of Education](#) [Education](#) [General Teacher Education](#)

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## EDUC-4732 (4-12) Student Teaching K-12

Required experience for music students seeking education at both elementary and secondary levels. Prereq., completed all education and content-specific music courses, passed required licensure exam. Coreq., MUSC 4193. Prerequisites: Restricted to Music Educ-Elem Sec or K-12 (EDMU) majors only.

[School of Education](#) [Education](#) [General Teacher Education](#)

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## EDUC-4800 (1-9) Special Topics

Designed to meet needs of students with topics of pertinent interest. May be repeated up to 18 total hours.

School of Education Education General Education

## EDUC-4810 (1-9) Special Topics

May be repeated up to 18 total credit hours, provided the topics vary.

School of Education Education General Education

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## Courses

Search by College, Department & Category

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EDUC

### EDUC-4811 (3-4) Teaching and Learning Biology

Provides an introduction to recent research into student learning on the conceptual foundations of modern biology, together with pedagogical methods associated with effective instruction and its evaluation. Students will be involved in active research into conceptual and practical issues involved in biology education, methods to discover student preconceptions, and the design, testing and evaluation of various instructional interventions. Same as MCDB 4811 and EDUC 6811.

[School of Education](#) | [Education](#) | [Graduate Education](#)

### EDUC-4822 (3) Teaching and Learning Chemistry

Explores issues related to how people learn and teach chemistry. Reviews high school and early college chemistry concepts both from the content and pedagogical perspectives. Delves into the chemistry education research, education, psychology, and cognitive science literature. Provides an opportunity to observe and/or teach K-12 or college chemistry classes.

[School of Education](#) | [Education](#) | [General Education](#)

### EDUC-4831 (3) Advanced Peer Education

Second semester of an academic year's training for students interested in peer counseling. Expand upon what you learned in ARSC 2274. Focus on presentations, leadership, and group facilitation. Basic group leadership, facilitation theory, and technique taught. Co-create and co-lead your own small groups/presentations for other CU students. Offered only spring semesters. Prereq., ARSC 2274 or instructor consent.

[School of Education](#) | [Education](#) | [General Education](#)

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## EDUC-4840 (1-4) Independent Study

School of Education | Education | General Education

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## EDUC-4910 (3) Peer Counseling Practicum (previously EDUC 4830, 4840)

Controlled enrollment. Repeatable for degree credit. Credit given for peer counseling activities. Students are selected to participate in this class and act as peer counselors or TAs for the peer counseling training.

School of Education | Education | General Education

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## EDUC-4912 (1) Practicum in Teacher Education

Provides in-school practicum experience.

School of Education | Education | General Teacher Education

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## EDUC-5005 (3) Advanced Social Foundations of Education

Critically examines the intellectual and political forces that shape the aims, policies, and practices of K-12 education in the United States, emphasizing the period following the Brown v. The Board of Education decision in 1954. Restricted to students admitted to the secondary MA+ program. Prerequisites: Restricted to EDCl, ICCE, ICCH, ICCM or ICCS majors only.

School of Education | Education | Graduate Education

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## EDUC-5015 (3) International / Comparative Education

Comparatively studies education in other countries, emphasizing its role in developing nations, with an emphasis on successful models in basic literacy, primary education, secondary curriculum, and teacher education. Analyzes political, social, and economic policies and ideologies for their relevance to the development process, including the role of international organizations: World Bank, UNICEF, UNESCO, Peace Corps and Volunteer Agencies. Same as EDUC 4015.

School of Education | Education | Graduate Education

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## EDUC-5035 (3) Proseminar: Parent and Community Involvement

Focuses on models and strategies for improving parent and community involvement in the schools. Discusses administrative concerns, such as parent advisory councils, and instructional concerns, such as helping children with school assignments.

School of Education | Education | Graduate Education

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## EDUC-5060 (3) Classroom Interactions

Same as EDUC 4060. Prerequisites: Restricted to Inst & Curr + Sec Math Lich (ICCM), Inst & Curr and Sec Sci Lich (ICCS) or Educ-Curriculum & Instruction (EDCI) majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5065 (3) Curriculum Theories

Examines four central curricular traditions: progressive; conservative; radical; and spiritual. Highlights the strengths and weaknesses of various writers within each tradition with attention paid to the conceptual features and the practical implications of each educational view. Encourages students to examine their own educational assumptions.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5070 (3) Spirituality and Religion in Education

Examines features of religion, spirituality, and a liberal arts education, so as to further understand the constitutional, historical and cultural constraints on, and acceptable approaches to the study of religion and spirituality in American education. Specifically explores aspects of a contemplative orientation and the degree to which such an orientation should/can be pursued in K-12 public and higher education. Prerequisites: Restricted to Graduate Students only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5075 (3) Sociology in Education

In-depth analysis of theories and concepts in sociology and education. Evolution of curriculum, organization, and enrollment characteristics of American schools. Schooling, class, culture, gender, stratification, and educational reform in light of paradigmatic change in theories and concepts of sociology.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5085 (3) History of American Education

Highlights social and intellectual history perspectives of American educational history, major reform movements from the 19th century to Dewey, and assessment of how differences of race, class, ethnicity, religion, power, and gender affected American education. Prerequisites: Restricted to Graduate Students only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5095 (3) Teachers as Researchers

Examines questions central to K-12 curriculum and instruction. Focuses on developing research projects applicable to current classroom practice, writing proposals for curriculum investigations, conducting specific curriculum investigations, and writing research findings.

School of Education Education Graduate Education

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## EDUC-5105 (3) Teaching for Understanding and Equity

Addresses perspectives and evidence-based teaching practices that promote equity and access to conceptual understanding. Introduces the knowledge base on effective teaching practices, and the theories and research that support these practices. Explores the impact of theory and research on classroom instruction.

School of Education Education Graduate Education

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## EDUC-5115 (3) Issues in School Change and Reform

Examines recent developments in teaching, and trends in the philosophy and practice of education. Focuses special attention on a variety of issues central to school reform.

School of Education Education Graduate Education

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## EDUC-5135 (3) Story and Memoir

Examines the questions of "who I am", "where I come from", "what I might become" and "what I am called to do" in order to remember as well as make sense of our lives. Introduces and discusses narrative theory and selected memoirs. Students engage in reflection on their own narrative, and evaluate their practical and analytic understanding of narrative practice. EDUC 4135 and 5135 are the same course. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5145 (3) Gender, Literacy, and the K-12 Classroom

Explores and critiques various conceptions of gender within popular and scholarly publications that have influenced how gender is approached in literacy classrooms. Builds a theoretical stance toward gender that supports equity, engagement and achievement for all children. Discusses teaching strategies that thoughtfully take into account gender identities and equity.

School of Education Education Graduate Education

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## EDUC-5165 (3) Children's Literature

Involves reading and evaluation of picture books, and emphasizes children's interests, authors and illustrators, multicultural literature, the components of narrative, and the features of illustrations. Examines connections between children's literature and children's development as writers.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5205 (3) Elementary Mathematics Theory and Methods

Provides pre-service teachers opportunities to explore contemporary theories of learning, curriculum development, and pedagogical strategies pertaining to teaching elementary-level mathematics. Blends exploration in mathematical content with understanding of mathematics teaching strategies. Coreqs., EDUC 4351 and 5215. Restricted to elementary teacher education students. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

[School of Education](#) [Education](#) [Elementary Education](#)

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## EDUC-5215 (3) Elementary Science Theory and Methods

Provides pre-service elementary teachers opportunities to explore contemporary theories of learning, curriculum development, pedagogical strategies, and assessment. Blends scientific content, pedagogy, and practical applications. Coreqs., EDUC 4351 and 5205. Restricted to students admitted to the elementary teacher education program. Prerequisites: Restricted to Elementary Education (EDEL) majors only.

[School of Education](#) [Education](#) [Elementary Education](#)

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## EDUC-5222 (3) Language Study for Educators

Same as EDUC 4222. Prerequisites: Restricted to Graduate Students only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5235 (3) Language and Literacy Across the Curriculum

Same as EDUC 4232. Prerequisites: Restricted to ICCS, ICCM, EDCI, EPSY, EFPP, EECD, REME graduate students only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5245 (3) Foundations of Reading Instruction K-12

Comparatively analyzes current and emerging philosophies and programs in K-12 with focus on teaching reading and thinking skills. Prerequisites: Restricted to Graduate Students only.

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## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

EDUC

### [EDUC-5255 \(3\) Processes Involved in Literary Interpretation](#)

Stresses curiosity, observation, challenge, and insight into how children and adolescents learn to become literate beings. Discusses the work and play of literary interpretation including analytic reading, substantive discussion, reflective writing, visual presentation, and dramatic enactment where readers learn to take the words from the page to inform and transform their worlds. Prereq., EDUC 5245.

[School of Education](#) [Education](#) [Graduate Education](#)

### [EDUC-5265 \(3\) Processes in Writing](#)

Examines processes writers use from early ages to maturity by investigating current research and proposing and evaluating research designs. Discusses the reciprocal relationship between reading and writing instruction, emphasizing the Colorado Academic Content Standards and the International Reading Association Specialized Reading Professional Standards. Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI) graduate students only.

[School of Education](#) [Education](#) [Graduate Education](#)

### [EDUC-5275 \(3\) Assessment in Literacy](#)

Assumes an interactive model of reading and supports the perspective of assessment as interrelated with curriculum and instruction; examines principles that guide the selection and interpretation of assessment techniques, with a particular focus on low-performing students. Prereq., EDUC 5255. Prerequisites: Restricted to Graduate Students only.

[School of Education](#) [Education](#) [Graduate Education](#)

### [EDUC-5285 \(3\) Reading Clinic Procedures K-12](#)

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Focuses learning on a select group of low performing students to assess reading proficiency, develop appropriate instructional goals, and provide instruction that addresses these goals. Emphasis on interpreting assessment data, extending a repertoire of instructional strategies, and developing and implementing a strong instructional plan. Prereq., EDUC 5275.

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## EDUC-5295 (3) Reading and Literacy in the Secondary Classroom

Examines ways in which adolescents develop literacy through reading, writing, speaking, viewing, and listening. Students learn to plan and organize literacy instruction based on ongoing assessment, to draw on and develop learner's linguistic skills related to reading, to support learner's reading comprehension skills, and to support their learning through oral language development. Prerequisites: Restricted ICCE or ICCH or EDCI or EPSY or EECD or EFPP majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5305 (3-4) Teaching and Learning in the Secondary Classroom

Presents and discusses issues in secondary school curriculum, instruction, assessment, and classroom management. Examines, analyzes, and evaluates a variety of teaching strategies, their effectiveness for students, and teacher dispositions to facilitate learning. Restricted to students admitted to the secondary MA+ program. Prerequisites: Restricted to EDCI, ICCE, ICCH, ICCM or ICCS majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5315 (3) Perspectives on Science

Explores contemporary ideas and issues in the history, philosophy, and sociology of science education and science, science as a social and cultural activity, and how contemporary issues in science relate to and impact educational practice. Same as EDUC 4312.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5316 (3) Nature of Social Studies and Social Studies Education

Prepares teacher education candidates for teaching social studies in a social context. Participants will understand theoretical and developmental processes associated with social studies learning, methods for teaching social studies in a diverse society, and the integration of classroom instruction with the Colorado Academic Content Standards that foster such processes. Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI), Social Studies-Secondary Educ. (EDSS), Inst & Curr + Sec Soc Std Licn (ICCH), Anthropology (ANTH), Economics (ECON), Geography (GEOG), History (HIST) or International Affairs (IAFS) majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5317 (3) Perspectives on Mathematics

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Explores the historical development of mathematics as a human construct, and the relationship between the discipline and the contemporary school mathematics curriculum. Focuses on the sociology of mathematics education and how cultural traditions and societal needs influence the school mathematics curriculum and educational practice.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5318 (3) The Nature of "English Language Arts"

Considers historical and ongoing controversies concerning the nature of "English" as an academic field of study and of "English Language arts" as a school subject. Integrates understandings of subject-matter specialization, of approaches to teaching this contested subject, and of the diverse learners that teachers seek to prepare for the 21st century literacies. EDUC 4318 and 5318 are the same course. Prerequisites: Restricted to Graduate Students only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5325 (3) Teaching Literature in Middle and Secondary Schools

Provides teachers of English with background and experiences relevant to using reading, writing, and a range of other classroom social languages to teach literature to a culturally and intellectually diverse population of students. Explores relevant literary theories, texts, and genres, and examines contemporary and historical perspectives on the meaning and function of stories in both personal and democratic public life. Restricted to students admitted to the secondary English education program. Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI), English - Secondary Education (EDEN), Inst & Curr + Sec English Licn (ICCE), Social Studies-Secondary Educ. (EDSS) or Inst & Curr + Sec Soc Std Licn (ICCH) majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5345 (3) Composition for Teachers

Same as EDUC 4342. Prerequisites: Restricted ICCE or ICCH or EDCI or EPSY or EECD or EFPP or ICCM or ICCS majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5355 (3-4) Methods and Materials in Secondary Social Studies

Focuses on curriculum, materials, methods, assessment, and related aspects of instruction. Introduces best practices in teaching the social studies in middle and high schools. Examines the Colorado Academic Content Standards. Prereqs., EDUC 4295/5295 and EDUC 5325. Restricted to students admitted to the secondary social studies teacher education program. Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI) or Social Studies-Secondary Educ. (EDSS) majors only.

[School of Education](#) [Education](#) [Graduate Education](#)

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## EDUC-5365 (3-4) Methods and Materials in Secondary English

Focuses on curriculum, materials, methods, and assessment. Introduces best practices in the teaching of English in middle and high

schools. Examines the Colorado Academic Content Standards. Prereqs., EDUC 4295/5295 and EDUC 5325. Restricted to students admitted to the secondary English teacher education program. Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI) or English - Secondary Education (EDEN) majors only.

School of Education | Education | Graduate Education

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## EDUC-5375 (3-4) Project-Based Math Instruction

Focuses on curriculum, materials, methods and assessment, and related aspects of instruction. Introduces best practices in teaching mathematics in middle and high schools. Examines the Colorado Academic Content Standards. Restricted to students admitted to the secondary math teacher education program. Prerequisites: Restricted to EDCI, EDSC, EDMA, ICCM or ICCS majors only.

School of Education | Education | Graduate Education

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## EDUC-5385 (3-4) Project-Based Science Instruction

Focuses on curriculum, materials, methods, assessment, and related aspects of instruction. Introduces best practices in teaching science in middle and high schools. Examines the Colorado Academic Content Standards. Restricted to students admitted to the secondary science teacher education program. Prerequisites: Restricted to EDCI, EDSC, EDMA, ICCM or ICCS majors only.

School of Education | Education | Graduate Education

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## EDUC-5425 (3) Introduction to Bilingual/Multicultural Education

Provides a comprehensive survey of bilingual-multicultural education programs for language minority students. Includes an overview of the history and legislation related to bilingual education and English as a second language. Presents various models, philosophies, and theoretical underpinnings of bilingual education and ESL. Same as EDUC 4425. Prerequisites: Restricted to Graduate Students only.

School of Education | Education | Graduate Education

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## EDUC-5435 (3) Materials and Methods in Bilingual/ Multicultural Education

Provides an in-depth study of the curriculum options available for bilingual and ESL programs. Presents, reviews, and critiques specific methods and strategies for teaching language to minority students. Gives the opportunity to develop and present teaching units in Spanish or in ESL methodology, as appropriate. Prereq., EDUC 5425.

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## EDUC-5445 (3) Curriculum for Multicultural Education

Analyzes curriculum programs and examines principles that inform innovation for education of diverse students at all school levels. Includes topics of ethnic, racial, socio-economic, linguistic, and gender diversity.

School of Education | Education | Graduate Education

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## EDUC-5455 (3) Literacy for Linguistically Different Learners

Presents current and emerging philosophies and methods on teaching reading to culturally diverse second-language learners. Includes review of materials, strategies for teaching reading and writing skills, and important considerations for transference from L1 to L2 reading. Prereq., Educ 5425 or reading course at 5000 level.

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## EDUC-5460 (3) Teaching and Learning Physics

Learn how people understand key concepts in physics. Through examination of physics content, pedagogy and problems, through teaching, and through research in physics education, students will explore the meaning and means of teaching physics. Students will gain a deeper understanding of how education research is done and how people learn. Useful for all students, especially for those interested in physics, teaching, and education research. Prereqs., PHYS 3210 and 3310 or instructor consent. EDUC 4460 and 5460 are the same course. Same as PHYS 4460 and 5460. Prerequisites: Restricted to Graduate Students only.

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## EDUC-5465 (3) Introduction to ESL/Bilingual and Special Education

Provides students with the fundamental information of ESL, bilingual and special education, including theories, assumptions, philosophies, and paradigms of bilingual and special education. Discusses successful teaching techniques and instructional approaches, including individualization, least restrictive environment, transition, and career education.

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## EDUC-5485 (3) Differentiation in the Classroom

Focuses on teaching culturally and linguistically diverse school students, special education students, and differentiation in the classroom. Emphasizes evidence-based teaching practices and programmatic interventions that support student learning.

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## EDUC-5505 (3) Education of Students with Learning and Behavior Disorders

Discusses unique learning needs of students with learning and behavior disorders. Emphasizes development of a systems model for diagnosis, programming, and remediation. Stresses data-based individualization of instruction, with emphasis on intervention in inclusive learning environments and developing a culturally responsive system.

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## EDUC-5515 (3) Curriculum and Assessment for Special Learners

Emphasizes assessment of special education students from pre-referral through staffing and placement, including response to intervention, research-based assessment practices, analytic teaching and assessment, curriculum-based assessment and measurement. Selection, administration, and interpretation of formal and informal assessment devices are studied, with particular emphasis on cultural relevance and equity in assessment for special learners with mild to severe needs. Prerequisites: Restricted to Graduate Students only.

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## Courses

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EDUC

### [EDUC-5525 \(3\) Research Issues in Special Education](#)

Provides practical experience in the review, critique, conceptualization, and writing of research studies in special education. Also offers experience in design of evaluation systems for classroom practice. Prerequisites: Restricted to Graduate Students only.

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### [EDUC-5535 \(3\) Diagnostic Testing in ESL and Bilingual Education](#)

Includes both theoretical and applied aspects of diagnostic testing. Reviews administration and interpretation of current formal and informal educational tests (language proficiency). Emphasizes practices for equitable testing and assessment of English language learners. Prerequisites: Restricted to Graduate Students only.

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### [EDUC-5545 \(3\) Strategies for Teaching Students with Special Needs](#)

Provides teachers with specific evidence-based methods and techniques for teaching students with a wide variety of high and low disabilities including learning and language disabilities, hearing and visual impairments, physical disabilities, and health impairments. Emphasizes different teaching methods, instructional materials, and learning strategies that have proven effective working students with cognitive learning needs. Prerequisites: Restricted to Graduate Students only.

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### [EDUC-5555 \(3-4\) Practicum in Bilingual/Special Education](#)

Offers supervised field experience in elementary and secondary special education class settings. Each credit hour requires 50 contact hours. Prereqs., EDUC 5465, 5505, and EDUC 5515 or 5545. Prerequisites: Restricted to Graduate Students only.

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School of Education Education Graduate Education

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## EDUC-5575 (1-4) Workshop in Curriculum and Instruction

School of Education Education Graduate Education

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## EDUC-5580 (3) Physics and Everyday Thinking

Same as EDUC 4580.

School of Education Education Graduate Education

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## EDUC-5595 (1-4) Practicum in Linguistically Different: English as a Second Language

University supervised, school-based field experience teaching linguistically different students, as well as assistance in the completion of EECD portfolio. Prereqs., EDUC 5425, 5435 and 5535. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5605 (3) Research Issues in Bilingual Education

Offers practical experience in the review, critique, conceptualization, and writing of research studies in bilingual/ESL education. Provides experience in the design of classroom evaluation systems. Prereq., EDUC 5425. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5610 (1-3) Math and Science Education

Introduces learning theory and teaching practices for mathematics and science learning assistants. Presents theoretical issues such as conceptual development, questioning techniques, cooperative learning, nature of math/science, and argumentation in mathematics and science.

School of Education Education Graduate Education

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## EDUC-5615 (3) Second Language Acquisition

Presents a broad survey of second-language acquisition research. Stresses theoretical concerns and research findings and practical applications to teaching second languages. Gives special emphasis to second-language acquisition. Prerequisites: Restricted to

Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5625 (3) Methods of Teaching English as a Second Language

Prepares teachers to teach English as a second language in public schools in the United States. Covers both theoretical and applied aspects of language learning and teaching. Recommended prereq., EDUC 5615.

School of Education Education Graduate Education

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## EDUC-5635 (3) Education and Sociolinguistics

Explores the discipline of sociolinguistics, the study of language variation and use, and its application within education settings. Not designed as an advanced sociology or linguistics course. Areas of study include language variation, speech communities, the ethnography of communication, speech and social identities, and sociolinguistic research related to teaching and learning.

School of Education Education Graduate Education

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## EDUC-5706 (3) Assessment in Mathematics and Science Education

Examines purposes and practices of assessment in mathematics and science education. Particular attention is given to application of theoretical foundations and contemporary research in the design and use of assessment techniques and tools to support teaching for student understanding. Addresses the role of effective formative assessment in teaching and learning.

School of Education Education Graduate Education

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## EDUC-5716 (3) Basic Statistical Methods

Introduces descriptive statistics including graphic presentation of data, measures of central tendency and variability, correlation and prediction, and basic inferential statistics, including the t-test. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5726 (3) Introduction to Disciplined Inquiry

Considers various research approaches and methodologies included in education including experimental and quasi-experimental methods; anthropological and case study methods; evaluative research and field studies; correlational; and sociological, historical, and philosophical research. Topics include library research, research criticism, research design, and proposal writing. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-5810 (3) Teaching K-12 Mathematics: Number Sense

Provides teachers opportunity to explore fundamental mathematical theories and pedagogical perspectives pertaining to the teaching and learning of number and operation. Engages students in explorations of mathematical content underlying number and operations, while highlighting relevant problem solving, reasoning and proof, and mathematical connections. Explores implications of teachers' mathematical learning on their classroom teaching. Develops practices supporting learner's number sense development.

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## EDUC-5820 (3) Teaching K-12 Mathematics: Algebraic Thinking

Uses reform-based mathematics curricula to engage participants in algebraic thinking, to reflect on their own knowledge of algebraic concepts, and to examine pedagogical ideas that can foster K-12 students' algebraic thinking and learning. Algebraic topics include patterning, variable, functions, multiple representations, equality, and solving linear and systems of equations.

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## EDUC-5822 (3) Teaching and Learning Chemistry

Explores issues related to how people learn and teach chemistry. Reviews high school and early college chemistry concepts both from the content and pedagogical perspectives. Delves into the chemistry education research, education, psychology and cognitive science literature. Provides an opportunity to observe and/or teach K-12 or college chemistry classes.

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## EDUC-5830 (3) Teaching K-12 Mathematics: Geometry & Measurement

Provides an opportunity to explore how to foster geometric thinking while examining fundamental mathematical theory underlying the content area of geometry and measurement. Emphasizes investigative approach involving problem solving, reasoning, connections, and communication as well as learning mathematics content in a flexible and conceptual way. Challenges participants to apply their understanding to teaching practices that foster geometric thinking in K-12 learners.

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## EDUC-5840 (3) Teaching K-12 Mathematics: Probability & Statistics

Focuses on teaching probability, data analysis, and statistics in K-12 classrooms. Explores curriculum and assessment strategies in the areas of probability and statistics. Examines research on students' thinking on stochastic tasks and how this research informs teaching practice. Emphasizes deepening of one's conceptual understanding of probability and statistics and their importance in the current information age.

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School of Education Education Graduate Education

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## EDUC-6210 (3) Education Policy and the Law

Approaches education policy issues through the rich history of litigation and current legal challenges facing American K-12 schooling. Builds an understanding of the legal and policy development of the American schooling system, particularly in the 20th century. Laws and legal cases will be used as jumping-off points for broader discussions. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-6220 (3) Gender Issues in Education

Provides a strong foundation in the various gender issues in education. Stimulates explorations into the ways the construct of "Gender" affects and is affected by the educational system and process. Presents knowledge and research about contemporary gender-related educational issues and theories of gender in education. Encourages development of well-considered views about the various issues, research, and theories.

School of Education Education Graduate Education

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## EDUC-6230 (3) Ethics in Education

Investigates controversies in education from a self-consciously ethical perspective, drawing as appropriate from moral and political theory as well as law. Focuses on public education's role in fostering democratic citizenship and providing equal educational opportunity. Critically evaluates various education reform policies and curriculum policies. Applies method commonly used in medical ethics to make decisions regarding concrete ethically problematic cases.

School of Education Education Graduate Education

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## EDUC-6240 (3) African American and Latino Education in the United States

Explores development of schooling for African Americans in the U.S. and for Latinos in the American Southwest. Emphasizes parallels and points of intersection these groups experienced in their quest to access meaningful educational opportunities. Examines how social, economic, political, and judicial action defined and organized policy and practice for these two groups. EDUC 4240 and 6240 are identical courses.

School of Education Education General Education

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## EDUC-6318 (3) Psychological Foundations of Education

Introduces students to theoretical and empirical contributions of educational psychology, emphasizing applications to educational practices. Topics include learning, development, cognitive processes, social and cultural context, motivation, assessment, and individual

differences. Prerequisites: Restricted to Graduate Students only.

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EDUC

### EDUC-6325 (3) Culture and Ethnography in Education

Applies anthropological perspectives to research in educational settings. Focuses on theories of culture, cultural transmission and acquisition, and cultural reproduction and production for understanding schooling and its outcomes.

[School of Education](#) [Education](#) [Graduate Education](#)

### EDUC-6328 (3) Advanced Child Growth and Educational Development

Introduces students to recent theoretical and research advances in the study of children and adolescent's cognitive, social and emotional development, with an emphasis on implications for learning in and out of school.

[School of Education](#) [Education](#) [Graduate Education](#)

### EDUC-6368 (3) Adolescent Psychology and Development for Teachers

Examines current theory and research on adolescent development, learning, motivation, and academic achievement. Emphasizes how theory and research can inform instructional decisions in the secondary classroom. Restricted to English-Secondary Education (EDEN), Social Studies-Secondary Educ (EDSS), Mathematics-Secondary Educ (EDMA) or Science-Secondary Educ (EDSC) graduate students only. Prerequisites: Restricted to English-Secondary Education (EDEN), Social Studies-Secondary Educ (EDSS), Mathematics-Secondary Educ (EDMA) or Science-Secondary Educ (EDSC) graduate students only.

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### EDUC-6504 (3) Issues and Methods in Cognitive Science

Interdisciplinary introduction to cognitive science, examining ideas from cognitive psychology, philosophy, education, and linguistics via computational modeling and psychological experimentation. Prereqs., graduate standing or at least one upper-division course in computer science, linguistics, philosophy, or psychology. Same as CSCI 6402, LING 6200, PHIL 6310, and PSYC 6200. Prerequisites: Restricted to Graduate Students only.

School of Education | Education | Graduate Education

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## EDUC-6505 (1-2) Readings and Research in Cognitive Science

Interdisciplinary reading of innovative theories and methodologies of cognitive science. Share interdisciplinary perspectives through in-class and online discussion and analysis of controversial texts and of their own research in cognitive science. Required for joint PhD in cognitive science. Prereq., graduate standing. Same as CSCI 7762, LING 7762, and PSYC 7765.

School of Education | Education | Graduate Education

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## EDUC-6506 (2) Cognitive Science Research Practicum

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint PhD in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., CSCI 6402 or EDUC 6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereq., CSCI 7762 or EDUC 6505 or LING 7762 or PHIL 7310 or PSYC 7762. Same as PSYC 7415, LING 7415, PHIL 7415, and CSCI 7412. Prerequisites: Restricted to Graduate Students only.

School of Education | Education | Graduate Education

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## EDUC-6516 (2) Cognitive Science Research Practicum 2

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint PhD in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., LING 7415 or PSYC 7415 or CSCI 7412 or EDUC 6506. Same as PSYC 7425, LING 7425, PHIL 7425, and CSCI 7422. Prerequisites: Restricted to Graduate Students only.

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## EDUC-6804 (1-4) Special Topics

May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

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## EDUC-6811 (3-4) Teaching and Learning Biology

Provides an introduction to recent research into student learning on the conceptual foundations of modern biology, together with

pedagogical methods associated with effective instruction and its evaluation. Students will be involved in active research into conceptual and practical issues involved in biology education, methods to discover student preconceptions, and the design, testing and evaluation of various instructional interventions. Same as MCDB 4811 and EDUC 6811. Prerequisites: Restricted to Graduate Students only.

School of Education Education Graduate Education

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## EDUC-6844 (1-4) Master's Independent Study

School of Education Education Graduate Education

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## EDUC-6855 (1-4) Independent Study in Curriculum and Instruction--- Master's Level

School of Education Education Graduate Education

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## EDUC-6877 (1-4) Independent Study in Educational Equity & Cultural Diversity: Master's Level

School of Education Education Graduate Education

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## EDUC-6888 (1-4) Independent Study in Educational and Psychological Studies---Master's Level

School of Education Education Graduate Education

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## EDUC-6899 (1-4) Independent Study in Educational Foundations Policy & Practice--Master's Level

School of Education Education Graduate Education

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## EDUC-6915 (1-4) Practicum in Curriculum and Instruction

School of Education Education Graduate Education

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## EDUC-6916 (1-4) Practicum in Research and Evaluation Methodology

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## EDUC-6917 (1-4) Practicum in Educational Equity and Cultural Diversity

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## EDUC-6918 (1-4) Practicum in Educational and Psychological Studies

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## EDUC-6919 (1-4) Practicum in Educational Foundations Policy and Practice

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## EDUC-6925 (1-4) Readings in Curriculum and Instruction

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## EDUC-6926 (1-4) Readings in Research and Evaluation Methodology

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## EDUC-6927 (1-4) Readings in Educational Equity and Cultural Diversity

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## EDUC-6928 (1-4) Readings in Educational and Psychological Studies

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## EDUC-6929 (1-4) Readings in Educational Foundations Policy and Practice

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## EDUC-6944 (1) Master's Degree Candidate

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EDUC

### EDUC-6954 (1-6) Master's Thesis

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### EDUC-6964 (3) Capstone: Inquiry in the Content Areas

Supports students in using and building on the ideas and content encountered in previous coursework. Requires students to conceptualize, design and implement an original research project in content area that will serve as exit requirement for the degree. Reads and engages in research and theory associated with Teacher Research (i.e. research conducted by teachers for professional purposes). Prerequisites: Restricted to Educ-Curriculum & Instruction (EDCI) graduate students only.

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### EDUC-7015 (3) Teaching Internship in Teacher Education

One-semester teaching internship in an undergraduate or graduate foundations course.

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### EDUC-7055 (3) Philosophy of Education

Examines exemplars of educational philosophy from ancient times to the present day, emphasizing their relevance and application to current controversies in education (e.g., multiculturalism, gender equity, and school choice). Formerly EDUC 5055. Prerequisites: Restricted to Graduate Students only.

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## EDUC-7105 (3) Collaboration to Meet Special Needs

Covers effective collaboration practices involving the special education teacher, other educational personnel, students, and parents. Bilingual special education considerations in collaboration will be described. Issues regarding inclusion will be explored. Practical application to teaching and learning will be made. Strategies for disseminating information and collaborative activities will be discussed.

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## EDUC-7316 (3) Intermediate Statistical Methods

Studies sampling theory and inferential statistics; advanced applications for testing of hypotheses regarding central tendency, variability, proportion, correlation, and normality; chi-square and the analysis of frequency data; multiple regression and prediction; introduction to the analysis of variance; and related computer programs for statistical analysis. Prereq., EDUC 5716.

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## EDUC-7326 (3) Experimental Design and Analysis 1

Focuses on experimental and quasi-experimental designs in educational research; applications of the general linear model; power and statistical efficiency; randomization and control; multiple comparisons; factorial experiments and interaction with fixed-factor and mixed design; analysis of covariance; effects of assumption violations; and related computer programs for statistical analysis. Prereqs., EDUC 5726 and 7316.

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## EDUC-7336 (3) Methods of Survey Research and Assessments

Examines theory and techniques involved in each stage of survey research, including problem formulation, questionnaire development, interview and mailed surveys, assessing reliability and validity, sampling plans, data reduction (e.g., factor analysis), and analysis of continuous and categorical data. Prereqs, EDUC 5726 and 7316.

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## EDUC-7346 (3) Ethnographic Methods in Educational Research

Explores the history of ethnography and its translation into educational research. Students practice participant observation, interviewing, journal writing, artifact searches, qualitative analysis and interpretation, and styles of reporting. Prereq., EDUC 6325 or equivalent doctoral level course in anthropological or sociological theory, or sociology of education.

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## EDUC-7376 (3) Theory and Practice of Educational and Psychological Measurement

Introduces theories of measurement and applications, and presents classical test theory. Includes quantitative concepts, methods, and computational techniques for the development, application, and evaluation of measurement instruments in social/ behavioral science and education. Prereq., EDUC 5716.

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## EDUC-7386 (3) Educational Evaluation

Builds an understanding of the range of approaches taken by educational evaluators, focusing particularly on the evaluation of programs. Explores the nature of different evaluation perspectives and how these disparate views translate into methodological and conceptual models. Students develop a familiarity with the most common and influential approaches to evaluation.

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## EDUC-7396 (3) Multivariate Analysis

Introduces contemporary advanced multivariate techniques and their application in social science research. Methods include multivariate regression and analysis of variance, structural equation models, and hierarchical/multi-level models. Prior experience with Anova and multiple regression is assumed. Prerequisites: Restricted to Graduate Students only.

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## EDUC-7416 (3) Seminar: Research Methodology

Presents selected topics for advanced study in educational research, statistics, measurement, and evaluation.

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## EDUC-7436 (3) Item Response Theory

Includes one-, two-, and three-parameter logistic models for dichotomously-scored items and partial credit models for polychotomously-scored items; applications of the models to problems such as equating of test forms, test design, computerized adaptive testing, and the detection of item bias. Prereqs., EDUC 7316, 7376.

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## EDUC-7446 (3) Seminar: Policy Issues in Education

Explores major policy issues confronting U.S. education and examines the nature and undertaking of educational policy studies. Learn to approach policy issues from a contextual perspective that highlights systemic forces and analyzes and applies differing policy instruments. While a wide variety of policies are covered in the course, it particularly emphasizes issues of educational equity.

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## EDUC-7456 (3) Advanced Multivariate Methods: Multi-level and Latent Variable Modeling

Covers in depth two advanced multivariate models common to social science research: latent variable (structural equation) models and multi-level (hierarchical) models. Topics may be taught with a particular analytic context, such as measurement of change (longitudinal analysis) or experimental design. Prereq., EDUC 7396 or equivalent.

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## EDUC-7775 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the ICS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in ICS Cognitive Science Academic Programs. Same as LING 7775, CSCI 7772, PSYC 7775, SLHS 7775, and PHIL 7810. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8014 (3) Doctoral Seminar: Multiculturalism and Education

Addresses the sociopolitical context of multiculturalism and education, and the sociocultural context of learning. Examines critical issues involved in making schooling responsive to an increasingly multicultural and multilingual society. Required for all doctoral students. Prereqs., EDUC 8210, 8220, 8230 8240, 8250 and 8260. Prerequisites: Restricted to EDCl, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8025 (3) Seminar: Curriculum Theories

Examines in depth recent developments in curriculum theory highlighting conceptual, contextual, and normative issues. Substantially explores distinct curricular traditions, corresponding conceptions of the good life along with related approaches to reason and emotion. Focuses on the works of prominent curriculum theorists.

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## EDUC-8045 (3) Philosophical Issues in Educational Research

Familiarizes students with important concepts and issues from the philosophy of science and, to a lesser extent, political theory and ethics; grounds such concepts and issues in the literature (often in terms of primary philosophical sources); and stimulates students to apply this material to the field of educational research in an informed way. Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only. Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8055 (3) Theoretical Issues in Education Policy

Provides students with an examination of the theories behind education policy analysis. Takes a thematic approach to the study of policy in order to understand how policy agendas are set; how democratic deliberation should be linked with research and policy; and the relationship between politics, social structures, research, and policies. Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8125 (3) Seminar: Radical Education Theories

Examines radical analyses, based on class, gender, and race, that public schooling in the U.S. maintains a dynamic of oppression and domination that undermines the schools' democratic premise. Scrutinizes the conceptual framework, interpretive and explanatory adequacy, and ethical justification of radical claims.

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## EDUC-8135 (3) Seminar: Research on Teaching

Provides an historical perspective of research on teaching, focusing on the evolution of conceptual frameworks, research methods, and research findings. Examines substantive and methodological issues that underlie contemporary research on teaching. Explores areas of research including teacher knowledge and beliefs, teaching for understanding, understanding student thinking, motivation and volition, and classroom assessment.

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## EDUC-8145 (3) Seminar: Research on Teacher Education and Learning to Teach

Explores substantive and methodological issues that underlie current research on learning to teach, teacher education, and teacher professional development. Considers the learning and development of experienced and novice teachers, with an emphasis on learning to teach in ways that conform to reform-based educational ideas.

## EDUC-8155 (3) Advanced Topics in Literacy Education

Examines special topics in theory and research related to literacy and literacy education. Topics vary each semester. May be repeated up to 12 total credit hours.

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EDUC

### [EDUC-8165 \(3\) Advanced Topics in Mathematics Education](#)

Examines special topics in theory and research related to mathematics education. Topics vary each semester. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

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### [EDUC-8175 \(3\) Advanced Topics in Science Education](#)

Examines special topics in theory, research, and assessment related to science education. Focuses on the development of the doctoral prospectus. Provides opportunities for students to defend their own work and to critique the work of their peers. Topics range from theoretical framing to presenting and defending one's work. May be repeated up to 12 total credit hours.

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### [EDUC-8210 \(3\) Perspectives on Classroom Teaching and Learning](#)

Introduces students to various paradigms within educational research and how they are employed to study teaching and learning in K-12 classrooms. Includes an analysis of the theories, assumptions, questions, methods, and findings associated with each of them. Prerequisites: Restricted to EDCl, EECD, EPSY, EFPP or REME PhD graduate students only.

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### [EDUC-8220 \(3\) Introduction to Educational Research and Policy](#)

Introduces conceptual and empirical issues and controversies in educational research and policy. Complements other doctoral courses in quantitative and qualitative methodology. Prerequisites: Restricted to EDCl, EECD, EPSY, EFPP or REME PhD graduate students only.

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School of Education Education Graduate Education

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## EDUC-8230 (3-4) Quantitative Methods I

Explores the use of statistics to formalize research design in educational research. Introduces descriptive statistics, linear regression, probability, and the basics of statistical inference. Includes instruction in the use of statistical software, (e.g., SPSS.). Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8240 (3-4) Quantitative Methods II

Continues the exploration of research design in the social sciences, especially the evaluation of the quantitative research reported in professional journals. Introduces instances of the general linear model (both multiple regression and ANOVA) and its application to educational research. Prereq., EDUC 8230 or equivalent. Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8250 (3) Qualitative Methods I

Introduces students to the theory and practice of qualitative research in education. First of a two-course sequence covering research design, theoretical perspectives, and methods. Preference given to first-year doctoral students in education. Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8260 (3) Qualitative Methods II

Builds on EDUC 8250 to develop knowledge and skills in ethnographic and case study research. Second of a two-course sequence covering qualitative research design, theoretical perspectives, and methods. Prerequisites: Restricted to EDCI, EECD, EPSY, EFPP or REME PhD graduate students only.

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## EDUC-8348 (3) Seminar: Human Development

Intensive study of selected topics in human development. The focus of the seminar will vary depending on the instructor's expertise and students' interests; may repeat for credit more than once. Recent topics include adolescent development in social context, Vygotsky and Cultural-Historical Activity Theory, and teaching and learning in and out of school. Prereqs., EDUC 6318, EDUC 8210, or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8358 (3) Seminar: Human Learning

Intensive study of selected topics in human learning. The focus of the seminar will vary depending on the instructor's expertise and students' interest; may repeat for credit more than once. Recent topics include sociocultural, situated, and other approaches to understanding the role of discourse in learning and teaching disciplinary content in school. Prereq., EDUC 6318, EDUC 8210, or instructor consent.

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## EDUC-8605 (3) Research and Professional Ethics for Educational Researchers

Examines the central issues and venerable theories of philosophical ethics that have historically framed research ethics. Also examines contemporary ethical theory that emphasizes a greater attention to the social sciences. Focuses on research ethics (both research of human subjects and research misconduct), various issues of professional academic ethics, and the AERA ethical code. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8610 (3) Advanced Topics in Educational Equity and Cultural Diversity

Examines special topics in theory and research related to educational equity and cultural diversity in education. Topics vary each semester. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8615 (3) Language Issues in Education Research

Examines ways in which issues of language can affect the validity of educational research. Discusses how language can be properly addressed with a multidisciplinary perspective through different stages in the process of an investigation, including design, sampling, data collection, and data analysis. Provides the conceptual basis for addressing linguistic diversity from a multidisciplinary perspective. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8710 (3) Measurement in Survey Research

Introduces students to classical test theory and item response theory. Emphasizes the process of developing, analyzing and validating a survey instrument. Focuses on developing a survey instrument with items that derive from a clearly delineated theory for the construct to be measured. Analyzes item responses and put together a validity argument to support the proposed uses of the survey. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8720 (3) Advanced Topics in Measurement

Focuses on psychometric models for measurement and their applications in educational and psychological research. Emphasizes understanding and evaluating the utility of models from item response theory (IRT). Applies and compares measurement models in the context of simulated or empirical data sets. Recommended prereq., EDUC 8710.

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## EDUC-8730 (3) Advanced Qualitative Data Analysis

Requires students begin semester with qualitative data already collected (from class project, pilot study, dissertation). Focuses on three approaches to data analysis: reconstruction, coding (deductive and inductive), and constant comparative method. Students apply these approaches to their own data. Instructors customize part of course to address specific topic of expertise, e.g., discourse analysis, video analysis, textual analysis, ethnographic analysis. May be repeated up to 12 total credit hours.

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## EDUC-8740 (3) Advances in the Assessment of Student Learning

Focuses on theories underlying traditional and contemporary proposals for assessment of student learning, and design and research of large-scale and classroom-based methods to assess student learning. Explores intersections between large-scale and classroom assessment, although gives greater attention to issues related to classroom assessment. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8804 (3) Special Topics

Designed to meet needs of graduate students with topics of pertinent interest. Prerequisites: Restricted to Graduate Students only.

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## EDUC-8844 (1-4) Doctoral Independent Study

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## EDUC-8855 (1-4) Independent Study in Curriculum and Instruction: Doctoral Level

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## EDUC-8866 (1-4) Independent Study in Research and Evaluation Methodology: Doctoral Level

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## EDUC-8877 (1-4) Independent Study in Educational Equity and Cultural Diversity: Doctoral Level

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## EDUC-8888 (1-4) Independent Study in Educational and Psychological Studies: Doctoral Level

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## EDUC-8899 (1-4) Independent Study in Educational Foundations Policy and Practice: Doctoral Level

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## EDUC-8935 (1-6) Internship in Curriculum and Instruction



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EDUC

## EDUC-8936 (1-6) Internship in Research and Evaluation Methodology

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## EDUC-8937 (1-6) Internship in Educational Equity and Cultural Diversity

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## EDUC-8938 (1-6) Internship in Educational and Psychological Studies

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## EDUC-8939 (1-6) Internship in Educational Foundations Policy and Practice

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## EDUC-8994 (1-10) PhD Doctoral Dissertation

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EHON

## EHON-1151 (3) Critical Encounters

Explores critical, literary and philosophical approaches to the following related problems: 1) how we organize knowledge and construct meaning, and 2) how we locate a sense of self as both individuals and members of various groups amidst the resources and demands of competing interpretations, traditions challenges and circumstances. Prereq., honors standing or instructor consent required. Prerequisites: Restricted to College of Engineering majors only.

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## EHON-1500 (1) Honors Reading Group

Faculty led reading seminars, focusing on specific text or texts chosen by the faculty. Special attention will be paid to group formation and the process of collaborative learning. Restricted to Engineering Honors Program (PHEN) students only or instructor consent required. Prerequisites: Restricted to Engineering Honors Program (PEHN) students only.

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## EHON-4051 (1) Dimensions of Leadership

Explores the many dimensions of leadership that exceed technical knowledge: the ethical, societal, cultural, interpersonal, and personal. Through seminars, workshops and exposure to leaders, students will reflect upon their engineering education in light of the multifaceted demands of effective leadership and their own personal career goals. Students will take an active role in shaping the course. Prereq., junior standing; honors standing or instructor consent. Repeatable for credit up to 3 credit hours.

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EMEN

## EMEN-4030 (3) Project Management Systems

Acquaints the student with multidisciplinary aspects of project management, including the relationship between schedule, project cost, and performance. Uses qualitative and quantitative tools to facilitate project management skills. Restricted to junior or senior in the College of Engineering and Applied Science with EMP approval. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

[College of Engineering & Applied Science](#) [Engineering Management](#)

## EMEN-4050 (3) Leadership and Professional Skills

Provides basic concepts of leadership and the essential skills required to become an effective leader/manager. Students will be provided the opportunity for personal development through exercises in communication and leadership effectiveness. Other major topics include leadership styles, managing commitments, change management, negotiation, conflict resolution, organizational culture, emotional intelligence, team dynamics, and business ethics. Restricted to seniors in the College of Engineering and Applied Science with EMP approval. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

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## EMEN-4100 (3) Business Methods and Economics for Engineers

Covers cost concepts, financial statements, and the company economic environment. Includes concepts and methods of analysis of the time value of money, comparison of project alternatives before and after taxes, cash flows, replacement analysis, risk management, and financial cash statements. Restricted to junior or senior in the College of Engineering and Applied Science with EMP approval. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

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## EMEN-4800 (3) Technology Ventures and Marketing.

Acquiring basic management and marketing skills is essential to successfully participating in technology venture development whether in a start-up company or Fortune 500 company. In the course, students learn to evaluate a technology, consider its viability as product, and learn the basic tenets of marketing with emphasis on developing a technology innovation into a commercially successful product with a mind on customer development as a key aspect of product development. Restricted to junior or senior in the College of Engineering and Applied Science with EMP approval. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

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## EMEN-4825 (3) Entrepreneurial Business Plan Preparation

Instructs students in the necessary elements of a business plan and how to prepare a complete well-written plan for an entrepreneurial business venture. Students work in interdisciplinary business-engineering five-person teams to create a business concept and take it through to business plan completion. Same as ESBM 4830. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

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## EMEN-4830 (1-3) Special Topics

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## EMEN-5000 (3) Engineering Analysis

Provides an introduction to the logical and systematic thinking required to evaluate and solve typical engineering problems in mechanics, electricity, thermodynamics, fluid mechanics, and light. Emphasizes understanding the physical behavior of systems and applying the principles and laws from the physical sciences to analyze these systems. Required for nonengineers seeking admission to the graduate technology management curriculum track. Not for degree credit. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5005 (3) Introduction to Applied Statistical Methods

Covers foundations for statistical reasoning and statistical applications. Topics include descriptive statistics, introduction to probability, random variables, discrete and continuous probability distributions, sampling theory and sampling distributions, statistical inference (point and interval estimation and hypothesis testing), and simple regression. All material taught is based upon case studies from business and industry. Restricted to students with 57-180 credits (Junior or Senior) or graduate students only. Not for EMP degree credit. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) or graduate students only.

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## EMEN-5010 (3) Introduction to Engineering Management

Provides a general introduction to the principles and methods of technical management covering a variety of topics in leadership, strategic planning, product management, entrepreneurship, finance, value chains, management of R&D, and economic environments. Industry guest speakers provide real-life examples and applications. Required for all degree students. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5020 (3) Finance and Accounting for Engineering Managers

Provides the concepts and skills necessary to financially analyze project and assess financial performance and status of an organization. Includes the time value of money, comparison of alternatives, taxes, risk management, cash flow, and financial cash statements. Required for all degree students. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5025 (3) Entrepreneurial Finance for Engineers

Teaches students to prepare, interpret and use financial information, in the context of startup and early stage enterprises. Includes historical financial statements, budgets and the budgeting process, and the use of financial information in raising capital. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5030 (3) Project Management

Presents the basic skills required to manage a wide range of technical projects. Topics include selecting project alternatives, managing project teams, developing project plan elements, risk management, monitoring and controlling projects, and financial analysis of projects. Skills learned are applied to a representative project. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5031 (3) Software Project Management

Understand unique considerations of the software lifecycle that impact project management. Emphasize configuration management, code reviews, architectural influences, and quality assurance with automated testing. Explore Capability Maturity Model (CMM) and Unified Modeling Language (UML) impact on project success. Recommended prereq., some software development experience. Same as ECEN 5603 and CSCI 5608. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5032 (3) Advanced Topics in Project Management

Covers advanced topics in project management from a systems view based on the Project Management Body of Knowledge (PMBOK); spans the entire project life cycle. Prereq., EMEN 5030 or equivalent. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5040 (3) Quality, Strategy, and Value Creation

Introduces business performance excellence (BPE) including history of Quality Sciences, Six Sigma, and Deming's Theory of Profound Knowledge. Addresses use of strategic planning, policy deployment, and Total Asset Utilization to exceed customer requirements and maximize profitability. Addresses topics strategically and tactically through case analysis, field study, and experiential learning. Prereq., EMEN 5005 or equivalent. Non-EMP students require instructor permission. Similar to OPIM 6030. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5041 (3) Advanced Topics in Value Creation

Studies methods designed to maximize excellence in business performance. Advanced study includes interactions with the customers and suppliers, integrated manufacturing, and meeting customer requirements while focusing on maximizing profitability. These characteristics are addressed both strategically and tactically through the use of case analysis, field study, and experiential learning for both the production and service sectors. Prereq., EMEN 5040. Recommended prereq., EMEN 5042. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5042 (3) Methods for Quality Improvement

In-depth investigation of the concepts, tools, and techniques used in the management and measurement of quality and productivity. Topics include basic statistics and probability; process variation; statistical process control charting and capability analysis for process, product, and management systems; and an introduction to design of experiments (DOE) in business and industry. Prereq., EMEN 5040 or instructor consent. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5043 (3) Advanced Topics in Quality Systems/ Engineering

Advanced study of methods, tools, techniques, and systems associated with advanced quality applications. Includes a survey of advanced process control technologies, control schemes, and measurement system analysis. Prereq., EMEN 5042. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5050 (3) Leadership

Provides working engineers a background in leadership concepts and methods, and enables students to develop practical skills through numerous exercises. Topics include authentic leadership, increasing human performance and effectiveness, emotional intelligence, managing commitments, conflict resolution, leading change, and organizational culture. Required for all engineering management degree students. Same as TLEN 5050. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5080 (3) Ethical Decision-Making in Engineering Management

Provide students with the ability to recognize ethical issues and dilemmas affecting managers in the workplace; understand various models and practices offering solutions to these issues; and understand how to create a culture of ethics and integrity in supporting and/or building a profitable, healthy, and responsible organization. Prerequisites: Restricted to students with 87-180 credits (Seniors) or graduate students only.

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## EMEN-5090 (3) Technology Ventures and Marketing

Acquiring marketing know-how is essential for engineers interested in technology and product development. Students learn the basic tenets of marketing with emphasis on developing a technology innovation into a commercially successful product. Special attention given to customer development as a key aspect of product development. Course designed to be of interest to engineers in existing companies and startups. Highlighted will be in-depth discussions of real-world case studies and providing the student with marketing strategies for the high tech environment. Non-EMP students require instructor permission. Restricted to graduate students in Engineering Management Program (EMEN) only. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5300 (3) Management of Research and Development

Provides practical, tested tools to manage research and development in industry and in university and government laboratories. R&D strategies are emphasized, as are innovation and creativity concepts and techniques. R&D portfolio techniques are emphasized and are the basis for a team project. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5400 (3) Product Development

Provides state-of-the-art techniques for improving the identification and creation of new products, services, and brands that provide an exceptional customer experience. Both proven and emerging management techniques in new product management are covered. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5405 (3) Systems Engineering: Requirements

Provides students with an understanding of how to prepare a program for effective and timely specification development and analytical methods for specification development. Management aspects covered include traceability, margins and budgets, requirements validation, specification publishing, and use of database systems. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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## EMEN-5410 (3) Systems Engineering: Synthesis

Provides methods for transforming a set of requirements in a series of specifications into a physical reality through product design, material procurement, and manufacturing transforms. The solution is developed through integration and optimization. This is the second course in a three course systems engineering sequence. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

EMEN

## EMEN-5415 (3) Systems Engineering: Verification

Provides students with methods to plan and implement effective product verification process on a program involving development of complicated products. Applies a process perfected on military programs, but the process is generic and can be applied effectively to commercial products. A worst case product and program complexity are considered permitting tailoring of the process for less complex cases. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

[College of Engineering & Applied Science](#) | [Engineering Management](#)

## EMEN-5430 (3) Software Product Management

Explores software product management activities from product concept to launch while ensuring both market visibility and customer satisfaction. Includes market research and opportunity analysis, software requirements, pricing and profitability, alpha-beta program feedback, operational readiness, sales channels and partner strategies. Recommended prereq., some software development experience. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

[College of Engineering & Applied Science](#) | [Engineering Management](#)

## EMEN-5500 (3) Lean and Agile Management

Operations Management has evolved and broadened from a sole focus on the manufacturing of hardware to a more universal set of concepts, management methods, and practical tools spanning manufacturing, supply chains, product development, software development, project management, support services, and accounting. This new approach can best be described as lean and agile management. Credit not granted for this course and OPIM 6080. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

[College of Engineering & Applied Science](#) | [Engineering Management](#)

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## EMEN-5600 (3) Survey of Operations Research

Applications oriented survey of operations research topics including linear and integer programming, network analysis, dynamic programming, nonlinear programming, decision analysis, Markov chain and Markovian decision models, queuing theory, and simulation. Non-EMP students require instructor permission. Same as OPIM 6070. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5610 (3) Advanced Statistical Methods for Engineering Research

Combines statistical methods with practical applications and computer software. Develops commonly used statistical models such as analysis of variance as well as linear and logistic regression. The statistical models are implemented and interpreted in the context of actual data sets using available statistical software. Continuation of EMEN 5005. Prereq., EMEN 5005 or equivalent and EMEN 5900 or equivalent. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5620 (3) Data Mining and Screening Experiments for Engineering Research

Combine intermediate and advanced statistical methods with practical research applications. Develops commonly used statistical models such as Two and Three-Way Analysis of Variance and the analysis of Fractional Factorial Designs for the solution of common business and industrial research problems. The statistical models are implemented and interpreted in the context of actual data sets using available statistical software. Prereq., EMEN 5610. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5710 (3) Applied Business Decisions

Student teams launch a high-tech company over eight quarters in a simulated business environment. Decisions are made in all major business areas-e.g. product development, marketing, operations, finance- in competition with other teams. Given the results of the previous quarter, teams make decisions for the next quarter. After the first year (four quarters), students prepare an elevator pitch, executive summary, and PowerPoint pitch to justify additional venture capital or a bank loan. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5825 (3) Entrepreneurial Business Plan Preparation

Instructs students in the necessary elements of a business plan and how to prepare a complete, well-written plan for an entrepreneurial business venture. Students work in teams to create a business concept and take it through business plan completion. Recommended prereq., EMEN 5020 or equivalent. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in

Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5840 (1-3) Independent Study Project

Available only through approval of graduate advisor. Subjects arranged to fit the needs of the particular student. Non-EMP students require instructor permission. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-5900 (3) Research Methods

Explores commonly used research methods including analytical, agreement, descriptive, and relational methods; experimental design including incorporation, nesting, blocking, and controlling; threats to the internal and external validity of research. Sampling procedures and considerations, measurement validity and reliability, and managing the research study are also reviewed. Prereq., EMEN 5005 or equivalent. Non-EMP students require instructor permission. Same as TLEN 5750. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-6805 (1) Capstone Preparation

Students determine capstone research question, conduct literature review, develop research methodology and project plan, write a proposal, and select capstone committee. Restricted to students who have completed 21 credit hours toward the EMEN degree. Prereq., either EMEN 5900 if choosing an applications-oriented capstone or EMEN 5825 if choosing a business plan capstone, and selection of a capstone advisor. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-6810 (2) Capstone Completion

Continues EMEN 6805 as the second half of a two-course sequence for the engineering management capstone project. Students conduct agreed-upon research, research and analyze results, develop recommendations, write a final report, and present the project to the committee for evaluation. Prereq., EMEN 6805. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN) only.

College of Engineering & Applied Science | Engineering Management

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## EMEN-6830 (3) Project Management Capstone

Evaluate project management practices in the student's work unit, company, or in another organization. Identify strengths and weaknesses of the major product management processes as outlined in the Project Management Body of Knowledge (PMBOK). Opportunities for improvement and methods for implementation are expected. Prereqs., EMEN 5030 and 5032 and acceptance into the Project Management Certification option. Prerequisites: Restricted to graduate students in Engineering Management Program (EMEN)

only.

[College of Engineering & Applied Science](#) | [Engineering Management](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject** **Number**

EMUS

## EMUS-1217 (1) University Singers

[College of Music](#) | [Music Ensembles](#)

## EMUS-1227 (1) University Choir

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Music](#) | [Music Ensembles](#)

## EMUS-1237 (1) Women's Chorus

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Music](#) | [Music Ensembles](#)

## EMUS-1247 (1) Men's Chorus

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Music](#) | [Music Ensembles](#)

## EMUS-1257 (1) Collegiate Chorale

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1267 (1) Choirs/Festival

College of Music | Music Ensembles

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## EMUS-1277 (1) Court Players

College of Music | Music Ensembles

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## EMUS-1287 (1) Marching Band

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1297 (1) Wind Symphony

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1307 (1) Band

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1317 (1) Campus Band

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1327 (1) Symphony Orchestra

2.0 hours offered CE Aspen Music School only. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

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## EMUS-1337 (1) Chamber Orchestra

College of Music | Music Ensembles

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## EMUS-1347 (1) Bell Ensemble

College of Music | Music Ensembles

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## EMUS-1357 (1) Harp Ensemble

College of Music | Music Ensembles

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## EMUS-1367 (1) Early Music Ensembles

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Music majors only.

College of Music | Music Ensembles

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## EMUS-1377 (1) Chamber Music-Brass

College of Music | Music Ensembles

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## EMUS-1387 (1) Chamber Music-Strings

College of Music | Music Ensembles

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## EMUS-1397 (1) Chamber Music Piano Duo

College of Music | Music Ensembles

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## EMUS-1407 (1) Chamber Music-Woodwinds

## EMUS-1417 (1) Percussion Ensemble

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Music majors only.

## EMUS-1427 (1) Jazz Ensemble

2.0 hours offered CE Aspen Music School only. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

## EMUS-1437 (1) Jazz Combo

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

## EMUS-1447 (1) Guitar Ensemble

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Music majors only.

## EMUS-1467 (1) World Music Ensemble

Study and performance of music's of minority cultures in the United States, including Native American, Latin American, African American, and Asian American, as well as music from the mother cultures of these groups. Same as EMUS 3467 and 5467. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.



## Courses

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EMUS

### EMUS-1477 (1) Vocal Jazz Ensemble

Study and performance of various vocal jazz styles, development of improvisational techniques, and investigation of the challenges of music making in a small group setting. Same as EMUS 3477 and EMUS 5477.

[College of Music](#) | [Music Ensembles](#)

### EMUS-1507 (1) Chamber Music

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Music](#) | [Music Ensembles](#)

### EMUS-1517 (1) Campus Orchestra

Offers University string, wind and percussion performers not majoring in music an opportunity to play in a conducted orchestra. Rehearsals are one night per week and has limited performance demands. Auditions are not required for strings. Instruments are available if needed. May be repeated up to 12 total credit hours. Same as EMUS 3517. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Music](#) | [Music Ensembles](#)

### EMUS-3217 (1) University Singers

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Music](#) | [Music Ensembles](#)

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## EMUS-3227 (1) University Choir

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3237 (1) Women's Chorus

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3247 (1) Men's Chorus

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3257 (1) Collegiate Chorale

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3267 (1) Choirs/Festival

College of Music | Music Ensembles

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## EMUS-3287 (1) Marching Band

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3297 (1) Wind Symphony

2.0 credit hours offered CE Aspen Music School only. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3307 (1) Band

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3317 (1) Campus Band

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3327 (1) Symphony Orchestra

2.0 hours offered CE Aspen Music School only. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3337 (1) Chamber Orchestra

College of Music | Music Ensembles

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## EMUS-3347 (1) Bell Ensemble

College of Music | Music Ensembles

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## EMUS-3357 (1) Harp Ensemble

College of Music | Music Ensembles

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## EMUS-3367 (1) Early Music Ensembles

Restricted to junior or senior College of Music majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music | Music Ensembles

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## EMUS-3377 (1) Chamber Music-Brass

College of Music | Music Ensembles

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## EMUS-3387 (1) Chamber Music-Strings

College of Music | Music Ensembles

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## EMUS-3397 (1) Chamber Music Piano Duo

College of Music | Music Ensembles

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## EMUS-3407 (1) Chamber Music-Woodwinds

College of Music | Music Ensembles

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## EMUS-3417 (1) Percussion Ensemble

Restricted to junior or senior College of Music majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music | Music Ensembles

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## EMUS-3427 (1) Jazz Ensemble

2.0 hours offered CE Aspen Music School only. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3437 (1) Jazz Combo

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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# Courses

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EMUS

## EMUS-3447 (1) Guitar Ensemble

Restricted to junior or senior College of Music majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

[College of Music](#) | [Music Ensembles](#)

## EMUS-3457 (1) Electronic Music Ensemble

[College of Music](#) | [Music Ensembles](#)

## EMUS-3467 (1) World Music Ensemble

Same as EMUS 1467 and EMUS 5467. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Music](#) | [Music Ensembles](#)

## EMUS-3477 (1) Vocal Jazz Ensemble

Study and performance of various vocal jazz styles, development of improvisational techniques, and investigation of the challenges of music making in a small group setting. Same as EMUS 1477 and EMUS 5477.

[College of Music](#) | [Music Ensembles](#)

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## EMUS-3507 (1) Chamber Music

Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-3517 (1) Campus Orchestra

May be repeated up to 12 total credit hours. Same as EMUS 1517. Restricted to Juniors or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Music | Music Ensembles

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## EMUS-5217 (1) University Singers

Prerequisites: Restricted to Graduate Students only.

College of Music | Music Ensembles

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## EMUS-5227 (1) University Choir

Prerequisites: Restricted to Graduate Students only.

College of Music | Music Ensembles

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## EMUS-5297 (1) Wind Symphony

2.0 credit hours offered CE Aspen Music School only. Prerequisites: Restricted to Graduate Students only.

College of Music | Music Ensembles

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## EMUS-5307 (1) Band

Prerequisites: Restricted to Graduate Students only.

College of Music | Music Ensembles

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## EMUS-5327 (1) Symphony Orchestra

2.0 hours offered CE Aspen Music School only. Prerequisites: Restricted to Graduate Students only.

College of Music | Music Ensembles

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## EMUS-5337 (1) Chamber Orchestra

College of Music | Music Ensembles

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## EMUS-5357 (1) Harp Ensemble

College of Music | Music Ensembles

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## EMUS-5367 (1) Early Music Ensembles

Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5377 (1) Chamber Music-Brass

College of Music | Music Ensembles

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## EMUS-5387 (1) Chamber Music-Strings

College of Music | Music Ensembles

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## EMUS-5407 (1) Chamber Music-Woodwinds

College of Music | Music Ensembles

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## EMUS-5417 (1) Percussion Ensemble

Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5427 (1) Jazz Ensemble

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Students perform in a principal format for jazz expression. The large ensemble setting affords the opportunity to expand knowledge of jazz styles and repertoire as well as refine reading skills and improve spontaneous interaction with other musicians. Prereq., previous experience in large jazz ensembles. Recommended EMUS 3427 or equiv. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5437 (1) Jazz Combo

Allows students the opportunity to perform in the principal format for jazz expression. The small group setting affords performers the opportunity to refine improvisation skills, improve spontaneous interaction with musicians and expand knowledge of jazz styles and repertoire. Prereq., previous performance experience in small jazz combos. Recommended EMUS 3437, or equiv. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5447 (1) Guitar Ensemble

Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5467 (1) World Music Ensemble

Study and performance of music's of minority cultures in the United States, including Native American, African American, and Asian American, as well as music from the mother cultures of these groups. Prereq., graduate standing or instructor consent. Same as EMUS 1467 and 3467. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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## EMUS-5477 (1) Vocal Jazz Ensemble

Study and performance of various vocal jazz styles, development of improvisational techniques, and investigation of the challenges of music making in a small group setting. Same as EMUS 1477 and EMUS 3477.

College of Music | Music Ensembles

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## EMUS-5507 (1) Chamber Music

Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music Ensembles

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**   **Number**

ENGL

## ENGL-1001 (3) Freshman Writing Seminar

Provides training and practice in writing. Focuses on the writing process, the fundamentals of composition, and the structure of argument. Provides numerous and varied assignments with opportunity for revision. Prereqs., College of Arts and Sciences freshman or sophomore standing. Not open to business or engineering majors. Meets MAPS requirement for English. Approved for arts and sciences CORE curriculum: lower-division written communication. Prerequisites: Not open to Engineering or Business majors.

[College of Arts & Sciences](#) [English](#) [Undergraduate Writing](#)

## ENGL-1191 (3) Introduction to Creative Writing

Introduces techniques of fiction and poetry. Student work is scrutinized by the instructor and may be discussed in a workshop atmosphere with other students. May not be taken concurrently with ENGL 2021 or 2051. May not be repeated. Not open to graduate students.

[College of Arts & Sciences](#) [English](#) [Undergraduate Writing](#)

## ENGL-1260 (3) Introduction to Women's Literature

Introduces literature by women in England and America. Covers both poetry and fiction and varying historical periods. Acquaints students with the contribution of women writers to the English literary tradition and investigates the nature of this contribution. Same as WMST 1260. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [English](#) [General Literature & Language](#)

## ENGL-1500 (3) Masterpieces of British Literature

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Introduces students to a range of major works of British literature, including at least one play by Shakespeare, a pre-20th century English novel, and works by Chaucer and/or Milton. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences English General Literature & Language

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## ENGL-1600 (3) Masterpieces of American Literature

Enhances student understanding of the American literary and artistic heritage through an intensive study of a few centrally significant texts, emphasizing works written before the 20th century. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences English General Literature & Language

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## ENGL-1800 (3) American Ethnic Literatures

Introduces significant fiction by ethnic Americans. Explores both the literary and the cultural elements that distinguish work by these writers. Emphasizes materials from Native American, African American, and Chicano traditions. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences English General Literature & Language

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## ENGL-1840 (1-3) Independent Study---Lower Division

Creative writing. May be repeated up to 8 total credit hours.

College of Arts & Sciences English General Literature & Language

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## ENGL-1850 (1-3) Independent Study---Lower Division

Literature/language. May be repeated up to 8 total credit hours.

College of Arts & Sciences English General Literature & Language

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## ENGL-2000 (3) Literary Analysis

Provides a basic skills course designed to equip students to handle the English major. Emphasizes critical writing and the acquisition of basic techniques and vocabulary of literary criticism through close attention to poetic and prose language. Required for students who declared the major summer 1999 and thereafter. Restricted to English majors only. Credit not granted for this course and ENGL 1010. Prerequisites: Restricted to English majors only.

College of Arts & Sciences English General Literature & Language

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## ENGL-2010 (3) Introduction to Literary Theory

Introduces students to a wide range of critical theories that English majors need to know. Covers major movements in modern literary/critical theory, from Matthew Arnold through new criticism to contemporary postmodern frameworks. Required for all English majors. Restricted to English majors only. Prerequisites: Restricted to English majors only.

College of Arts & Sciences English General Literature & Language

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## ENGL-2020 (5) Literary Analysis (with Lab)

Provides basic skills for the English major, enhanced with a language arts lab. Emphasizes critical writing and the acquisition of the techniques and vocabulary of criticism through close attention to literary language. Required for students who declared the major summer 1999 and thereafter. Restricted to English majors. Credit not granted for this course and English 2000. Prerequisites: Restricted to English majors only.

College of Arts & Sciences English General Literature & Language

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## ENGL-2021 (3) Introductory Poetry Workshop

Introductory course in poetry writing. May be repeated up to 9 total credit hours. Prereq., ENGL 1191 (min grade B-), or equivalent transfer course work. Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better). Not open to graduate students.

College of Arts & Sciences English Undergraduate Writing

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## ENGL-2036 (3) Introduction to Digital Media in the Humanities

Serves as a humanities-based introduction to digital media structures such as digital archive and reading/writing software; studies theories and methodologies for undertaking digital media scholarship in the humanities; and explores digital textualities ranging from text messaging, blogging, and game to digital fiction and poetry. Same as ATLS 2036. Formerly ENGL 2030.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-2051 (3) Introductory Fiction Workshop

Introductory course in fiction writing. May be repeated up to 9 total credit hours. Prereq., ENGL 1191 (min grade B-), or equivalent transfer course work. Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better).

College of Arts & Sciences English Undergraduate Writing

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## ENGL-2222 (3) Foundations of British and American Literature

Studies major texts of medieval and Renaissance writers who fundamentally influenced the course of English writing. Ordinarily deals

with Chaucer, Shakespeare, and Milton, though other classical, medieval, and Renaissance authors may be substituted.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-2502 (3) British Literary History 1

Provides a chronological study of great figures and forces in English literature from Beowulf to 1660. Students may not receive credit for both ENGL 2502 and 3503.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-2512 (3) British Literary History 2

Provides a chronological study of great figures and forces in English literature from 1660 to the present. Credit not granted for this course and ENGL 3512 and 3513.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-2602 (3) Introduction to Western European Literature 1

Close study of literary classics of Western civilization: the Odyssey or Iliad, Greek drama, and several books of the Bible.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-2612 (3) Introduction to Western European Literature 2

Close study of literary classics of Western civilization: major Roman and medieval texts.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-2707 (3) Introduction to Lesbian, Bisexual, and Gay Literature

Offers students at sophomore and junior levels an introduction to some of the forms, concerns, and genres of contemporary lesbian, bisexual, and gay writing in English. Prereq., sophomore standing. Same as LGBT 2707.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-2717 (3) American Indian Literature

Surveys historical and contemporary North American Native American literature. Examines the continuity and incorporation of traditional stories and values in Native Literature, including novels, short stories, and poetry. Same as ETHN 2713.

College of Arts & Sciences English Multicultural & Gender Studies

## ENGL-2727 (3) Survey of African American Literature 1

Chronological study of African American literature from the 17th century to the Harlem Renaissance. Same as ETHN 2722.

College of Arts & Sciences English Multicultural & Gender Studies

## ENGL-2737 (3) Survey of African American Literature 2

Chronological study of African American literature from the Depression writers to the present. Same as ETHN 2732.

College of Arts & Sciences English Multicultural & Gender Studies

## ENGL-2747 (3) Chicana/Chicano and Mexican Literature

Introduces Chicana and Chicano and Mexican literary studies, focusing on narrative works by Chicana and Chicano writers. Examines diverse range of Mexican writing in Greater Mexico as it addresses recurring issues and themes, including language, race and class, questions of identity, and gender relations. Same as ETHN 2746.

College of Arts & Sciences English Multicultural & Gender Studies

## ENGL-2767 (3) Survey of Post-Colonial Literature

Surveys the development of literatures in English in former British colonies. Topics include the spread and adaptation of English language literary forms in Asia, Africa, the Caribbean, and the far new world (Australia and New Zealand). Students learn the causes of the dispersion and the motivations for the clearly different uses of English literary forms in the ex-colonies. Same as ETHN 2761. .

College of Arts & Sciences English Multicultural & Gender Studies



# Courses

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**Subject    Number**

ENGL

## ENGL-3000 (3) Shakespeare for Nonmajors

Introduces students to Shakespeare's major works: the histories, comedies, and tragedies. May include the nondramatic poetry as well. Prereq., sophomore standing. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [English](#) [General Literature & Language](#)

## ENGL-3010 (3) History of the English Language

Introduces students to the historical stages of English from Anglo-Saxon, c. 500, to Modern English. Considers both language change and the role of language in historical and political phenomena such as globalization (including the spread of English and the emergence of different dialects) and past and present debates about standard language, canon formation, and culture.

[College of Arts & Sciences](#) [English](#) [General Literature & Language](#)

## ENGL-3021 (3) Intermediate Poetry Workshop

Intermediate course in poetry writing. May be repeated up to 9 total credit hours. Prereqs., ENGL1191 (min. grade B-) and 2021 (min. grade C-). Prerequisites: Requires prerequisite courses of ENGL 1191 (B- or better) and ENGL 2021 (C- or better). Restricted to students with a sub plan of Creative Writing.

[College of Arts & Sciences](#) [English](#) [Undergraduate Writing](#)

## ENGL-3041 (3) Studies in Fiction and Poetry

Examines literary forms and themes with special emphasis on issues related to the craft of poetry and fiction. This course is taught in

conjunction with visiting lectures by practicing writers. Does not count as Creative Writing workshop credit. Prereq., ENGL 1191 (min grade B-). Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better).

College of Arts & Sciences English Undergraduate Writing

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## ENGL-3051 (3) Intermediate Fiction Workshop

Intermediate course in fiction writing. May be repeated up to 9 total credit hours. Prereqs. ENGL1191 (min. grade B-) and 2051 (min. grade C-). Prerequisites: Requires prerequisite courses of ENGL 1191 (B- or better) and ENGL 2051 (C- or better). Restricted to students with a sub plan of Creative Writing.

College of Arts & Sciences English Undergraduate Writing

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## ENGL-3060 (3) Modern and Contemporary Literature for Nonmajors

Close study of significant 20th century poetry, drama, and prose works. Readings range from 1920s to the present. Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English General Literature & Language

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## ENGL-3081 (3) Intermediate Nonfiction Workshop

Discussion and practical criticism of student work and discussion of relevant works of literary nonfiction. May be repeated up to 9 total credit hours. Prereq., ENGL 1191 (min. grade B-). Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better). Restricted to English, Humanities, Theatre (THTR or TBFA) majors only.

College of Arts & Sciences English Undergraduate Writing

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## ENGL-3116 (3) Topics in Advanced Theory

Studies special topics in theory; specially designed for English majors. Topics vary each semester. May be repeated up to 6 total credit hours different topics. Prereq., sophomore standing. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-3164 (3) History and Literature of Georgian England

Provides an interdisciplinary study of England in one of its most vibrant cultural and historical periods. Topics include politics, religion, family life, and the ways contemporary authors understood their world. Prereq., sophomore standing. Approved for arts and sciences core curriculum: historical context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English British Literature after 1660

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## ENGL-3217 (3) Topics in Gender Studies

Studies special topics in gender studies; specially designed for English majors. Topics vary each semester. May be repeated up to 6 total credit hours for different topics. Prereq., sophomore standing. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-3226 (3) Folklore 1

Emphasizes formal study of folk traditions (includingtales, songs, games, customs, beliefs, and crafts) within a theoretical framework, using examples from several cultures. Prereq., sophomorestanding. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-3246 (3) Topics in Popular Culture

Studies special topics in popular culture; specially designed for English majors. Topics vary each semester. May be repeated for a total of 6 credit hours for different topics. Prereq., sophomore standing. Prerequisites: Restricted to sophomore, junior, or senior English or Humanities Majors only.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-3267 (3) Women Writers

Introduces literature by British and American women. Prereq., sophomore standing. Same as WMST 3267.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-3302 (3) Backgrounds of English and American Literature

Studies literary, philosophic, and religious traditions of the Greco-Roman and Judeo-Christian worlds, with close analysis of major texts in translation. Compares ancient and modern texts where feasible. Prereq., sophomore standing. Restricted to English and Humanities majors. Prerequisites: Restricted to sophomore, junior, or senior English or Humanities Majors only.

College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-3312 (3) The Bible as Literature

Surveys literary achievements of the Judeo-Christian tradition as represented by the Bible. Restricted to sophomores/juniors/seniors. Same as JWST 3312. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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College of Arts & Sciences English Backgrounds to Literature Engl

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## ENGL-3377 (3) Topics in Multicultural Literature

Studies special topics in multicultural literature; specially designed for English majors. Topics vary each semester. May be repeated up to 6 total credit hours for different topics. Prereq., sophomore standing. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-3553 (3) Geoffrey Chaucer

Selection of Chaucer's works, including The Canterbury Tales and other shorter poems. Includes an introduction to Middle English. Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English English Literature to 1660

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## ENGL-3563 (3) Early Shakespeare

Shakespeare's works through 1600. Prereq., junior standing. Restricted to English, humanities, and theatre majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL), Humanities (HUMN), Theatre (THTR or TBFA) majors only.

College of Arts & Sciences English English Literature to 1660

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## ENGL-3573 (3) Later Shakespeare

Shakespeare's works after 1600. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL), Humanities (HUMN) or Theatre (THTR or TBFA) majors only.

College of Arts & Sciences English English Literature to 1660

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## ENGL-3583 (3) Milton

Milton's poetry and selected prose. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English English Literature to 1660

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## ENGL-3655 (3) American Literature to 1860

Chronological survey of the literature from Bradford to Whitman. Restricted to English, humanities, and film studies majors only. Credit

not granted for this course and ENGL 3654. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) English (ENGL), Humanities (HUMN) or Film (FILM or FMST) majors only.

College of Arts & Sciences English American Literature

## ENGL-3665 (3) American Literature after 1860

Chronological survey of the literature from Whitman to Faulkner. Continuation of ENGL 3655. Restricted to English, humanities, and film studies majors only. Prereq., sophomore standing. Credit not granted for this course and ENGL 3664.

College of Arts & Sciences English American Literature

## ENGL-3677 (3) Jewish-American Literature

Explores the Jewish-American experience from the 19th century to the present through writers such as Sholom Aleichem, Peretz, babel, Singer, Malamud, Miller, Ginsberg, and Ozick. The Jewish experience ranges from the travails of immigration to the loss of identity through assimilation. Restricted to sophomores/juniors/seniors. Same as JWST 3677. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences English Multicultural & Gender Studies

## ENGL-3796 (3) Queer Theory

Surveys theoretical, critical, and historical writings in the context of lesbian, bisexual, and gay literature. Examines relationships among aesthetic, cultural, and political agendas, and literary and visual texts of the 20th century. Prereq., sophomore standing. Same as LGBT 3796.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

## ENGL-3856 (3) Topics in Genre Studies

Studies special topics in genre studies; specially designed for English majors. Topics vary each semester. May be repeated for a total of 6 credit hours for different topics. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) English (ENGL), Humanities (HUMN), Film (FILM or FMST) or Theatre (THTR or TBFA) majors only.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

ENGL

## ENGL-3930 (1-6) Internship

Provides academically supervised opportunity for upper-division students to work in public or private organizations on projects related to students' career goals and to relate classroom theory to practice. May be repeated up to 6 total credit hours. Restricted to students with 57-180 credits (Junior or Senior) and instructor consent required. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences   English   General Literature & Language

## ENGL-3940 (1-3) Service Learning Practicum

Under faculty supervision, students participate in a service project correlated with the academic subject. May be repeated up to 6 total credit hours.

College of Arts & Sciences   English   General Literature & Language

## ENGL-4021 (3) Advanced Poetry Workshop

Advanced course in poetry writing. May be repeated up to 9 total credit hours. Prereqs., ENGL 1191 (min. grade B-), 2021 (min. grade C-) or 3021 (min. grade C-). Prerequisites: Requires prerequisite courses of ENGL 1191 (B- or better), ENGL 2021 (C- or better) and ENGL 3021 (C- or better). Restricted to students with a sub plan of Creative Writing.

College of Arts & Sciences   English   Undergraduate Writing

## ENGL-4038 (3) Critical Thinking in English Studies

Concerned with developments in the study of literature that have significantly influenced our conception of the theoretical bases for study

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and expanded our understanding of appropriate subject matter. May not be repeated. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English Critical Studies in English

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## ENGL-4051 (3) Advanced Fiction Workshop

Advanced course in fiction writing. May be repeated up to 9 total credit hours. Prereq., ENGL 1191 (min. grade B-), 2051 (min. grade C-), 3051 (min. grade C-). Prerequisites: Requires prerequisite courses of ENGL 1191 (B- or better), ENGL 2051 (C- or better), and ENGL 3051 (C- or better). Restricted to students with a sub plan of Creative Writing.

College of Arts & Sciences English Undergraduate Writing

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## ENGL-4071 (3) Scriptwriting Workshop

Designed to give students practical criticism of their script writing and technical format requirements. Either stage plays or screenplays are studied, as announced. May be repeated up to 9 total credit hours. Prereq., CRW major or instructor consent based on submission of manuscript. Same as FILM 4075. Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better).

College of Arts & Sciences English Undergraduate Writing

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## ENGL-4081 (3) Playwriting

May be repeated up to 9 total credit hours. Prereq., CRW major or instructor consent based on submission of manuscript. Prerequisites: Requires prerequisite course of ENGL 1191 (B- or better). Restricted to students with a sub plan of Creative Writing.

College of Arts & Sciences English Undergraduate Writing

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## ENGL-4113 (3) History and Culture of Medieval England

Explores the major historical, literary, and cultural developments in England from the Anglo-Saxon period through the 15th century. Prereq., junior standing. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences English English Literature to 1660

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## ENGL-4116 (3) Advanced Topics in Media Studies

Studies specialized topics in the history, theory, and practice of media, such as the history of the book, the theory of digital media, and the theory and practice of multimedia forms. Specially designed for English majors. Topics vary year to year. May be repeated up to 6 total credit hours. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-4204 (3) Development of the English Novel 1

From the beginnings to 1830. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English British Literature after 1660

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## ENGL-4214 (3) Development of the English Novel 2

Continuation of ENGL 4204. Prereq., junior standing.

College of Arts & Sciences English British Literature after 1660

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## ENGL-4224 (3) Modern British and Irish Novel

Studies major figures and trends in the 20th century. Restricted to students with 57-180 credits (Junior or Senior). Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English British Literature after 1660

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## ENGL-4235 (3) American Novel 1

From the beginnings to 1900. Prereq., junior standing.

College of Arts & Sciences English American Literature

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## ENGL-4245 (3) American Novel 2

From 1900 to the present. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English American Literature

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## ENGL-4250 (3) Modern and Contemporary Novel

Close study of masterpieces by such novelists as Proust, Joyce, Woolf, Lawrence, Mann, Kafka, and Faulkner. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English General Literature & Language

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## ENGL-4277 (3) Topics in Women's Literature

Focuses on areas of research interest in the study of women's literature, such as selected themes or critical issues. Students are expected to contribute original research to the topic under consideration. Prereq., junior standing. Same as WMST 4277.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-4286 (3) Folklore 2

Upper-division studies of folk groups, events, texts, and contexts as they reflect traditional knowings---folk perceptions and teachings about the structure and purpose of the universe. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English Advanced Thry, Genre, Pop Cult

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## ENGL-4287 (3) Studies in Lesbian, Gay, Bisexual, and Transgender Literature

Examines selected British, American, and French literary representations of lesbian and gay identity from the early 16th century to the present. Discusses the changing status of homosexuality as a literary and cultural topos, including how same-sex desire is defined, and the rhetorical and ideological difficulties involved in its representation. Specific topics vary each semester. May be repeated up to 9 total credit hours. Restricted to juniors and seniors. Same as LGBT/WMST 4287.

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-4460 (3) Modern Poetry

Selects works of British and American poets from 1900 to the present. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English General Literature & Language

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## ENGL-4503 (3) Continental Medieval Literature

Intensive study of the major literary works of the Middle Ages in Europe. Prereq., junior standing.

College of Arts & Sciences English English Literature to 1660

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## ENGL-4513 (3) British Medieval Literature

Intensive study of the major literary works of the Middle Ages in Britain. Restricted to students with 57-180 credits (Junior or Senior). May be repeated up to 9 total credit hours provided the topics vary. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English English Literature to 1660

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## ENGL-4523 (3) The Renaissance in England: 1500--1600

Selected prose and non-dramatic poetry from Skelton and More through Shakespeare and his contemporaries. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English English Literature to 1660

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## ENGL-4533 (3) The Renaissance in England: 1600--1700

Selected prose and poetry by Donne, Jonson, Bacon, and their successors. Prereq., junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English English Literature to 1660

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## ENGL-4544 (3) The Age of Satire: 1660--1740

Dryden, Defoe, Swift, Pope, Addison, Steele, and their contemporaries. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English British Literature after 1660

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## ENGL-4554 (3) The Age of Sense and Sensibility: 1740--1800

Gray, Johnson, Goldsmith, Boswell, Cowper, Burns, Blake, and their contemporaries. Prereq., junior standing.

College of Arts & Sciences English British Literature after 1660

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

ENGL

### ENGL-4564 (3) The Early Romantics

Major emphasis on Blake, Coleridge, and Wordsworth. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English British Literature after 1660

### ENGL-4574 (3) The Later Romantics

Major emphasis on Keats, Shelley, and Byron. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English British Literature after 1660

### ENGL-4583 (3) Elizabeth I and Her Times

Interdisciplinary course explores different aspects of the reign of Elizabeth I: social and political history; literature; theater; and music. Explores the role and impact of a female ruler on English culture. Restricted to juniors and seniors. Same as HIST 4134 and THTR 4091.

College of Arts & Sciences English English Literature to 1660

### ENGL-4604 (3) The Early Victorians

Main currents of Victorian thought in prose and poetry, 1830--1860. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English British Literature after 1660

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## ENGL-4614 (3) The Later Victorians

Continuation of ENGL 4604, covering 1860-1900. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English British Literature after 1660

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## ENGL-4655 (3) Studies in American Literature to 1900

Extensive study of particular periods and movements in American literature. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English American Literature

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## ENGL-4665 (3) Studies in American Literature after 1900

Extensive study of particular periods and movements in American literature. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) English (ENGL) or Humanities (HUMN) majors only.

College of Arts & Sciences English American Literature

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## ENGL-4697 (3) Contemporary African American Literature 1

Advanced in-depth study of the works of prominent African American novelists and poets. Restricted to juniors/seniors. Same as ETHN 4692. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English Multicultural & Gender Studies

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## ENGL-4820 (3) Honors Seminar

Prepares prospective honors students to write honors theses. Focuses on sharpening the skills needed to write a successful thesis, including research techniques and the ability to evaluate and respond to secondary materials. May not be repeated. Prereq., instructor consent. Restricted to junior and senior English majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences English General Literature & Language

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## ENGL-4830 (3) Honors Thesis

Students accepted to English Departmental Honors are enrolled in this course.

College of Arts & Sciences English General Literature & Language

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## ENGL-4840 (1-3) Independent Study---Upper Division

Creative writing. May be repeated up to 8 total credit hours.

College of Arts & Sciences English General Literature & Language

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## ENGL-4850 (1-3) Independent Study---Upper Division

Literature/language. May be repeated up to 8 total credit hours.

College of Arts & Sciences English General Literature & Language

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## ENGL-5019 (3) Survey of Contemporary Literary and Cultural Theory

Introduces a variety of critical and theoretical practices informing contemporary literary and cultural studies. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English (ENGL) MA-Lit graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5029 (3) British Literature and Culture Before 1800

Introduces graduate level study of medieval and early modern writing through the long eighteenth century. Emphasizes a wide range of genres, forms, historical background, and secondary criticism. Cultivates research skills necessary for advanced graduate study. Topics will vary. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5059 (3) British Literature and Culture After 1800

Introduces graduate level study of Romantic, Victorian, Modern, and Postmodern writing. Emphasizes a wide range of genres, forms, historical background, and secondary criticism. Cultivates research skills necessary for advanced graduate study. Topics will vary. May be repeated up to 6 total credit hours. Same as ENGL 5079. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5079 (3) British Literature and Culture After 1800.

Same as ENGL 5059.

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College of Arts & Sciences English Graduate Courses

## ENGL-5109 (3) Literature and Culture of the United States

Introduces graduate level study of writing of the United States from its inception to the present. Emphasizes a wide range of genres, forms, historical background, and secondary criticism. Topics will vary. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

## ENGL-5139 (3) Global Literature and Culture

Introduces graduate level study of recent writing in English from around the world. Emphasizes a wide range of genres, forms, new media, and secondary criticism. Cultivates research skills necessary for advanced graduate study. Topics will vary. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

## ENGL-5169 (3) Multicultural/Postcolonial Studies.

Introduces graduate level study of ethnic American and/or postcolonial writing in English, including relevant theoretical discourse. Emphasizes a wide range of genres, forms, historical background, and secondary criticism. Cultivates research skills necessary for advanced graduate study. Topics will vary. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English, English Literature or English Literature-Creative Writing graduate students only.

## ENGL-5199 (3) Studies in Special Topics

See ENGL 5109 for description.

## ENGL-5229 (3) Poetry Workshop

Designed to give students time and impetus to generate poetry and discussion of it in an atmosphere at once supportive and critically serious. Admission to graduate creative writing students or by instructor's approval of an application manuscript. May be repeated up to 9 total credit hours. Prerequisites: Restricted to English Literature-Creative Writing, English Literature or English graduate students only.

## ENGL-5239 (3) Fiction Workshop

Designed to give students time and impetus to generate fiction and discussion of it in an atmosphere at once supportive and critically serious. Admission to graduate creative writing students or by instructor's approval of an application manuscript. May be repeated up to 9 total credit hours. Prerequisites: Restricted to English Literature-Creative Writing, English Literature or English graduate students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5259 (3) Nonfiction Workshop

Designed to give students time and impetus to generate nonfiction and discussion of it in an atmosphere at once supportive and critically serious. Admission to graduate creative writing students or by instructor's approval of an application manuscript. May be repeated up to 9 total credit hours. Prerequisites: Restricted to English, English Literature or English Literature-Creative Writing graduate students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5269 (3) Publishing Workshop

Provides practical experience in the editorial, design, and business procedures of desktop publishing. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5279 (3) Studies in Poetry

Addresses modern poetry, written since World War II. May be repeated up to 6 total credit hours. Prerequisites: Restricted to English, English Literature or English Literature-Creative Writing graduate students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject    Number**

ENGL

## ENGL-5289 (3) Scriptwriting Workshop

Designed to give time and impetus to scriptwriting in terms of both imaginative and technical aspects. Either stage plays or screenplays are studied, as announced. Admission to graduate writing students or by instructor of an application manuscript. May be repeated up to 9 total credit hours.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5299 (3) Studies in Fiction

Addresses modern fiction written since World War II. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5309 (3) Playwriting

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-5319 (3) Studies in Literary Movements

Studies styles, trends, innovations, and major writers in significant literary movements, particularly those after 1900, such as modernism and objectivism. May be repeated up to 9 total credit hours. Restricted to graduate CRWR, ENLT, and ENGL majors. Prerequisites: Restricted to English Literature-Creative Writing, English Literature or English graduate students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

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## ENGL-5459 (3) Introduction to the Profession

Introduces purposes, methods and techniques of professional scholarship in English. Provides an overview of the discipline, including traditional areas of research and recent developments. Teaches students how to use research, bibliographic, and reference tools to prepare papers for conferences and publication. Required of all MA students in English. Prereq., graduate standing or instructor consent. Formerly ENGL 7859.

College of Arts & Sciences English Graduate Courses

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## ENGL-5529 (3) Studies in Special Topics

Studies special topics that focus on a theme, genre, or theoretical issue not limited to a specific period or national tradition. Topics vary each semester. May be repeated up to 9 total credit hours. Same as ENGL 5549 and 5559. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5549 (3) Studies in Special Topics

Same as ENGL 5529 and 5559. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5559 (3) Studies in Special Topics

Same as ENGL 5529 and 5549. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-5849 (1-6) Independent Study (Graduate Level 1)

Independent investigation of topics of specific interest to individual students. Students wishing to enroll in independent study must petition the Associate Chair for Graduate Studies prior to the beginning of the semester. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-6949 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences English Graduate Courses

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## ENGL-6959 (1-9) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-7019 (3) Advanced British Literature and Cultre Before 1800

Studies special topics in medieval and early modern writing through the long 18th Century. Topics will vary. May be repeated up to 9 total credit hours. Recommended prereq., ENGL. 5019. Prerequisites: Restricted to English Literature-Creative Writing, English Literature or English graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-7059 (3) Advanced British Literature and Culture After 1800

Studies special topics in romantic, Victorian, modern and postmodern writing. Topics will vary. May be repeated up to 9 total credit hours. Recommended prereq., ENGL 5059. Prerequisites: Restricted to English Literature-Creative Writing, English Literature or English graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-7119 (3) Advanced Literature and Culture of the United States

Studies special topics in writing of the United States. May be repeated up to 9 total credit hours. Recommended prereq., ENGL 5109. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-7149 (3) Advanced Global Literature and Culture

Studies special topics in recent writing in English from around the world. May be repeated up to 9 total credit hours. Recommended prereq., ENGL 5149. Prerequisites: Restricted to English Lit-Creative Writing (CRWR), English Literature (ENLT), English (ENGL) or Comparative Literature (CMLT) graduate students only.

College of Arts & Sciences English Graduate Courses

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## ENGL-7179 (3) Advanced Multicultural/Postcolonial Studies

Studies special topics in ethnic American and/or postcolonial writing in English, including relevant theoretical discourses. Topics will vary.

May be repeated up to 9 total credit hours. Recommended prereq., ENGL 5169. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-7489 (3) Advanced Special Topics

Studies special topics in theory, culture, and literature of any period. Topics will vary. May be repeated up to 9 total credit hours. Prereq., ENGL 5019; Ph.D. exempted. Prerequisites: Restricted to English graduate students only.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-7849 (1-3) Independent Study (Graduate Level 2)

May be repeated up to 7 total credit hours.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

## ENGL-8999 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

[College of Arts & Sciences](#) [English](#) [Graduate Courses](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

ENVD

## ENVD-1004 (3) Introduction to Environmental Design Theory

Introduces students to the complexity of forces that interact to shape the designed environment. A lecture sequence and parallel set of design exercises exposes students to the theory and practice of environmental design, and to the important issues that guide the work of architects, landscape architects, urban designers, and urban planners. Open to nonmajors on a space available basis. Coreqs., ENVD 1052, 2001. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [History and Theory](#)

## ENVD-1010 (3) Design Appreciation

Designed for students who are interested in pursuing a degree in design. Provides a foundation for viewing the world through the "eyes" of a designer and gives a broad overview of various design professions including: Architecture, Planning, Landscape Architecture, and Industrial Design through a basic history of design and speculation concerning the future of these professions. Restricted to non-ARPL students. Prerequisites: Restricted to non-College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [History and Theory](#)

## ENVD-1052 (3) Design and Communication 1

Using both lectures and drawing exercises, this class extends understandings of the representational conventions used by the design professions through its introduction to the possibilities offered by emerging digital techniques for the depiction of designed artifacts and environments, allowing students to extend and enhance their understandings of advanced practices for design visualization, representation, and communication. Coreqs., ENVD 1004, 2001. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [Methods and Techniques](#)

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## ENVD-1102 (3) Design and Communication 2

Using both lectures and drawing exercises, this class extends understandings of the representational conventions used by the design professions through its introduction to the possibilities offered by traditional techniques for the advanced practices for design visualization, representation, and communication. Prereqs., ENVD 1004, 1052, 2001. Coreqs., ENVD 1104, 2003. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052, and ENVD 2001. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-1104 (3) Introduction to Environmental Design Methods

Explores the forces and conditions that interact to shape the designed environment. It does so through a lecture sequence and parallel set of design exercises introducing students to the theory and practice of environmental design. It develops student understandings of the central role design thinking plays as the unique process used to effect appropriate change in the designed environment. Prereq., ENVD 1004, 1052, 2001. Coreqs., ENVD 1102, 2003. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052, and ENVD 2001. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-2001 (3) Human Behavior in Design and Planning

Examines reciprocal relationships between people and their built and natural environments, tracing major issues and approaches in design research to understand how people are influenced by the environment and how they can create healthy, just, and livable places. Coreqs., ENVD 1004, 1052. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Social Factors

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## ENVD-2002 (3) Environmental Design Media 1

Using both lectures and drawing exercises, this class examines the traditional representational conventions used by the design professions to depict and describe space, form, pattern and information. Uses a multi-disciplined approach that explores the three basic intentions that inform the marks that designers make: visualization, representation and communication. Prereq., ENVD 1004. Open to nonmajors on a space available basis. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-2003 (3) Ecology and Design

Introduces basic principles and techniques of ecology as they relate to the design and understanding of the built environment. Includes a study of hazards and the impact of modern technology on the natural and built environments. Prereqs., ENVD 1004, 1052, 2001. Coreqs., ENVD 1102, 1104. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052, and ENVD 2001. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Physical Factors

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## ENVD-2052 (3) Introduction to Computers in Planning

Introduces the use of computers in design fields, including applications for word-processing, desktop publishing, graphic creation, and Cad-style design. Aims to provide basic general skills in computer use that are transferable to other computer applications. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-2100 (6) Architecture Studio 1

The first of four architecture studios, this class introduces students to the basic strategies and techniques of architectural design. Focuses on the languages of design, as well as on traditional and digital methods of visualizing architectural ideas and forms. Prereq., ENVD 2002. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-2110 (6) Environmental Design Studio

This class exposes students to a sequence of design investigations that lead to the development of design concepts for critical evaluation and discussion. The intent of this introductory design studio is to expose students to fundamental design practices common to the disciplines---architecture, landscape architecture, planning, urban design---that share the responsibility for shaping the designed environment. Prereq., ENVD 2002.

College of Architecture & Planning Environmental Design Studios

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## ENVD-2120 (6) Environmental Design Lab - Urban Design

Exposes students to a sequence of design investigations that lead to the development of design concepts for critical evaluation and discussion. The intent of this introductory design studio is to expose students to the fundamental design practices that are common to the disciplines of environmental design, planning, urban design and landscape design - that share the responsibility for shaping the designed environment. Prereqs., ENVD 1102, 1104, 2003. Coreqs., ENVD 3122, 3124. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104, and ENVD 2003. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-2130 (6) Environmental Design Studio: Landscape Design

Exposes students to a sequence of design investigations that lead to the development of design concepts for critical evaluation and discussion. The intent of this introductory design studio is to expose students to the fundamental design practices that are common to the disciplines of architecture, urban design and landscape design - disciplines that share the responsibility for shaping the designed environment. Prereqs., ENVD 1004 and 1104. Restricted to ARPL majors. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3122, and ENVD 3124. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-2152 (3) Geographic Info Systems

Focuses on construction and use of computer-based information systems to represent and manipulate geographic data. Emphasizes the recording, mapping, and transforming of data for analysis and use by planners. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Methods and Techniques

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## ENVD-3001 (3) Environment and Behavior

Examines the social and behavioral aspects of relationships between people and the designed environment. Gives special attention to antecedent factors (why we have the environments we do), implications of given arrangements for special population groups, and responses to incongruent environments. Open to nonmajors on a space available basis. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Social Factors

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## ENVD-3002 (3) Design Theory and Methods

The nature of design and systematic methods for improving design. Topics include: nature of design problems; structure of design process; theory of form; problem definition; generating solution ideas; evaluation; roles of form and function. Students use computers without having to learn to program. Open to nonmajors.

College of Architecture & Planning | Environmental Design | Methods and Techniques

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## ENVD-3003 (3) Site Planning

Introduces the site planning process including: site analysis and its relationship to building program and site concept, and preparation of site plans. Emphasis is placed on the planning of the physical site through a thorough understanding of process, land use, site constraints and synthesis of ecological, functional and aesthetic considerations in the site planning process. Prereqs., ENVD 2120, 3122, 3124. Coreqs., ENVD 2130, 3004. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3122, and ENVD 3124. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | Physical Factors

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## ENVD-3004 (3) History of Landscape Architecture

Investigates landscape architectural thought from antiquity to the present. Begins with a review of Greek ideals and proceeds - through an appreciation of landscape and nature as essential cultural constituents - with a survey of major themes such as Renaissance Humanism, the Picturesque, and the varieties of Modernism, Neo-Eclecticism and most recent directions in landscape and garden design. Prereqs., ENVD 2120, 3122, 3124. Coreqs., ENVD 2130, 3003. Restricted to College of Architecture and Planning undergrads. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3122, and ENVD 3124. Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning | Environmental Design | History and Theory

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## ENVD-3015 (3) Introduction to Historic Preservation

Introduces methods for identifying historic structures and evaluating their materials. Considers techniques for preserving and restoring and legal options for promoting preservation efforts. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Technology and Practice

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## ENVD-3022 (3) Technical Photography

Introduces students to the technical and practical aspects of making photographic images: the workings of the camera and lens, principles of depth of field, black and white film processing, printing, and basic darkroom procedures. Open to nonmajors on a space available basis. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3052 (3) Introduction to Computer Methods in Environmental Design

Surveys existing and emerging computer methods used in the environmental design professions, with an introduction to computer programming. Open to nonmajors with instructor consent.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3100 (6) ENVD Studio--Architectural Design

Exposes students to a sequence of design investigations that lead to the development of design concepts for critical evaluation and discussion. The intent of this introductory design studio is to expose students to the fundamental design practices that are common to the disciplines of environmental design, planning, urban design and landscape design - that share the responsibility for shaping the designed environment. Prereqs., ENVD 2130, 3003, 3004. Coreqs., ARCH 3114, ENVD 3115. Restricted to ARPL students only. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3110 (6) Architecture Studio 1

The first of four upper-division studios introduces students to the basic strategies and techniques of architectural design. Focuses on the languages of design, as well as on traditional and digital methods of visualizing architectural ideas and forms. Prereq., ENVD 2110. Restricted to junior/senior ARCH majors.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3115 (3) Introduction to Building Materials and Systems

Surveys building methods, materials, and assemblies from the designer's perspective. Prereqs., ENVD 2130, 3003, 3004. Coreqs., ARCH 3114, ENVD 3100. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Technology and Practice](#)

## ENVD-3122 (3) Research Issues and Methods in Design and Planning

Explores topics of current interest in planning. Looks at the development and social consequences of the neighborhood movement, forms of municipal and regional governments, regional settlement patterns, and new communities. Introduces selected methods from the social sciences used by planners and urban designers. Prereqs., ENVD 1102, 1104, 2003. Coreqs., ENVD 2120, 3124. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104, and ENVD 2003. Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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# Courses

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ENVD

## ENVD-3124 (3) Issues in Planning History

Broadly introduces physical environmental planning in the U.S., examining both historical roots and recent trends in American planning concepts and implementation. Emphasizes an analytical and critical approach to historical and contemporary planning issues, mechanisms, and cases. Prereqs., ENVD 1102, 1104, 2003. Coreqs., ENVD 2120, 3122. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104, and ENVD 2003. Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [History and Theory](#)

## ENVD-3152 (3) Introduction to Computer Graphics Applications

Explores principles and uses of computer graphics in design. Topics include creation and modification of complex two- and three-dimensional objects; orthographic and perspective views; use of color; input using mouse and digitizer; output using screen, plotter, matrix printer, and slides; automated aids for form generation and manipulation; and analysis of current and future trends of computer usage for design. May be repeated up to 12 total credit hours. Prereq., ENVD 1052, 1102. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [Methods and Techniques](#)

## ENVD-3212 (3) Color Theory

Illustrates color media techniques for the preparation, composition, and presentation of landscape and built environment drawings. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) | [Environmental Design](#) | [Methods and Techniques](#)

## ENVD-3220 (6) Planning Studio 2

See ENVD 2120. Prereq., ENVD 2120. Restricted to PLAN majors. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3252 (3) Computer Graphic Programming

Provides an introductory computer programming course designed to teach the capabilities of a computer in providing graphic representations of environments, including buildings. Open to nonmajors.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3300 (3-6) Special Topics: Intermediate Design Lab

Design lab exploring new and emerging themes in environmental design. May be repeated up to 18 total credit hours. Prereqs., ARCH 3114, ENVD 3100, 3115. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3310 (6) Architecture Studio 2

The second of the four upper-division studios focuses on concepts of medium-scale building design, siting, and climate. Through a number of design exercises, students learn how these factors help shape buildings. Prereq., ENVD 3110. Formerly ENVD 3210. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3320 (2) Planning Practicum

Supervised practicum in some aspect of urban or regional planning. Prereq., ENVD 3220.

College of Architecture & Planning Environmental Design Studios

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## ENVD-3352 (3) Architectural Computer Media

Introduces the integration of computing and the architectural design process and related representational tasks. Studies common computer-aided design programs, emphasizing two- and three-dimensional and animation techniques. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-3909 (1-6) Independent Study

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

College of Architecture & Planning Environmental Design Miscellaneous

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## ENVD-3919 (1-6) Teaching Assistant

By special arrangement with instructor. Prereq., junior standing and 3.00 GPA. Available for pass/fail credit only.

College of Architecture & Planning Environmental Design Miscellaneous

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## ENVD-4005 (3) Design and Planning Law

Teaches students how to research the various codes and to draft and pass laws. Covers environmental, water quality, property, zoning, and building codes and laws. Prereq., ENVD 2130.

College of Architecture & Planning Environmental Design Technology and Practice

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## ENVD-4012 (3) Imagination and Creativity

Offers a seminar on imagination and creativity in environmental design. Students research and prepare a class presentation and paper on a topic of interest. Open to nonmajors at all levels.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-4023 (3) Environmental Impact Assessment

Provides a field-oriented seminar in current environmental impact controversies. Gives attention to history, theory, and application of impact analysis at state levels for designers, land-use planners, and others involved in resource decision making. Prereq., instructor consent. Open to nonmajors on a space available basis, by instructor consent. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Physical Factors

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## ENVD-4031 (3) Thinking Like a Mountain: A New Land Ethic

Critically reviews and analyzes land use policies, the ethics and economics of air and water pollution, regional sustainability, and resource management. Includes critical evaluation of empirical methodologies, and criteria of cultural and social equity. Prereq., junior or senior standing in the college.

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## ENVD-4035 (3) Solar and Sustainable Design

Introduces aspects of solar technology relevant to the environmental design professions. Includes readings and lectures on the nature of energy limitations, energy needs, and the potential role of solar energy in meeting these needs. Prereq., ENVD 2130.

## ENVD-4052 (3) Digital Presentation and Portfolio

Introductory course creating interactive web sites. Covers use of Hypertext Markup Language (HTML) and Flash to create linked pages containing text, images animations, menus, and buttons. Covers principles of site navigation, page layout, and graphic design for designers and planners. Credit not granted for this course and ENVD 2352. Prerequisites: Restricted to College of Architecture and Planning majors only.

## ENVD-4092 (3) Improving Imaging Ability

Offers an advanced course dealing with theories of imaging and methods of improving imaging in the design process. Open to nonmajors.

## ENVD-4100 (3-6) Advanced Design Lab 1

Design lab exploring new and emerging themes in design. May be repeated up to 18 total credit hours. Prereq., ENVD 3300.

## ENVD-4112 (3) Architectural Graphics 1

Illustrates techniques of graphics communication and presentation for architectural design. Includes advanced delineation and use of color. Prereq., ENVD 2130.

## ENVD-4114 (3) History of American Architecture and Urbanism

Surveys architecture, landscape architecture, urban design, and planning in the U.S. from ca. 1600 to the present. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [History and Theory](#)

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## ENVD-4122 (3) Advanced Technical Photography

Focuses on working with a variety of alternative photographic processes intended to give students an array of photographic techniques to incorporate into studio course presentations and portfolio work. Processes include hand-applied color to black and white images, using two or more negatives to produce black and white combination prints, shooting color slides to produce graphic arts, high-contrast black and white prints, and documentary photography of Colorado architecture and urban landscapes using color slide film. Students must provide their own 35mm SLR camera. Prereq., ENVD 3022 or ARTS 2191 or instructor consent.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4152 (3) Computer Graphic Applications

Introduces the mechanics of entering 2-D images and 3-D objects into the computer. Once entered, graphics are interactively rotated in space, walked through, and displayed in perspective from any position. Also covers the mechanics of other computer programs allowing additional manipulation of images and objects. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4192 (3) Improving Imaging Ability 2

Offers an advanced course dealing with theories of imaging and methods of improving imaging in the design process. Open to nonmajors.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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## ENVD-4212 (3) Architectural Graphics 2

Covers development of an architectural set of construction documents combined with job administration, field observation, and guest speakers from related construction and architectural disciplines. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Methods and Techniques](#)

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# Courses

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ENVD

## ENVD-4233 (3) Environmental Aesthetics

Explores the interdisciplinary field of environmental aesthetics, examining the history of landscape tastes, theoretical approaches to the study of aesthetic responses, and contemporary attempts to incorporate matters of aesthetics in American planning. Emphasizes developing analytical and critical approaches to aesthetics in the public realm.

[College of Architecture & Planning](#) [Environmental Design](#) [Physical Factors](#)

## ENVD-4300 (3-6) Advanced Design Lab 2

Design lab exploring new and emerging themes in design. May be repeated up to 12 total credit hours. Prereq., ENVD 4100. Prerequisites: Restricted to College of Architecture and Planning majors only.

[College of Architecture & Planning](#) [Environmental Design](#) [Studios](#)

## ENVD-4311 (3) Housing Policies and Practices

A seminar providing students with a descriptive knowledge and analytical understanding of the use and development of residential settings in different political economies, globally divided into advanced capitalist nations, collectivist economies, and the third world. Prereq., ENVD 2130.

[College of Architecture & Planning](#) [Environmental Design](#) [Social Factors](#)

## ENVD-4314 (3) Architectural Theory

Surveys, through lectures and readings, the major historical developments and contemporary directions in architectural theory. Prereqs.,

ARCH 3114 and ARCH 3214. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-4320 (6) Planning Studio 3

See ENVD 2120. Prereq., ENVD 3300.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4322 (1-6) Special Topics: Graphics

Provides an advanced seminar on special issues in design communications. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-4340 (4-6) Landscape Design Studio

Studio in landscape design. Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4352 (1-6) Special Topics: Computer Methods

Topics include animation and environmental simulation, computational methods of technical evaluation and optimization, and computational mapping and analysis. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Methods and Techniques

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## ENVD-4360 (4-6) Historic Preservation Studio

A design studio exploring emerging issues and practices in historic preservation. Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4361 (1-6) Special Topics: Social Factors in Design

Addresses variable topics in the relationship of human experience and behavior to the built environment, e.g., social research methods in environmental design. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

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College of Architecture & Planning Environmental Design Social Factors

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## ENVD-4363 (1-6) Special Topics: Physical Factors in Environmental Design

Includes such topics as appropriate technology, public policy and natural hazards, organization of the designing and building process, and physical elements of urban development. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Physical Factors

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## ENVD-4364 (1-6) Special Topics: History and Historiography of Environmental Design

Provides an advanced seminar on history and historiography of environmental design, e.g., American dwellings. May be repeated for credit by petition. Prereq., ENVD 2130.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-4365 (1-6) Special Topics: Technology and Practice

Provides an advanced seminar on new technologies and issues of professional practice in the environmental design professions. Prereq., ENVD 3100. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Technology and Practice

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## ENVD-4420 (3) Senior Capstone Seminar

Advanced seminar focuses on theoretical concerns and practical issues inherent in environmental design and planning. Views concerns and issues in terms of setting, processes, and planning and design outcomes. Provides a critical synthesis of the inherently interdisciplinary nature of planning and design education. Open to planning and design studies seniors only, or by instructor consent. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4440 (6) Landscape Design Studio 2

A preprofessional studio in landscape architecture. Prereq., ENVD 4340.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4510 (6) Architecture Studio 3

The third of the four upper-division studios focuses on concepts of program, architectural meaning and human behavior in buildings. Through a number of design exercises, students learn how these factors help shape buildings. Prereq., ENVD 3310. Formerly ENVD 4310. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4550 (4-6) Urban Design Studio

A studio exploring emerging issues and practices Prereq., ENVD 3300. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4710 (6) Architecture Studio 4

The last of the four upper-division studios focuses on concepts of building technology, context and environmental sustainability. Prereq., ENVD 4510. Formerly ENVD 4410. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design Studios

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## ENVD-4764 (1-6) Special Topics: Theory and Criticism in Environmental Design

Provides an advanced seminar on theory and criticism in environmental design, e.g., architecture now and introduction to design theory and criticism. May be repeated for credit by petition. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-4794 (3) History of Urban Design and Planning

Examines history of European and American planning and urban design in the late 19th and 20th centuries. Prereq., ENVD 2130. Prerequisites: Restricted to College of Architecture and Planning majors only.

College of Architecture & Planning Environmental Design History and Theory

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## ENVD-4909 (1-6) Independent Study

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

College of Architecture & Planning Environmental Design Miscellaneous

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## ENVD-4919 (1-6) Teaching Assistant

By special arrangement with instructor. Pass/fail credit only. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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## ENVD-4929 (1-6) Research Assistant

By special arrangement with instructor. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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## ENVD-4939 (1-6) Internship

By special arrangement with instructor and outside sponsor. Pass/fail credit only. Prereq., ENVD 3100 and a 3.00 GPA.

[College of Architecture & Planning](#) [Environmental Design](#) [Miscellaneous](#)

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# Courses

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ENVS

## ENVS-1000 (4) Introduction to Environmental Studies

Surveys environmental studies, examining ecological, socioeconomic, political, aesthetic, and technological factors that influence the quality of life on Earth. Required for ENVS majors. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#) [Environmental Studies](#)

## ENVS-2100 (3) Topics in Applied Environmental Studies

Covers a variety of topics not currently offered in the curriculum: offered depending on instructor availability and student demand. May be repeated up to 6 total credit hours, provided the topics vary. Prereq., ENVS 1000.

[College of Arts & Sciences](#) [Environmental Studies](#)

## ENVS-2840 (1-6) Independent Study

Students work with an approved faculty sponsor to explore a topic in greater depth and to pursue an interest that is not offered in the formal curriculum. May be repeated up to 8 total credit hours. Prereq., ENVS 1000.

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## ENVS-3001 (3) Sustainable Solutions Consulting

Introduces students to green design, industrial ecology, and life cycle analysis. Students use basic techniques of environmental auditing to analyze the CU-Boulder campus. Prereq., any two-semester science sequence. Prerequisites: Restricted to students with 57-180

credits (Junior or Senior) Environmental Studies (ENVS) majors only.

College of Arts & Sciences Environmental Studies

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## ENVS-3020 (3) Advanced Writing in Environmental Studies

Offers training in critical thinking and analytical writing skills appropriate to upper-division classes. Writing assignments integrate the subject matter of different topical areas. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Studies (ENVS) majors only.

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## ENVS-3040 (4) Conservation Biology

Applies principles of population ecology, population genetics, biogeography, animal behavior, and paleobiology to the maintenance of biodiversity and natural systems. The resulting theory is then applied to conservation policy and management techniques. Prereq., EBIO 2040 or 2640. Same as EBIO 3040.

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## ENVS-3070 (3) Energy and the Environment

Examines contemporary issues in energy consumption and its environmental impact, including fossil fuel use and depletion; nuclear energy and waste disposal; solar, wind, hydroelectric, and other renewable sources; home heating; energy storage; fuel cells; and alternative transportation vehicles. Includes some basic physical concepts and principles that often constrain choices. No background in physics is required. Same as PHYS 3070. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences Environmental Studies

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## ENVS-3103 (3) Applied Environmental Studies: Mining in Four Corners

Explores mining related issues that have pronounced impact on the environment, economy and politics of the Four Corners region. Students apply their basic knowledge of environmental science, policy and values toward the understanding of and productive discourse about the conflicts and opportunities brought about by the mining industry in the Four Corners region. Course includes a seven day field trip, visiting mining and reclamation sites in New Mexico, Utah and Colorado. Fulfills application requirement for Environmental Studies majors. Prereq., ENVS 1000 and one year natural science.

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## ENVS-3140 (3) Environmental Ethics

Examines major traditions in moral philosophy to see what light they shed on value issues in environmental policy and the value

presuppositions of the economic, ecological, and juridical approaches to the environment. Prereq., sophomore standing or PHIL 1100, 1200, 2200, 3100, or 3200. Same as PHIL 3140. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## ENVS-3434 (3) Introduction to Applied Ecology

Emphasizes the integration of physical, chemical, and biological processes in controlling terrestrial and aquatic ecosystems. Ecosystem concepts are applied to current environmental and water quality problems. Includes field trips and a group project. Prereq., CHEM 1111 or CHEN 1211 and 1221. Same as CVEN 3434.

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## ENVS-3520 (3) Energy and Climate Change: An Interdisciplinary Approach

Examines sources of energy and other resources in light of their availability, use, environmental impact, as well as their impact on policy, economics and values. As fossil fuels are the dominant energy source today, particular emphasis is placed on climate impacts and the carbon cycle. All material is assessed through the lenses of the physical sciences, policy, ethics and economics. Prereq., a two-course sequence in any natural science. May be repeated up to 6 total credit hours. Same as GEOL 3520. Approved for arts and sciences core curriculum: natural science.

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## ENVS-3521 (3) Climate Politics and Policy

Engages students in exploring the realm of contemporary and historical climate policy at three major levels of government: international, national and local/regional. Through course lectures, discussions, readings and activities, students will become conversant with the actors, mechanisms and concerns involved in climate policy and politics, and develop their own sense of how to judge the success of climate policies.. Prereq., ENVS 1000.

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## ENVS-3522 (3) Environment, Media & Society

Examines how mass media influence our society, specifically with regard to environmental issues and outcomes. Focuses on media influence over environmental politics and policy, environmental public opinion, popular culture, and environmental/scientific knowledge.

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## ENVS-3600 (3) Principles of Climate

Describes the basic components of the climate system: the atmosphere, ocean, cryosphere, and lithosphere. Investigates the basic physical processes that determine climate and link the components of the climate system, including the hydrological cycle and its role in climate, climate stability, and global change. Covers forecasting climate, its applications, and human dimensions. Prereqs., ATOC 1050 and 1060, or ATOC 3300/GEOG 3301, or GEOG 1001 and 1-semester calculus. Same as GEOG 3601 and ATOC 3600. Approved for arts and sciences CORE curriculum: natural science. Prerequisites: Restricted to Environmental Studies or Geography majors only.

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## ENVS-3621 (3) Energy Policy and Society

Examines how society makes decisions about energy, and how these decisions affect the environment and the economy. Uses tools from policy analysis, economics, and other disciplines to build an in-depth understanding of energy's role in U.S. contemporary society. Recommended prereqs., ENVS/PHYS 3070.

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## ENVS-3800 (3) The Art of Research: The Essential Elements of Research in Environmental Studies

Introduces students to the practice of doing research in environmental studies. Examines how to define a research problem, select methods, design research, construct arguments and evaluate others' research. Aims to familiarize students with the process of doing research and enable them to proceed with confidence in pursuing their own research topics. Recommended for juniors planning to write ENVS honors theses. Prereq., ENVS 1000. Recommended prereq., ENVS 3020. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Environmental Studies

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## ENVS-3930 (1-3) Internship

Relates classroom theory to practice. Provides academically supervised opportunities for environmental studies majors to work in public and private organizations on projects related to students' career goals. May be repeated up to 6 total credit hours.

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## ENVS-4027 (3) Inequality, Democracy, and the Environment

Focuses on the structural forces affecting environmental degradation and environmental behavior by examining the relationships between (a) inequality and democratic decision making and (b) undemocratic decision making; U.S. and corporate food and energy policy; and global environmental degradation. The course also focuses on the role that global inequality plays in fostering environmental degradation. Restricted to juniors/seniors. Same as SOCY 4027.

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## ENVS-4050 (2-4) Field Studies in Environmental Sciences

Includes field-oriented courses offered at irregular intervals during academic year or during summer sessions.

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## ENVS-4100 (1-3) Topics in Environmental Policy

Covers a variety of topics not currently offered in the curriculum; offered depending on instructor availability and student demand. May be repeated upto 9 total credit hours, provided the topics vary. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Environmental Studies

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## ENVS-4120 (1-3) Topics in Environmental Sciences

Covers a variety of topics not currently offered in the curriculum; offered depending on instructor availability and student demand. May be repeated upto 6 total credit hours, provided the topics vary. Restricted to junior and senior ENVS majors.

College of Arts & Sciences Environmental Studies

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## ENVS-4160 (3) Introduction to Biogeochemistry

Covers fundamentals of biogeochemical cycling, emphasizing water, carbon, and nutrient dynamics in terrestrial ecosystems; chemical interactions of atmosphere, biosphere, lithosphere, and hydrosphere, and natural and human-managed environments. Prereqs., GEOL 3320 or EBIO 3270, and CHEM 1011 or higher. Same as GEOL and EBIO 4160

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## ENVS-4201 (3) Biometeorology

Introduces this interdisciplinary science, studying the interactions between atmospheric processes and living organisms (plants, animals, and humans). Discusses how organisms adapt to a changing environment. Uses a practical, problem-solving approach to explore these interactions. Prereq., GEOG 1001. Same as GEOG 4201.

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## ENVS-4795 (3) Field Methods in Zoology and Botany

Class covers research and field methods for biological disciplines associated with natural history museums: vertebrates, invertebrates,

and plants. Emphasis is on field research techniques: observations, sampling, collection and preservation methods, and comparisons among elevation zones. Includes 5 field labs, 2 weekend trips, 5 lab practica, experience with several taxonomic experts, and individual research projects. Same as MUSM 4795 and EBIO 4795.

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## ENVS-4800 (3) Critical Thinking in Environmental Studies

Examines a specific environmental topic in depth, synthesizing information from complex and controversial issues. Different course sections present different topics. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Studies (ENVS) or Geography (GEOG) majors only.

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## Courses

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ENVS

### ENVS-4840 (1-6) Independent Study

May be repeated up to 8 total credit hours. Prereq., ENVS 1000.

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### ENVS-4990 (3) Senior Thesis

Supervised project involving original research. Open only to environmental studies majors with at least a 3.30 GPA. Thesis proposal must be accepted by honors chairman. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Studies (ENVS) majors only.

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### ENVS-5000 (3) Policy, Science, and the Environment

Introduction to methodologies of the policy sciences with emphasis on applications to environmental issues; role of science in decision making; professional roles and responsibilities as a policy analyst. Prerequisites: Restricted to Environmental Studies (ENVS) or Political Science (PSCI) graduate students only.

[College of Arts & Sciences](#) [Environmental Studies](#)

### ENVS-5001 (3) Environmental Philosophy

A survey of the major philosophical issues in environmental studies, comprising key issues in environmental ethics, in environmental political philosophy, and in the philosophy of biology and ecology.

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## ENVS-5002 (3) Environmental Science

Surveys methodologies of environmental science. Emphasizes understanding the scientific basis of current environmental problems, and linking scientific understanding to policy making.

College of Arts & Sciences Environmental Studies

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## ENVS-5100 (1-3) Special Topics in Environmental Studies

A variety of topics not currently offered in curriculum; offered depending on instructor availability and student demand. May be repeated up to 9 total credit hours, provided the topics vary.

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## ENVS-5110 (1-3) Topics in Environmental Social Science and Humanities

Covers various topics in the social sciences and humanities in environmental studies. Prerequisites: Restricted to Arts and Sciences, Journalism, Law or Business Graduate Students only.

College of Arts & Sciences Environmental Studies

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## ENVS-5120 (1-3) Topics in Quantitative Methods

Covers a wide range of quantitative methods used in policy research and their applications. Topics may include decision-making under uncertainty, fundamentals of microeconomics, mathematics of economic efficiency, cost-benefit analysis, system optimization, budgeting, fundamentals or probability, risk assessment, risk perception, risk communication, and decision analysis. Includes practical exercises, as well as readings and discussion, of various strengths and weaknesses of the different methods.

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## ENVS-5710 (3) Introduction to the Policy Sciences

Provides an introduction to the policy sciences as a distinctive tradition within the policy field. Emphasizes the use of conceptual tools to improve analysis of complex problems. Teaches problem-solving framework that students apply to an issue of their choice. Restricted to graduate students or instructor consent required. Same as PSCI 7016. Prerequisites: Restricted to Environmental Studies (ENVS) or Political Science (PSCI) graduate students only.

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## ENVS-5720 (3) The Problem Orientation

Teaches basic problem-solving framework for policy analysis. Emphasizes applications to develop policy recommendations for issues selected by students. Includes group projects. Restricted to graduate students or instructor consent required. Same as PSCI 7026.

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## ENVS-5730 (3) Introduction to the Policy Sciences: The Decision Process

Provides policy sciences frameworks for analyzing policy processes and designing political strategies to influence those processes in the direction of the preferred alternative. Emphasizes applications to problems selected by students for term projects. Restricted to graduate students or instructor consent required. Same as PSCI 7036. Prerequisites: Restricted to Graduate Students only.

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## ENVS-5740 (3) Context-Sensitive Research Methods

Prepares students to conduct research on topics where data is not obvious or not easily available. Encompasses variations in context and setting as part of data observations. Methods include interviewing protocols, interpretive methods, cluster analyses, case study methodologies, and textual analyses. Restricted to graduate students or instructor consent required. Same as PSCI 7116.

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## ENVS-5810 (3) Water Resources and Environmental Sustainability

Assesses impacts of climate variability and regional growth on western U.S. water resources, and examines successes and failures of different management strategies, as well as ways that science is used and misused in support of water management. Prerequisites: Restricted to Arts and Sciences, Journalism, Law or Business Graduate Students only.

College of Arts & Sciences Environmental Studies

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## ENVS-5820 (3) Renewable Energy Policy

Examines the technology, policy and politics of renewables. Technology includes the resource, science, and engineering aspects of renewables. Policy includes various policy levers used to influence renewables. Politics refers to political settings of renewables: how decision-makers perceive them, who supports/opposes policies, and how policies progress through the political process. Prereq., an introductory energy science and technology course. Prerequisites: Restricted to Graduate Students only.

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## ENVS-5830 (3) Critical Issues in Climate and the Environment

Discusses current issues such as ozone depletion, global warming, and air quality for graduate students in nonscientific fields. Provides the scientific background necessary to understand, follow scientific developments, and critically evaluate these issues. Same as ATOC 5000. Credit not granted for this course and ATOC 4800.

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## ENVS-5840 (3) Global Biogeochemical Cycles

Focuses on the cycling of elements at the global scale with a particular emphasis on human modification of biogeochemical cycles. Major biogeochemical cycles, their past dynamics, present changes, and potential future scenarios will be addressed. Ecosystem to global-scale model of the earth system will be discussed, along with global-scale measurements of element fluxes from satellites, aircraft, and measurement networks. Prereq., general chemistry, some organic chemistry. Same as GEOL 5305. Prerequisites: Restricted to Graduate Students only.

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## ENVS-5909 (1-3) Independent Study

Only 3 hours of independent study can be used towards degree requirements. May be repeated up to 6 total credit hours for different topics. Prereq., department and instructor consent.

College of Arts & Sciences Environmental Studies

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## ENVS-5930 (2) Internship

Provides academically supervised opportunities for environmental studies majors to work in public and private organizations on projects related to the students' research and career goals, and to relate classroom theory to practice.

College of Arts & Sciences Environmental Studies

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## ENVS-6007 (3) Foundations of Environmental Sociology

Provides overview of environmental sociological theory and research including topics such as: public environmental perception, concern, and knowledge; environmentalism as a social movement; environmental justice; energy, technology, and risk; human dimensions of environmental change; and natural hazards and disasters. Same as SOCY 6007.

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## ENVS-6940 (1) Master's Degree Candidacy

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## ENVS-6950 (1-6) Master's Thesis

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## ENVS-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

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# Courses

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ESBM

## ESBM-3100 (3) Introduction to Entrepreneurship

Introduces non-business students to the multiple facets of entrepreneurship and the entrepreneurial process. Entrepreneurship is a process of fundamental transformation: from innovative idea to enterprise and from enterprise to value, thus, entrepreneurship is more than a business practice. Innovation is central to this process and students will be challenged to develop creative solutions to a problem or need. Restricted to non-Business majors with 60-180 units completed. Prerequisites: Restricted to non-Business majors with 60-180 units completed.

[Leeds School of Business](#) [Entrepreneurship and Small Business Management](#)

## ESBM-3200 (3) Principles of Business for Entrepreneurs

Provides non-business students with a basic understanding of the business principles required to start and grow an entrepreneurial venture. It is intended for individuals who have not taken a marketing, accounting or finance course. This course will focus on two aspects of business that are critical to the success of any new venture: marketing and financial management. Restricted to non-Business majors with 60-180 units completed. Prerequisites: Restricted to non-Business majors with 60-180 units completed.

[Leeds School of Business](#) [Entrepreneurship and Small Business Management](#)

## ESBM-3700 (3) Entrepreneurial Environments

Introduces entrepreneurship. Addresses opportunity recognition, target markets, industry analysis, business model identification, sources of funding, managing rapid growth, and writing feasibility studies. Examines alternative forms of entrepreneurship such as franchising, corporate entrepreneurship, family business, and social entrepreneurship. Prereqs., BCOR 2000, 2050, 2100, 2150, or BCOR 2000, 2200, 2300, 2400. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Entrepreneurship and Small Business Management](#)

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## ESBM-4100 (3) Writing a Venture Plan

Requires non-business students to engage in a rigorous, thoughtful and challenging process essential to planning a new venture. Using their own concept, students will develop a strategy to start and grow a venture. Communicating the plan is an essential element of this course and students will learn when and how to write a plan and make effective presentations. Restricted to non-Business majors with 60-180 units completed. Prerequisites: Restricted to non-Business majors with 60-180 units completed.

[Leeds School of Business](#) | [Entrepreneurship and Small Business Management](#)

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## ESBM-4570 (3) Entrepreneurial Finance.

Focuses on the financial concepts, issues, methods, and industry practices relevant to entrepreneurial decision makers. Addresses a variety of topics including financial valuation, various sources of funds, structures and legal issues in arranging financing, the private and public venture capital markets, and preparation for, and execution of, an initial public securities offering. Provides an understanding of the segments of the capital markets specializing in start-ups and growth financing. Prereq., BCOR 2200. Restricted to Business majors with 52-180 units completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

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## ESBM-4820 (3) Special Topics in Entrepreneurship

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## ESBM-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Entrepreneurship and Small Business Management. Restricted to juniors/seniors.

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## ESBM-4826 (3) Exp. Sem-Social Entrepreneurship: Designing a Better World

See the future through the eyes of entrepreneurs who are addressing global and social environmental problems such as poverty and deforestation. Can the social ventures they create to solve these problems survive over time and will they achieve the impact they seek? We will meet some of these social entrepreneurs and, in teams, write case studies to tell their stories. Restricted to non-Business majors with 60-180 units completed. CESR 4826 and ESBM 4826 are the same course. Prerequisites: Restricted to non-Business majors with 60-180 units completed.

[Leeds School of Business](#) | [Entrepreneurship and Small Business Management](#)

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## ESBM-4830 (3) Entrepreneurship Business Planning and Preparation

Work as part of a small team, with the focus on the process of creating a plan from the business concept and model through all of the elements of a professionally written business plan document. Prereqs., ESBM 3700 and 4570. Same as EMEN 4825. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Entrepreneurship and Small Business Management](#)

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## ESBM-4900 (1-3) Projects in Entrepreneurial Companies

Complete projects in preselected entrepreneurial companies. Prereq., instructor consent.

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# Courses

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ESLG

## ESLG-1130 (2) Accent Reduction for Foreign Students

Provides oral activities with authentic English materials to reduce accents and to increase intelligibility for U.S. academic situations. Evaluates individual problem areas and includes one-on-one meetings with the native-speaker instructor. Improves overall articulation and fluency. Does not fulfill humanities or major requirements.

College of Arts & Sciences Linguistics

## ESLG-1140 (2) Presentation Skills for International Students

Provides instruction and practice to improve classroom oral communication skills necessary for effective participation in the U.S. academic setting, either as an international TA or RA, graduate or undergraduate student. Evaluates individual problem areas and includes digital audio and video recording with extensive feedback from the native-speaker instructor. Improves oral competence and listening comprehension in English for international students. Recommended prereq., ESLG 1130.

College of Arts & Sciences Linguistics

## ESLG-1210 (2) Academic Writing for Foreign Students

Addresses the development of paragraphs and full-length essays. Focus areas include organization and style, grammar and vocabulary, and conventions of academic writing, including incorporating the ideas of others and citing sources appropriately. Extensive instructor feedback provided. Improves fluency and precision in academic writing. Does not fulfill humanities or major requirements.

College of Arts & Sciences Linguistics

# ESLG-1222 (2) Advanced Written Composition for Foreign Students

Continued practice in academic writing, including incorporating the ideas of others and citing sources appropriately. Extensive instructor feedback provided. Preparation, writing, and revising of a full-length academic term/research paper or work on chapters for a master's thesis or doctoral dissertation. Does not fulfill humanities or major requirements. Prereq., ESLG 1210 or instructor consent.

[College of Arts & Sciences](#) [Linguistics](#)

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ETHN

### [ETHN-1022 \(3\) Introduction to Africana Studies](#)

Overview of Africana studies as a field of investigation, its origins, and history. Formerly ETHN 2002. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Africana Studies](#)

### [ETHN-1023 \(3\) Introduction to American Indian Studies](#)

Introduces critical terms, issues, and questions that inform the discipline of American Indian Studies. Examines "historical silences" and highlights how American Indian scholars, poets, and filmmakers use their work to address/redress historical subjects, and represent their Native communities. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Ethnic Studies](#) [American Indian Studies](#)

### [ETHN-1025 \(3\) Introduction to Asian American Studies](#)

Examines the various factors that define minority groups and their positions in American society using Asian Americans as a case study. Emphasizes the perspectives and methodologies of the discipline of ethnic studies. Formerly AAST 1015. Approved for arts and sciences core curriculum: contemporary societies or human diversity.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Asian American Studies](#)

### [ETHN-1123 \(3\) Exploring a Non-Western Culture: Hopi and Navajo](#)

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Explores two American Indian cultures, Hopi and Navajo, and cultural interrelationships from the prehistoric through the contemporary period, using an integrated, holistic, and humanistic viewpoint. Same as ANTH 1120. Formerly AIST 1125. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-2001 (3) Foundations: Race and Ethnicity in the United States

Introduction to race, ethnicity and gender in the United States. Focuses on the five major racialized groups (African Americans, Asian Americans, Chicanas and Chicanos, European Americans and Indigenous peoples) in the U.S. The course design centers on historical and contemporary ideologies and systems that have constructed and continue to define, shape, and impact the significance of race and ethnicity in our economic, political and social lives. Formerly ETHN 2000.

College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-2004 (3) Themes in American Culture 1

Enables students to explore various themes in pre-1865 American culture. Examines these themes, which vary each year, in their social context. Formerly AMST 2000. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences Ethnic Studies American Studies

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## ETHN-2013 (3) Critical Issues in Native North America

Explores a series of issues including regulations of population, land and resource holdings, water rights, education, religious freedom, military obligations, the sociopolitical role of men and women, self-governance, and legal standing as these pertain to American Indian life. Formerly AIST 2015. Approved for arts and sciences core curriculum: human diversity or United States context.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-2014 (3) Themes in American Culture 2

Enables students to explore various themes in post-1865 American culture. Examines these themes, which vary each year, in their social context. Formerly AMST 2010. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences Ethnic Studies American Studies

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## ETHN-2064 (3) Topics in American Studies

Critically examines American identity and experiences, past and present, focusing on ethnicity, gender, popular culture, and political

culture. Formerly AMST 2060.

College of Arts & Sciences Ethnic Studies American Studies

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## ETHN-2203 (3) American Indians in Film

Examines images of American Indians in films produced by, and about, Native peoples. Follows the creation of "the Hollywood Indian" from still-photography to contemporary motion pictures. Films are analyzed within historical, social, and artistic contexts, and examined in terms of the impact their images have exerted upon American society at large and Native communities in particular. Formerly AIST 2201.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-2215 (3) The Japanese American Experience

Surveys the Japanese American experience, emphasizing post-WWII developments. Gives attention to intragroup diversity having to do with generation, ethnicity, ecology, and gender. Recommended prereq., ETHN 1025. Formerly AAST 2210. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Ethnic Studies Asian American Studies

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## ETHN-2232 (3) Contemporary African American Social Movements

Examines selected case studies of African American collective behavior in a historical context. Emphasizes an in-depth investigation of the continuing African American struggle for social/democratic rights. Formerly BLST 2200. Approved for arts and sciences core curriculum: human diversity or contemporary societies.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-2242 (3) African American Social and Political Thought

Introductory course designed to acquaint students with historical and contemporary thinking, writings, and speeches of African Americans. Formerly BLST 2210. Approved for arts and sciences core curriculum: human diversity or contemporary societies.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-2432 (3) African American History

Surveys African American history. Studies, interprets and analyzes major problems, issues, and trends affecting African Americans from about 1600 to the present. Same as HIST 2437. Formerly BLST 2437. Approved for arts and sciences core curriculum: human diversity or United States context.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-2502 (2) African Dance

Explores the technique, style, and rhythms of various African, Caribbean, and dance forms of the Americas. Music, history, anthropology, and folklore help to enhance the dance and provide a cultural experience. May be repeated up to 6 total credit hours within a term. Same as DNCE 2501. Formerly BLST 2501.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-2536 (3) Survey of Chicana/o History and Culture

Through historical and social scientific studies, novels, autobiographies, testimonies, films, music, and art, this course will provide students a survey of Chicana/o history and culture. Historical overviews of Chicana/o peoples from Mesoamerica; the Spanish Conquest; the historical presence of Chicana/o peoples in the Southwest; the rise of the Chicana/o student and community movements; immigration issues; and the gender, sexuality, and criminalization issues. Formerly CHST 2537. Approved for arts and sciences core curriculum: human diversity or United States context.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-2546 (3) Chicana and Chicano Fine Arts and Humanities

Provides foundation for study of Chicano literature, music, the plastic arts, theatre, and film. Also introduces aesthetic and critical concepts and their applications in Chicana and Chicano studies. Formerly ETHN 1036, CHST 1031. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-2713 (3) American Indian Literature

Surveys historical and contemporary North American Native American literature. Examines the continuity and incorporation of traditional stories and values in Native Literature, including novels, short stories, and poetry. Same as ENGL 2717.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-2732 (3) Survey of African American Literature 2

Chronological study of African American literature from the Depression writers to the present. Same as ENGL 2737. Formerly BLST 2732.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-2746 (3) Chicana/Chicano and Mexican Literature

Introduces Chicana and Chicano and Mexican literary studies, focusing on narrative works by Chicana and Chicano writers. Examines diverse range of Mexican writing in Greater Mexico as it addresses recurring issues and themes, including language, race and class, questions of identity, and gender relations. Same as ENGL 2747.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-2761 (3) Survey of Post-Colonial Literature

Surveys the development of literatures in English in former British colonies. Topics include the spread and adaptation of English language literary forms in Asia, Africa, the Caribbean, and the far new world (Australia and New Zealand). Students learn the causes of the dispersion and the motivations for the clearly different uses of English literary forms in the ex-colonies. Same as ENGL 2767. Formerly ETHN 2762.

College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-3015 (3) Asian Pacific American Communities

Covers the concepts, methods, and theories commonly used in community research, as well as substantive information on selected Asian/Pacific American communities. Emphasizes the ethical/political dimensions of community studies. Prereq., ETHN 2001 or 1025. Formerly AAST 3013. Approved for arts and sciences CORE curriculum: United States context or contemporary societies.

College of Arts & Sciences Ethnic Studies Asian American Studies

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## ETHN-3026 (3) Women of Color: Chicanas in U.S. Society

Critically explores the Chicana experience and identity. Examines issues arising from the intersection of class, race, and gender. Focuses on controversies surrounding culture and gender through an analysis of feminism and feminismo. Prereq., ETHN 2001 or 2536 or equivalent.. Formerly CHST 3026.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-3031 (3) Race and Racism

Explores the origins and evolution of racism as a political and religious force in American life, beginning with Puritan ideology in colonial New England, proceeding through the era of Manifest Destiny, and ending in the present day. Special attention is paid to the history of organizations such as the Ku Klux Klan, and emergence of Christian identity doctrine. Prereq., ETHN 2001 or equivalent. Formerly ETHN 3013.

## ETHN-3101 (3) Selected Topics in Ethnic Studies

Intensive examination of a particular topic, theme, issue, or problem in ethnic studies as chosen by the instructor. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001 or equivalent. Formerly ETHN 3100.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

ETHN

## ETHN-3102 (3) Selected Topics in African American Studies

Intensive examination of a particular topic, theme, issue, or problem concerning the African American presence, as chosen by the instructor. Sample offerings could include African American Pop Culture, the Civil Rights Movement, or other African American issues. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001, 2002 or equivalent. Formerly ETHN 3022

[College of Arts & Sciences](#) | [Ethnic Studies](#) | [Africana Studies](#)

## ETHN-3103 (3) Selected Topics in American Indian Studies

Examines a particular topic, theme, issue, or problem in American Indian Studies. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001 or 2003 or equivalent. Formerly ETHN 3023.

[College of Arts & Sciences](#) | [Ethnic Studies](#) | [American Indian Studies](#)

## ETHN-3105 (3) Selected Topics in Asian American Studies

Intensive examination of a topic or issue affecting Asian Americans, such as the Japanese American internment during World War II, or Asian American social movements or community organizations. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 1025 or 2001. Formerly ETHN 3425, AAST 3420.

[College of Arts & Sciences](#) | [Ethnic Studies](#) | [Asian American Studies](#)

## ETHN-3106 (3) Selected Topics in Chicana and Chicano Studies

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Intensive examination of a particular topic, theme, issue, or problem in Chicana and Chicano studies as chosen by the instructor. May be repeated up to 6 total credit hours within a term on different topics. Prereq., ETHN 1016 or 2001. Formerly CHST 3100.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-3136 (3) Chicana Feminisms and Knowledges

Provides insight into the present socioeconomic condition of Chicanas and the concept of feminismo through interdisciplinary study of history, sociology, literary images, and film portrayals. Prereq., ETHN 2001 or 2536 or equivalent. Same as WMST 3135. Formerly CHST 3135. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-3201 (3-4) Multicultural Leadership: Theories, Principles and Practices

Focuses on leadership theories and skills necessary for effectiveness in multicultural settings. Students gain understanding of traditional and culturally diverse approaches to leadership and change through comparative analyses of western and non-western theories and practices. Community service required. Prereq., ETHN 2001 or equivalent. Formerly ETHN 3200. Same as INVS 3100 and LDSP 3100. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-3212 (3) Introduction to Hip Hop Studies

Examines critical questions posed by hip hop culture. Accentuated in this course are hip hops contributions to the political-economic, philosophical, and sociological study of race, racism, sexism, and sexuality. This course examines the ways in which hip hop, as a new social phenomenon, cultural force and aesthetic form, have influenced contemporary American and global culture. Prereq., ETHN 2001 or 2002.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-3213 (3) American Indian Women

Explores the experiences, perspectives, and status of American Indian women in historical and contemporary contexts. Examines representations of Indigenous women in mainstream culture. Emphasizes the agency of American Indian women-their persistence, creativity, and activism, especially in maintaining Indigenous traditions. Prereq., WMST 2000, 2600 or ETHN 2001 or 2003. Same as WMSt 3210. Approved for arts and sciences core curriculum: human diversity. Formerly AIST 3210. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-3252 (3) African American Urban History

Fosters a better understanding and appreciation of the role African Americans have played in the evolution and shaping of urban America. Employs techniques of urban studies to more effectively assess the many dimensions, subtleties, and insensitivities of life in the city. Prereq., ETHN 2001 or 2002 or equivalent. Recommended prereq., a working knowledge of U.S. and Afro-American history. Restricted to juniors/seniors. Formerly ETHN 4252.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-3301 (3) Elements of Religion

Explores universal components of religion, as inferred from religions of the world, ranging from smaller-scale oral to larger-scale literate traditions. Same as ANTH 3300. Formerly ETHN 3300.

College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-3403 (3) Indigenous Rights and Red Power Movement

Deals with historical events involving conflicts between the U.S. government and American Indians. Examples include the role of the FBI in the Pine Ridge Sioux Reservation (1972--76) or the 1864 massacre of the Cheyenne and Arapaho Indians in Colorado territory. Additional courses may relate to tribal governments. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001, 2003, 2013. Restricted to juniors/seniors. Formerly AIST 3400.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-3501 (3) Theory/Methods/Writing in Ethnic Studies

Preparation for empirical inquiry in Ethnic Studies. Emphasizes philosophy of social science and cultural studies. Students engage rigorous, theoretical concepts to understand research methods. Prepares students for writing a lengthy, cogent research paper. Prereq., ETHN 2001. Formerly ETHN 3500. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Ethnic Studies (ETHN) majors only.

College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-3502 (3) Historical and Contemporary Issues of African American Women

Explores the social, economic, political, historical, and cultural role of African American women from an interdisciplinary perspective. Special emphasis is placed on African American women's rich oral and literary tradition. Prereq., ETHN 2001, 2002, or WMST 2000 or equivalent. Same as WMST 3505. Formerly BLST 3505.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-3575 (3) Japanese American Internment: Critical Thinking in Sociocultural Diversity

Offers an historical overview of the Japanese American experience in the United States. Introduces and explores fundamental issues inherent in the study of human beings from the perspective of cultural social difference. Prereq., ETHN 1025 or 2001. Restricted to juniors/seniors. Formerly AAST 3670. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Ethnic Studies](#) [Asian American Studies](#)

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## ETHN-3671 (3) People of Color and Social Movements

People of color the world over are struggling for sovereignty, independence, civil and human rights, food security, decent wages and working conditions, healthy housing, and freedom from environmental racism and other forms of imperialism. Course analyzes and brings alive these struggles. Prereq., ETHN 2001 or equivalent. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: human diversity. Formerly ETHN 3675.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-3841 (1-6) Undergraduate Independent Study

Consult the Department of Ethnic Studies for information. May be repeated up to 6 total credit hours. Prereq., ETHN 2001. Department and instructor consent required. Formerly ETHN 3840.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-3954 (3) Methods in American Ethnic Studies

Through structured discussions, selected readings, and written assignments, students develop an understanding of theoretical concepts that engage race, class gender and sexuality in American Ethnic Studies. The emphasis is on critical analysis and theoretical arguments that encourage students to become critical thinkers. Prereqs., ETHN 2001 or 2004 and ETHN 2014 or 2064. Restricted to juniors and seniors. Formerly AMST 3950. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Ethnic Studies](#) [American Studies](#)

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## ETHN-4001 (3) Screening Race, Class & Gender in the U.S. and the Global Borderland

Engaging with the ways in which race, class, gender and sexual oppression intersect, this class examines several film productions by and about diasporic and subaltern subjects (especially children and women) in the U.S./Mexico borderlands, and the urban ethnic metropolises of the global borderlands. Prereq., ETHN 2001 or equivalent ETHN course. Same as FILM 4001. ETHN 4001 and 5001 are the same course. Formerly ETHN 3001.

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College of Arts & Sciences Ethnic Studies Crosscultural/Comparative Study

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## ETHN-4006 (3) Chicana/Chicano Native American Cultures of the U.S.

Theoretically engaged seminar considers intersections of Chicana/o and Native American studies to shape our scholarly understanding of the U.S. and Mexico borderlands. Ethnographies, historical studies, novels, film, and music will be used to understand the processes of Spanish and Euro-American colonization, neocolonialism, identity formation, gender, syncretism, and mestizaje. Prereq., ETHN 2001 or 2536 or equivalent. Formerly CHST 400.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-4112 (3) African American Educational History

Examines the history of the education of African Americans from early American history until current times. Covers primary, secondary, and higher education. Topics include education of African Americans before 1800, education of African Americans during the period of American slavery, and factors affecting today's education gains. Also covers current research being conducted in higher education. Prereq., ETHN 2001, 2002 or equivalent. Formerly ETHN 3112.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4116 (3) Spoken Word Latino Poetics and Poetry

This is a writing intensive workshop in contemporary poetry writing and Chicana/o and Latina/o poetics-specifically, Nuyorican and Afro-Latino (the Nuyorican Poets Cafe). The purpose of the course is dual-fold: 1) students will be encouraged and empowered to express and develop their poetic voice; 2) students will be challenged to develop and refine their poetic craft. Examines primarily Chicana and Latino specific poetic expression that reflects the cultural mestizaje of Chicano/a and Latina/o peoples. Prereq., ETHN 2001. Recommended prereq., 6 credits in any ETHN class.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-4232 (3) The Life and Thought of Martin Luther King Jr

An intensive exploration and examination of the life and thought of the Rev. Dr. Martin Luther King Jr. Special emphasis on the stages of his life and their corresponding productions. Prereq., ETHN 2001 or 2002 or equivalent. Restricted to juniors/seniors. Formerly BLST 4235.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4272 (3) W.E.B. Du Bois Seminar

Analyzes the life and thought of W.E.B. Du Bois for its contributions to interdisciplinary and intersectional studies. Emphasis will be placed on the innovative interdisciplinary and intersectional nature of Du Bois's epistemology and research methodology, as well as his participation in radical political and social movements. Prereq., ETHN 2001 or 2002. Restricted to junior/senior ETHN majors/minors. ETHN 4272 and 5272 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Ethnic Studies (ETHN) majors only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Africana Studies](#)

## ETHN-4306 (3) The Chicana and Chicano and U.S. Social Systems

Gives special attention to ways U.S. institutions (i.e., legal, economic, educational, governmental and social agencies) affect Chicanas and Chicanos. Discusses internal colonialism, institutional racism, assimilation and acculturation, and identity. Prereq., ETHN 2536 or equivalent. ETHN 4306 and 5306 are indetical courses. Formerly CHST 4303.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Chicana/o Studies](#)

## ETHN-4504 (3) Ethnic-American Autobiography

Investigates the genre of autobiography in America from its inception to the present. American autobiography has been associated with the invention of national character and, thus, is a site of cultural contestation and identity formation. Its changing form crosses disciplinary lines and provides a site for discourses on ethnicity, class, gender, sexuality, age, family, religion and other American cultural conflicts. Prereq., ETHN 2001 or equivalent. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Ethnic Studies](#) [American Studies](#)

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## Courses

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Search by Course Number

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ETHN

### [ETHN-4521 \(3\) Applied Cultural Anthropology](#)

Analyzes problems of cultural change due to contacts between people of different cultures. Restricted to senior ANTH or ETHN majors. Same as ANTH 4510. Formerly ETHN 4520.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

### [ETHN-4553 \(3\) Indigenous Representations in the United States](#)

Examines the relationship and negotiation of culture/status/place through representation(s) within and concerning Indigenous peoples/communities. Focuses on U.S. representational forms in popular experiences e.g., literature, film, media and the roots of those representations via legal and medical definitions. This investigation and analysis is supplemented with focus on gender as well as contextualization through global Indigenous portrayals. Recommended prereq., ETHN 2003 or 2013. ETHN 4553 and 5553 are the same course.

[College of Arts & Sciences](#) [Ethnic Studies](#) [American Indian Studies](#)

### [ETHN-4563 \(3\) North American Indian Acculturation](#)

Comprehensive survey of changes in the native cultures of America north of Mexico caused by occupation of the continent of Old World populations, including a review of processes of contact, environmental changes, changes in major institutions, the nature of federal/state administration, the reservation system, and contemporary developments. Prereq., ETHN 2001 or 2003. Restricted to junior/senior ANTH or ETHN majors. Same as ANTH 4560. Formerly AIST 4565. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Ethnic Studies](#) [American Indian Studies](#)

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## ETHN-4632 (3) Frantz Fanon Seminar

Analyzes the life and thought of Frantz Fanon for its contributions to interdisciplinary and intersectional studies. Emphasis will be placed on the innovative interdisciplinary and intersectional nature of Fanon's psychology, sociology and philosophical anthropology, as well as his participation in African and Caribbean anti-colonial movements. Prereq., ETHN 2001 or 2002. ETHN 4632 is restricted to junior/senior ETHN majors/minors. ETHN 4632 and 5632 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Ethnic Studies (ETHN) majors only.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4652 (3) Contemporary Issues in African American Studies

Variable topic that allows intensive coverage of a subject, theme, or issue in African American studies. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001 or 2002 or equivalent. Restricted to juniors/seniors. ETHN 4652 and 5652 are the same course. Formerly BLST 4650. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4672 (3) Seminar on the Civil Rights and Black Power Movements

A review of the ideas, events, persons, organizations oriented to the quest for African American social justice in the decade of the sixties. Prereq., ETHN 2001 or 2002. Restricted to juniors/seniors or instructor consent. Formerly BLST 4670. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4686 (3) Special Topics in Chicana and Chicano Studies

Examines a particular topic, theme, issue, or problem concerning Chicana and Chicano studies. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001 or 2536 or equivalent. Same as ETHN 5686. Formerly CHST 4681.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-4692 (3) Contemporary African American Literature 1

Advanced in-depth study of works of prominent African American novelists and poets. Prereq., ETHN 2001 or 2002. Restricted to juniors/seniors. Same as ENGL 4697. Formerly BLST 4692. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-4841 (1-6) Independent Study

Work with an approved faculty sponsor to explore a topic in greater depth. May be repeated up to 6 total credit hours for different topics. Prereq., department and instructor consent.

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[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-4951 (3) Senior/Graduate Seminar in Ethnic Studies

Capstone experience in Ethnic Studies. Includes an independent research project and public presentation. Prereqs for ETHN 4951 are ETHN 2001, 3501 and 4511 or equivalent. ETHN 4951 is restricted to students with 57-180 credits (junior or senior). ETHN 5951 is restricted to graduate students. ETHN 4951 and 5951 are identical courses. Formerly ETHN 4950. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-4961 (3) Honors Thesis I

Supervised project involving original research in the emerging field of ethnic studies. The thesis is submitted to the Honors Program of the College of Arts and Sciences and is orally defended. Prereqs., ETHN 2001 and ETHN 4511. Formerly ETHN 4960. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Ethnic Studies (ETHN) majors only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-4971 (3) Honors Thesis II

Prereqs., ETHN 2001, 4511, and 4961. Formerly ETHN 4970. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Ethnic Studies (ETHN) majors only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-5001 (3) Screening Race, Class & Gender in the U.S. and the Global Borderland

Engaging with the ways in which race, class, gender and sexual oppression intersect, this class examines several film productions by and about diasporic and subaltern subjects (especially children and women) in the U.S./Mexico borderlands, and the urban ethnic metropolises of the global borderlands. Prereq., ETHN 2001 or equivalent ETHN course. Same as FILM 4001. ETHN 4001 and 5001 are the same course. Formerly ETHN 3001.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-5272 (3) W.E.B. Du Bois Seminar

Analyzes the life and thought of W.E.B. Du Bois for its contributions to interdisciplinary and intersectional studies. Emphasis will be placed on the innovative interdisciplinary and intersectional nature of Du Bois's epistemology and research methodology, as well as his participation in radical political and social movements. Prereq., ETHN 2001 or 2002. Restricted to junior/senior ETHN majors/minors. ETHN 4272 and 5272 are the same course. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-5306 (3) The Chicana and Chicano and U.S. Social Systems

Gives special attention to ways U.S. institutions (i.e., legal, economic, educational, governmental and social agencies) affect Chicanas and Chicanos. Discusses internal colonialism, institutional racism, assimilation and acculturation, and identity. Prereq., ETHN 2536 or equivalent. ETHN 4306 and 5306 are identical courses. Formerly CHST 4303.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-5553 (3) Indigenous Representations in the United States

Examines the relationship and negotiation of culture/status/place through representation(s) within and concerning Indigenous peoples/communities. Focuses on U.S. representational forms in popular experiences e.g., literature, film, media and the roots of those representations via legal and medical definitions. This investigation and analysis is supplemented with focus on gender as well as contextualization through global Indigenous portrayals. Recommended prereq., ETHN 2003 or 2013. ETHN 4553 and 5553 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ethnic Studies American Indian Studies

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## ETHN-5632 (3) Frantz Fanon Seminar

Analyzes the life and thought of Frantz Fanon for its contributions to interdisciplinary and intersectional studies. Emphasis will be placed on the innovative interdisciplinary and intersectional nature of Fanon's psychology, sociology and philosophical anthropology, as well as his participation in African and Caribbean anti-colonial movements. Prereq., ETHN 2001 or 2002. ETHN 4632 is restricted to junior/senior ETHN majors/minors. ETHN 4632 and 5632 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-5652 (3) Contemporary Issues in African American Studies

Variable topic that allows intensive coverage of a subject, theme, or issue in African American studies. May be repeated up to 6 total credit hours on different topics. Prereq., ETHN 2001 or 2002 or equivalent. Restricted to juniors/seniors. ETHN 4652 and 5652 are the same course. Formerly BLST 4650.

College of Arts & Sciences Ethnic Studies Africana Studies

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## ETHN-5686 (3) Selected Topics Chicana and Chicano Studies

Examines a particular topic, theme, issue, or problem concerning Chicanas and Chicanos. May be repeated up to 6 total credit hours on different topics. Same as ETHN 4686. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Ethnic Studies Chicana/o Studies

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## ETHN-5951 (3) Senior/Graduate Seminar in Ethnic Studies

Capstone experience in Ethnic Studies. Includes an independent research project and public presentation. Prereqs for ETHN 4951 are ETHN 2001, 3501 and 4511 or equivalent. ETHN 4951 is restricted to students with 57-180 credits (junior or senior). ETHN 5951 is restricted to graduate students. ETHN 4951 and 5951 are identical courses. Formerly ETHN 4950. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-6011 (3) Race and Sexuality Studies

Examines primary texts in queer studies and queer theory while challenging colonial heteronormative and homonormative studies that exclude queers of color and their life experiences. Readings include works by Gloria Anzaldua, Jose Munoz, Audre Lorde, David Eng, Judith Butler, Judith Halberstam, and Michel Foucault. Topics such as queer borderlands, citizenship, racialized and transgender identities will be interrogated. Restricted to grad students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-6101 (1-6) Topics: Specialized Comparative Studies

Focuses on a variety of advanced interdisciplinary studies. Themes include: Race and Sports, Critical Whiteness Studies, Race and Masculinity, Applied Community Engagement, Black Women in the Diaspora, US/Mexico Border Cultures, Criminalization and Latinas/os, Race, Violence and Film, and Cuba and Tourism. May be repeated up to 6 total credit hours. Recommended prereq., ETHN coursework. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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## ETHN-6841 (1-6) Advanced Directed Readings in Ethnic Studies

This is a graduate level directed readings course designed to expand student knowledge in a particular area of concentration with a broad interdisciplinary and comparative framework. These areas of concentration include work in Africana, American Indian, Asian American, Chicana and Chicano and Transnational/Hemispheric ethnic studies. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Ethnic Studies](#) [Crosscultural/Comparative Study](#)

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# Courses

Search by College, Department & Category

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All

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**Subject**    **Number**

EVEN

## [EVEN-1000 \(1\) Introduction to Environmental Engineering](#)

Introduces students to environmental engineering as an academic major and a career. Covers air quality, aquatic ecology, chemical processing, energy, site remediation, and water resources and treatment. Includes reading and writing on the history of environmental engineering, major environmental issues, and professional ethics.

[College of Engineering & Applied Science](#) | [Environmental Engineering](#)

## [EVEN-2840 \(1-3\) Independent Study: General Topics](#)

General topics relating to environmental engineering. One-on-one assistance with an instructor.

[College of Engineering & Applied Science](#) | [Environmental Engineering](#)

## [EVEN-4100 \(3\) Environmental Sampling and Analysis](#)

Introduces students to hands-on environmental sampling and analysis techniques for characterization of surface water, subsurface water, soils and sediments, and air. Laboratories include stream sampling, drilling, monitoring well installation, water level, slug tests, air sampling. Prereqs., CVEN 4404 and 4414, fluid mechanics, or instructor consent.

[College of Engineering & Applied Science](#) | [Environmental Engineering](#)

## [EVEN-4830 \(3\) Special Topics](#)

[College of Engineering & Applied Science](#) | [Environmental Engineering](#)

## EVEN-4840 (1-3) Independent Study: General Topics

General topics relating to environmental engineering. One-on-one assistance with an instructor. May be repeated up to 6 total credit hours.

## EVEN-4980 (3) Senior Thesis 1

Provides faculty-supervised independent research in environmental engineering for students planning to complete a senior thesis. To be taken prior to EVEN 4990, during the final year before graduation. Instructor consent required. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Environmental Engineering (EVEN) majors only.

## EVEN-4990 (3) Senior Thesis 2

Continuation of EVEN 4980. Consists of final phase of faculty-supervised research, the preparation of a written thesis, and an oral defense of the research to a committee. Prereq., EVEN 4980.



# Courses

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FARR

## FARR-1000 (1) Farrand Service-Learning Practicum: Special Topics

Offers a varying service-learning practicum experience as corequisite to a service-learning lecture course. May be repeated up to 6 total credit hours, provided the practica are different. Graded pass/fail.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

## FARR-1003 (1) Banned Books and the First Amendment

Focuses on a heated topic of discussion since the Constitution was drafted: the censorship of books. This class will look at some classics in literature: Catcher in the Rye, The Color Purple, and Huck Finn, and will explore the questions of why they were controversial and whether censorship of books is ever justified. Graded pass/fail.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

## FARR-1004 (1) Teen Trials and Tribulations in Literature

Discusses major themes and literary strategies in coming-of-age literature. Pass/fail only.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

## FARR-1005 (1) Comics and the Interpretive Arts

Explores comic books as literature and visual art. This course will introduce methods of literary analysis and apply them to a specific medium of art: the comic book. Discussions will focus on content and form and will be guided by questions about the way in which art is

defined and categorized. Graded pass/fail.

College of Arts & Sciences Farrand Residential Academic Program

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## FARR-1561 (1) Nonviolence for Everyday: Meditation and Other Helpful Habits

Focuses on the challenge of achieving nonviolence on a day-to-day basis by maintaining a peaceful, focused frame of mind. Explores ways to train the mind, including methods that may aid healing.

College of Arts & Sciences Farrand Residential Academic Program

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## FARR-1562 (3) Gandhi's Satyagraha: Love in Action for Humans and Other Creatures

Class texts and films explore social justice and structural violence in regard to humans, animals, and the environment in the light of a Gandhian approach to these issues. Outreach work in the community is included.

College of Arts & Sciences Farrand Residential Academic Program

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## FARR-2000 (3) Farrand Seminar in the Humanities and the Arts

Studies an aspect of the theme of the Center for Humanities Seminar Program each year, and will be taught by faculty participants in the Center's fellowship program. May be repeated up to 6 total credit hours.

College of Arts & Sciences Farrand Residential Academic Program

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## FARR-2002 (3) Literature of Lifewriting

Examines how diverse writers have created unique personal narratives that shape memory within historical and social contexts. Works will exemplify a wide range of literary structures, themes, and strategies that enhance an understanding of the genre and provide models for students' own lifewriting assignments. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Farrand Residential Academic Program

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## FARR-2400 (3) Understanding Privilege and Oppression in Contemporary Society

Through a focus on race, class, sexual orientation, and physical ability, this course explores privilege, oppression, and empowerment in

the United States. Through community service, students learn how oppression and privilege interact, and apply classroom learning to community experiences. Same as LDSP 2400. Approved for the arts and sciences core curriculum: human diversity or contemporary societies

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

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## FARR-2510 (3) Exploring Good and Evil through Film

Eighteen films depict our capacities for good and evil. Topics addressed include the following: the Holocaust, Jung's concept of "The Shadow," the Seven Deadly Sins, altruistic and sociopathic personalities, capital punishment, the redemptive narrative, and the satanic in film. Same as FILM 2613. Approved for arts and sciences CORE curriculum: ideals and values.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

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## FARR-2660 (3) Ethics of Ambition

Through selected readings in classical literature on ethics and through more contemporary readings and films, examines critical ethical issues relating to the competition of ambitions and the alternative styles of choosing between courses of action in a dangerous world. Uses biographies of those whose lives illustrate both the complexities of the struggles and the profundity of possibilities. Considers the unconscious metaphors of national visions and ambitions, the competing ethics of ends and means, the conflicting ambitions in a pluralistic society, and the transcendent ambitions of visionaries. Same as HONR 2250. Approved for arts and sciences CORE curriculum: ideals and values.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

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## FARR-2820 (3) Future of the Spaceship Earth

Examines major ecological, political, economic, cultural, legal, and ethical issues that will shape the future. Students consider how their decisions influence the future, and reflect on fundamental values and ideals underlying the search for solutions to these complex problems. Approved for the arts and sciences CORE curriculum: ideals and values.

[College of Arts & Sciences](#) [Farrand Residential Academic Program](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

FILM

## FILM-1002 (3) Film Analysis for Non-Majors

Introduces the critical study of film, exploring theoretical, historical, and technical concerns while presenting a survey of important film periods and genres. Students will hone critical-thinking, close-analysis, and writing skills. The course will cover a wide variety of films, approaching them from numerous perspectives, considering both the effects films have on individual viewers and their ability to reflect culture.

[College of Arts & Sciences](#) [Film Studies](#) [Genre and Movements](#)

## FILM-1502 (3) Introduction to Film Studies

Introduces the critical study of film, exploring basic theoretical concerns while presenting a survey of important film genres, both narrative and nonnarrative. Lectures may be presented by various faculty members. Considerable amount of writing is required.

[College of Arts & Sciences](#) [Film Studies](#) [Genre and Movements](#)

## FILM-2000 (3) Beginning Filmmaking

Instructs students in making Super-8 films. Covers use of cameras and editing equipment, basic editing and splicing techniques, and analysis of pertinent films. May emphasize making personal, experimental films or making narrative sound films, according to instructor. Students need to purchase materials and rent the necessary equipment. The Film Studies Program maintains an equipment pool with modest rental fees for students needing equipment. Prereq., FILM 1502.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

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## FILM-2002 (3) Recent International Cinema

Familiarizes students with current trends and major directors in international cinema. Students attend specific films screened in class and/or offered in the International Film Series, and read and write about these films. Prereq., FILM 1502 or 6 hours humanities courses involving critical writing.

College of Arts & Sciences | Film Studies | Genre and Movements

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## FILM-2003 (3) Film Topics

Varying topics on important individuals, historical developments, groupings of films, film directors, critical and theoretical issues in film. May be repeated up to 9 total credit hours, provided the topics are different.

College of Arts & Sciences | Film Studies | Topics

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## FILM-2005 (3) Movies and Screenplay Analysis

Analyzes the narrative structure of films and screenplays. Familiarizes students with the specific narrative characteristics of the classic motion picture, the three-act structure, and the multiple tasks involved in the process of adaptation. Dissects the form and structure of feature films through analyzing movies and screenplays. Prereq., FILM 1502.

College of Arts & Sciences | Film Studies | Workshops

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## FILM-2010 (3) Moving Image Computer Foundations

Provides students with artistic foundational hands-on experience in integrated use of media software in both the PC and Mac creative imaging making digital working environments. Includes fundamentals in general computer maintenance, creative and practical audio editing, image management and manipulation, and creative moving image practice. Restricted to Film (FILM or FMST) majors only. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences | Film Studies | Production

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## FILM-2105 (3) Introduction to the Screenplay

Explores, through close reading and original student work, the form and structure of the screenplay from the writer's perspective. Students will begin by analyzing structural and character elements of such screenplays as Chinatown and Witness, then analyze screenplays of their choosing. Students will learn the basics of screenwriting form, then develop and write 10 minutes of an original screenplay. Prereq., FILM 1502. Prerequisites: Restricted to students with 0-26 credits (Freshmen) only.

College of Arts & Sciences | Film Studies | Workshops

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## FILM-2300 (3) Beginning/Intermediate Filmmaking

Covers basic camera, editing, and splicing techniques for Super-8 film. Equipment is available at the film studies office for a modest rental fee. Prereq., FILM 1502.

College of Arts & Sciences Film Studies Production

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## FILM-2312 (3) Film Trilogies

Study of films designed as trilogies, drawing on a wide range of international cinema. Films include Satyajit Ray's Apu Trilogy (India), Krzysztof Kieslowski's Three Colors Trilogy (Poland), Francois Truffaut's Antoine Doinel cycle (France), and Abbas Kiarostami's Iran Trilogy (Iran). Restricted to FILM/FMST majors. Non-majors will need instructor's consent.

College of Arts & Sciences Film Studies Genre and Movements

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## FILM-2500 (3) Introduction to Cinematography

Film production class focusing on developing a basic understanding of the aesthetics and principles of Cinematography. Through projects, screenings, and critiques, students learn creative camera lighting processes. Prereqs., FILM 1502 and 2000 or 2300 with an averaged combined grade in these two courses of 3.00, with a minimum overall GPA of 2.0. Restricted to FILM majors. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences Film Studies Production

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## FILM-2513 (3) Major Asian Filmmakers

Surveys the major Asian directors from China, India, Japan, Taiwan, and Vietnam. Recommended prereq., FILM 1502. Restricted to FILM/FMST majors. Non-majors will need instructor's consent.

College of Arts & Sciences Film Studies Topics

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## FILM-2521 (3) Classics of the Foreign Film: 1960s to Present

Surveys the classics of international cinema from the 1960s to the present. Recommended prereq., FILM 1502. Restricted to FILM/FMST majors. Non-majors will need instructor's consent.

College of Arts & Sciences Film Studies History

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## FILM-2610 (3) Animation Production

Includes analysis of independent and experimental animation and an introduction to various animation techniques (object, line, collage, sand or paint on glass, Xerox, cameraless, pixellation, etc.). Students produce exercise films and a final film exploring these techniques.

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Prereq., FILM 2000 or 2300. Recommended prereq., FILM 2500.

College of Arts & Sciences Film Studies Production

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## FILM-2613 (3) Exploring Good and Evil Through Film

Eighteen films depict our capacities for good and evil. Topics addressed include the following: the Holocaust, Jung's concept of "The Shadow," the Seven Deadly Sins, altruistic and sociopathic personalities, capital punishment, the redemptive narrative, and the satanic in film. Same as FARR 2510. Approved for arts and sciences CORE curriculum: ideals and values.

College of Arts & Sciences Film Studies Topics

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## FILM-2900 (3) Lighting

Covers the basics of "Why you need lighting", color temp, as well as camera techniques, lighting theory, and lighting set-ups for still and motion picture film video. Emphasizes hands on as well as theory. Prereq., FILM 2000 or 2300. Recommended prereq., FILM 1502.

College of Arts & Sciences Film Studies Production

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## FILM-3002 (3) Major Film Movements

Historical-aesthetic survey dealing with various national cinemas, taught in conjunction with the appropriate language department. Typical offerings are the French film, the German film, the Russian film, and so on. Also offers a more detailed approach to a more restricted subject, i.e., film comedy, women filmmakers, German expressionist cinema, Italian neorealism. May be repeated up to 12 total credit hours within the same term with departmental consent. Restricted to FILM/FMST majors. Non-majors will need instructor's consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Film Studies Genre and Movements

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## FILM-3003 (3) Major Film Directors

Focuses on the work of a single director or a group of related directors. Course content varies each semester. Consult the online Schedule Planner for specific topic. May be repeated up to 12 total credit hours with departmental consent. . Non-majors need instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) FILM (FILM or FMST) majors only.

College of Arts & Sciences Film Studies Topics

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## FILM-3004 (3) Films of Alfred Hitchcock

Intensive, critical investigation of the films of one of cinema's greatest directors, Alfred Hitchcock. Concepts to be examined include authorship, desire, gender, and film acting. Critical and theoretical writings about Hitchcock are explored. Paper and exams required. Restricted to FILM/FMST majors. Non-majors will need instructor's consent.

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College of Arts & Sciences | Film Studies | Intensive and Small Courses

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## FILM-3010 (1-3) Film Production Topics

Offers students both theoretical and practical experience in various specialized areas of cinematic production. Topics vary but include production in the documentary, fictional narrative, animation, computer animation, and experimental genres. May be repeated up to 9 total credit hours. Prereq., FILM 2000 or 2300. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences | Film Studies | Production

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## FILM-3012 (3) Documentary Film

Provides a historical and theoretical introduction to the documentary film. Examines the historical beginnings of documentary film as well as exploring contemporary documentary practice. Canonical moments of documentary history and lesser known examples of documentary film work will be explored. Prereq., FILM 1502. Recommended prereq., FILM 3051.

College of Arts & Sciences | Film Studies | Genre and Movements

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## FILM-3013 (3) Women and Film

Examines the representation of women both in mainstream movies and in women's counter-cinema that resists traditional form, content, and spectator-text relationships of Hollywood models. Emphasizes work by key women filmmakers such as Margarethe Von Trotta, Lizzy Borden, and Yvonne Rainer, as well as readings in feminist film theory. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | Film Studies | Topics

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## FILM-3022 (3) Jung, Film and Literature

The basic themes of C. G. Jung's archetypal psychology (shadow, anima/animus, character typology, and individuation) are studied and applied as tools of critical analysis to selected films and literary texts of the modern period. Instructor consent required. Same as HUMN 3015.

College of Arts & Sciences | Film Studies | Genre and Movements

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## FILM-3030 (3) Cinema Alternative Process

Explores alternative methods of film processing and filmic image manipulation. Through projects, film screenings, lectures and discussions students will learn fine arts approaches to creative control for the moving image. Prereq., FILM 1502, 2000, 2300 or 2500, or instructor consent. Restricted to BFA majors.

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## FILM-3032 (3) Stage Tragedy and Film

Presents an aerial survey of the history of Western drama as represented in film: Greek drama, the Elizabethans, Ibsen/Strindberg to O'Neill/Williams, Beckett, etc. Prereq., FILM 1502. Recommended prereq., FILM 3051.

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## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

FILM

### FILM-3033 (3) Color and Cinema

Examines color and cinema from historical, technological, aesthetic and theoretical perspectives. Students will be required to complete both creative and scholarly assignments.

[College of Arts & Sciences](#) [Film Studies](#) [Topics](#)

### FILM-3042 (3) Horror Film

Serious investigation of the horror film genre as well as its origins in, and relation to, works of romanticist literature (e.g., Poe, Shelley). Issues include: the relation of fantasy and reality; gender in horror film; psychological issues raised by the films; historical issues generated by the genre. Prereq., FILM 1502. Recommended prereq., FILM 3051.

[College of Arts & Sciences](#) [Film Studies](#) [Genre and Movements](#)

### FILM-3043 (3) Topics in Critical Film Studies

Prepares students for advanced Film Critical Studies work. Subject matter varies from semester to semester. May be repeated up to 9 total credit hours, provided topics are different. Prereq., FILM 1502 or instructor consent. Restricted to FILM or FMST majors. Prerequisites: Restricted to Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Topics](#)

### FILM-3051 (4) Film History 1

Intensive introduction to film history from 1895 to 1935. Topics covered include the beginnings of motion picture photography, the growth

of narrative complexity from Lumiere to Griffith, American silent comedy, Soviet theories of montage, German expressionist films, and the transition to sound. Prereq., FILM 1502.

College of Arts & Sciences Film Studies History

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## FILM-3061 (4) Film History 2

Starts with the late 1930s and early 1940s films of Renoir and Welles and follows the historical growth and evolution of film aesthetics to the present. Studies Italian neorealist, French new wave, and recent experimental films, as well as the films of major auteur figures such as Bergman, Kurosawa, Fellini, Hitchcock, Bunuel, Antonioni, and Coppola. Prereqs., FILM 1502 and 3051, or instructor consent.

College of Arts & Sciences Film Studies History

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## FILM-3081 (3) American Film in the 1980s and '90s

Examines the relationship between American films of the 1980s and '90s and their cultural and historical context. Includes films by Lynch, Stone, Solondz, Scott, Scorsese, Lee, Duyme, Lemmons, Tarantino, Altman. Controlled enrollment. Prereqs., FILM 1502, 3051, 3061, or instructor consent.

College of Arts & Sciences Film Studies Production

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## FILM-3104 (3) Film Criticism and Theory

Surveys the range and function of film criticism, introduces major positions and concepts of film theory, and focuses on students' abilities to write about film. Prereq., FILM 1502. Restricted to FILM, FMST, and HUMN majors. Same as HUMN 3104.

College of Arts & Sciences Film Studies Intensive and Small Courses

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## FILM-3211 (3) History of Russian Cinema

Surveys Russian cinema in historical and cultural context from early 20th century to the present. Prereq., FILM 1502 or RUSS 2221. Same as RUSS 3211. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Film Studies Production

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## FILM-3301 (3) Contemporary Issues in Russian Film

Examines the relationship between politics, economics, aesthetics, and the way moral and social issues are treated in noteworthy Russian films from the last 20 years. Same as RUSS 3301.

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College of Arts & Sciences Film Studies History

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## FILM-3400 (3) Cinema Production I

Exploration of creative cinema production through short production and post-production projects. A short final project will be required. Focuses on the tactics and strategies of independent cinema production, examining a variety of approaches to genre. Explores a range of film and digital technologies. Restricted to Film (FILM or FMST) majors only. Prereqs., FILM 1502, 2000 or 2300, and 2500. Coreqs., FILM 3515 and 3525. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences Film Studies Production

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## FILM-3402 (3) European Film and Culture

Studies the relationships between European film, art, and culture. Offered each summer in a different European city (viz, Rome, Paris, London, Athens, Barcelona). There will be regular in-class lectures, film screenings, field trips, and on-site teaching. May be repeated up to 12 total credit hours. Recommended prereq., introductory film and art history courses. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Film Studies Genre and Movements

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## FILM-3422 (3) Genre: The Hollywood Musical

Second only to jazz, some critics regard the Hollywood musical as the greatest American popular art form of the 20th century. This course proposes a historical, formal, and theoretical approach to the musical through its several iterations, from the classical, to the revisionist, to the unusual, placing the changes in the genre's form, structure, and ideology in the context of America's changing social, political, and religious values. Prereq., FILM 1502. Recommended prereq., FILM 3051.

College of Arts & Sciences Film Studies Genre and Movements

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## FILM-3503 (3) German Film Through World War II

History and theory of Weimar and Nazi film with sociocultural emphasis. Taught in English. Same as GRMN 3503.

College of Arts & Sciences Film Studies Topics

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## FILM-3504 (3) Topics in German Film

Analyzes key issues in German culture as they are represented in film and other media, e.g., technology, architecture, women, and the Holocaust. Taught in English. May be repeated up to 6 total credit hours provided the topics are different. Same as GRMN 3504.

College of Arts & Sciences Film Studies Intensive and Small Courses

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## FILM-3513 (3) German Film and Society 1945-1989

Introduces issues in German society through film during the Cold War. Focus on East and West Germany, though some other German language films may be included. Emphasis is on reading films in their social, historical, and political contexts. Taught in English. Same as GRMN 3513.

[College of Arts & Sciences](#) [Film Studies](#) [Topics](#)

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## FILM-3514 (3) German Film & Society After 1989

Introduces post-1989 German culture through film. The course emphasizes films in their socio-historical contexts and explores developments in German culture during and after the unification. Taught in English. Same as GRMN 3514.

[College of Arts & Sciences](#) [Film Studies](#) [Intensive and Small Courses](#)

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## FILM-3515 (2) Camera Workshop

Focuses on the development of independent cinema production and post-production skills. The instructor must certify students in order to continue with their BFA studies. Prereqs., FILM 1502, 2000 or 2300, and 2500. Coreq., FILM 3400. Restricted to BFA film studies majors. Prerequisites: Restricted to Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Workshops](#)

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## FILM-3525 (2) Cinema Editing Workshop

Focuses on the development of independent cinema post-production skills. The instructor must certify students in order to continue with their BFA studies. Prereqs., FILM 1502, 2000 or 2300, and 2500. Coreq., FILM 3400. Restricted to BFA film studies majors. Prerequisites: Restricted to Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Workshops](#)

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## FILM-3563 (3) Producing the Film

Focuses on the production process of movie making from idea through distribution, analyzing each of the five phases involved, including the major players, function and problems inherent in each. Emphasizes the critical role the script plays in this process. Designed to give students a "map of the minefield" before venturing out on their own. Offered through Continuing Education.

[College of Arts & Sciences](#) [Film Studies](#) [Topics](#)

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## FILM-3600 (3) Digital Post-Production Process

Through projects, discussions, and screenings, this class explores the practices and aesthetics of computer-based moving-image art editing. Restricted to Film (FILM or FMST) majors only. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences Film Studies Production

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## FILM-3603 (3) Sound and Vision

Historical and aesthetic overview of sound in relation to film, ranging from Hitchcock's *Blackmail* to Mailick's *The Thin Red Line*. Pursues issues in sound design, mixing film scores, voiceovers, and film/sound theory in narrative, experimental, and documentary films. Among the filmmakers to be studied are Vertov, Welles, Altman, Brakhage, Lipsett, Eisenstein, Coppola, Scorsese, Stone, Leone, Godard, Nelson. Also explores a limited practicum using Pro Tools for sound design. Prereq., FILM 1502. Recommended prereq., FILM 3051.

College of Arts & Sciences Film Studies Topics

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## FILM-3620 (3) Experimental Digital Animation

Instructs students in the making of digital animation. Covers the use of the exposure sheet, frame series manipulation, digital motion techniques, and an analysis of pertinent films. Emphasis is on digital tools to create individual, personal, or experimental animated works. Includes experimental techniques of transfer between digital media and film. Prereq., FILM 2610. Recommended prereqs., FILM 3030 and FILM 3400 or 3600.

College of Arts & Sciences Film Studies Production

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## FILM-3660 (3) The Postmodern

Analyzes the cultural and critical practices as well as the thought that defines the postmodern period at the end of twentieth century. Prereq., HUMN 2000 or junior/senior standing. HUMN 3660 and FILM 3660 are the same course. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Film Studies History

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## FILM-3700 (3) Digital Audio Design

Studies and applies Pro Tools as a post-production audio toolbox. Applied techniques include sound recording, sound editing, field recording, foley, vocal recording and editing, plug-in generated sound creation, MIDI, basic scoring principles, audio sweetening, and audio mixing. Students will be required to complete regular editing assignments in addition to a final soundscape project. Prereq., FILM 2000 or 2300, 2500, and 3400 or 3600. Restricted to BFA majors. Prerequisites: Restricted to Film (FILM or FMST) majors only.

College of Arts & Sciences Film Studies Production

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# FILM-3900 (1-3) Independent Study (Production)

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

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# Courses

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FILM

## FILM-3901 (1-3) Independent Study (Critical Study)

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Film Studies](#) [History](#)

## FILM-3920 (3) Professional Seminar

Learning aspects of professional development in the field of cinema. Through workshops and assignments students will learn of the many opportunities found within all areas of production. Guests will help inform the students of professional options and expectations. Topics will include: crew work, fund raising, marketing festivals, low budget filmmaking, and alternative venues. Students may have an internship concurrently with this course. May be repeated up to 6 total credit hours. Recommended restriction to Film (FILM or FMST) majors only. Prereq., FILM 2500.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

## FILM-3940 (1-6) Film Studies Internship

Provides students with professional internship experiences with film, video, new media production companies, governmental agencies, production units, audio recording studios, and new media industries. Students will be responsible for securing their own internship position. May be repeated up to 9 credit hours. Prereqs., must be a BA or BFA film studies major with a CU GPA of at least 2.00, upper-division standing, and a 3.00 GPA as a BA or BFA film studies major. Offered pass/fail only. Prerequisites: Restricted to Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

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## FILM-4000 (3) Advanced Digital Postproduction

Through projects, discussions, and screenings, this class explores the advanced practices and aesthetics of computer-based moving-image art editing. Topics include how to edit and manage a postproduction cycle, how to use digital editing systems and capabilities such as compositing, digital audio, and optical effects treatments. Prereqs., FILM 1502, 2000 or 2300, 2500, and 3400 or 3600, or instructor consent. Restricted to BFA FMST majors. Cannot be taken simultaneously with FILM 3400 or 3600. Same as ARTF 5000.

College of Arts & Sciences Film Studies Production

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## FILM-4001 (3) Screening Race, Class & Gender in the U.S. and the Global Borderland

Engaging with the ways in which racial, class, gender and sexual oppression intersect, this class examines several filmic productions by and about diasporic and subaltern subjects (especially children and women) in the U.S./Mexico borderlands, and the urban ethnic metropolises of the global borderlands. Prereq., ETHN 2001 or equivalent ETHN course. Same as ETHN 4001.

College of Arts & Sciences Film Studies History

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## FILM-4003 (3) Film and Fiction

Explores similarities and differences between literature and film as narrative arts. Studies several novels, short stories, and plays and films made from them. Examines problems in point of view, manipulation of time, tone, structure, and setting. Same as ARTF/COML 5003.

College of Arts & Sciences Film Studies Topics

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## FILM-4004 (3) Topics in Film Theory

Provides topic-centered analyses of controversial areas in film theory. Students read extensive materials in the topic area, analyze and summarize arguments as presented in the literature, write "position" papers, and make oral presentations in which they elaborate their own arguments about specific assigned topic, establishing critical dialogue with the primary materials. May be repeated up to 6 total credit hours. Prereq., FILM 3051 or instructor consent. Same as HUMN 4004 and ARTF 5004. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) FILM (FILM or FMST) or Humanities (HUMN) majors only.

College of Arts & Sciences Film Studies Intensive and Small Courses

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## FILM-4005 (3) Screenwriting Workshop: Short Form

A writing intensive course that focuses on the art of the short form screenplay. Students will complete regular writing exercises, presentations, and several short scripts. May be repeated up to 6 total credit hours. Prereq., FILM 3400 or 3600. BFAs only. Prerequisites: Restricted to sophomore, junior or senior FMST majors only.

College of Arts & Sciences Film Studies Workshops

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## FILM-4010 (1-3) Topics in Film Studies-Production

Prepares students for advanced Film Studies production courses. Subject matter varies each semester. May be repeated up to 9 total credit hours, provided the topics are different. Same as ARTF 5010.

College of Arts & Sciences Film Studies Production

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## FILM-4013 (3) Film, Photography and Modernism

Provides interdisciplinary study of film, photography, and modernism, focusing on issues such as dystopia, alienation, sexuality, subjectivity, and self-referentiality. Photographs by Stieglitz, Strand, Weston, Evans, Cartier-Bresson, Kertesz, and Moholy-Nagy. Films by Dziga-Vertov, Eisenstein, Resnais, Antonioni, Bergman, Bunuel, and Bertolucci. Prereq., FILM 1502. Recommended prereq., FILM 3051. Same as ARTF 5013.

College of Arts & Sciences Film Studies Topics

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## FILM-4021 (3) Directing/Acting for the Camera

Offers an intensive workshop that provides students with experience directing dramatic material, acting before a camera, and interpreting or adopting dramatic material for film. No experience in directing or acting required. Attendance, research, and papers required. Recommended prereq., FILM 1502. Same as ARTF 5021.

College of Arts & Sciences Film Studies History

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## FILM-4023 (3) Topics in International Cinema

Focuses on major international filmmakers who have had a decisive impact on world cinema. Students will learn how directors create their own innovative body of work with specific formal and thematic patterns, and will also learn to place such work within multiple frameworks that will cover film history, theory, aesthetics, philosophy, and social and cultural analysis. May be repeated up to 6 total credit hours provided topics are different. Prereq., FILM 1502. Recommended prereqs., FILM 3051 and 3061. Restricted to FILM, FMST, ARTC majors. Same as ARTF 5023. Prerequisites: Restricted to Film (FILM or FMST) or Fine Arts - Creative Arts (ARTC) majors only.

College of Arts & Sciences Film Studies Topics

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## FILM-4024 (3) Advanced Research Seminar

Focuses on a specific topic, director, or genre chosen by the professor. Research skills and critical thinking are emphasized. With faculty guidance, students determine individual projects and present them to the class. Class participation is mandatory. Each student submits a thorough and original research paper for a final grade. May be repeated up to 6 total credit hours. Prereq., FILM 1502. Recommended prereqs., FILM 3051, 3061. Same as ARTF 5024.

College of Arts & Sciences Film Studies Intensive and Small Courses

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## FILM-4030 (3) Visiting Filmmakers Seminar

Examines creative issues in contemporary cinema art. Graduate and advanced undergraduate students explore filmmaking ideas with guest artists within a seminar setting. Filmmakers, videographers and programmers of national and international reputation, with an emphasis on "experimental" practice, interact with graduate and advanced undergraduate students, and discuss their work at seminar meetings, public lectures or events. May be repeated up to 6 total credit hours. Restricted to Film (FILM or FMST), Fine Art -Studio Arts (BASA), or Fine Arts-Creative Arts (ARTC) majors only. Recommended prereqs., FILM 1502 and 4453. Same as ARTF 5030. Prerequisites: Restricted to Film (FILM or FMST), Fine Art -Studio Arts (BASA), or Fine Arts-Creative Arts (ARTC) majors only.

College of Arts & Sciences | Film Studies | Production

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## FILM-4043 (1-3) Topics in Film Studies-Critical Studies

Prepares students for advanced Film Studies critical studies courses. Subject matter varies each semester. May be repeated up to 9 total credit hours, provided the topics are different. Same as ARTF 5043.

College of Arts & Sciences | Film Studies | Topics

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## FILM-4105 (3) Advanced Screenwriting

Introduces professional screenwriting, in the form of a creative writing workshop. Admission by portfolio (see film department). Students write scenes and scripts for short films, feature treatments, etc., and are graded on a final portfolio. Prereq., approved writing sample. Recommended prereqs., FILM 3051 and 3061. Same as ARTF 5105.

College of Arts & Sciences | Film Studies | Workshops

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## FILM-4135 (3) Art and Psychoanalysis

Explores psychoanalytic theory as it relates to our understanding of literature, film, and other arts. After becoming familiar with some essential Freudian notions (repression, narcissism, ego/libido, dreamwork, etc.), students apply these ideas to works by several artists (e.g., Flaubert, James, Kafka, Hoffmann, and Hitchcock). Prereq., HUMN 2000 or junior/senior standing. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences | Film Studies | Topics

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## FILM-4200 (3) Flow Visualization

Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and shadowgraphy and schlieren. Reviews optics and fluid physics, especially atmospheric clouds. Assignments are student-driven, to individuals and mixed teams of grad, undergrad, engineering majors and photography/video majors. Please see <http://flowvis.colorado.edu>. Prereq., MCEN 3021 or equivalent, or significant imaging experience (photography/video). FILM 4200 and

ARTF 5200 are the same course. Same as MCEN 4151/5151.

College of Arts & Sciences Film Studies Graduate Film Courses

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## FILM-4240 (3) Beginning Video Production

Presents a studio course on basic single camera video production strategies and concepts. Through class screenings, projects, demonstrations, discussions, and readings, students gain an introductory familiarity with camera, lighting, sound, editing and the organization and planning involved in a video project. Explores a basic theoretical understanding of video as an art form and its relationship to television, film, art, history, culture. Prereqs., FILM 2000 and 2500 or instructor consent. Same as ARTS 4246.

College of Arts & Sciences Film Studies Production

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## FILM-4340 (3) Intermediate Video Production

Continuation of beginning video production. Extends the knowledge of single camera video production strategies and concepts. Expands the concept of montage (editing) and strategies to develop a video project through class screenings, projects, discussions, and readings. Furthers theoretical understanding of video as an art form. Prereq., FILM 4240 or instructor consent. Same as ARTS 4346.

College of Arts & Sciences Film Studies Production

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## FILM-4440 (3) Advanced Video Production

Continuation of intermediate video production. Explores advanced technical skills to control the quality of the video image in production, postproduction, and distribution. Emphasizes self-motivated independent projects, conceptual realization of advanced student work and basic working knowledge of distribution and life as a media artist. Promotes further theoretical understanding of video as an art form. May be repeated up to 9 total credit hours. Prereq., FILM 4340 or instructor consent. Same as ARTS 4446.

College of Arts & Sciences Film Studies Production

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## FILM-4453 (3) Elective Affinities: Avant-Garde Film and the Arts

Traces the history and aesthetics of avant-garde/ experimental films in light of similar ideas found in the other arts, particularly painting, poetry, photography and music. Topics covered include Dada and the early avant-garde; surrealism and psychodramas; Brakhage and abstract expressionism; feminist arts and film since the 1980s; the idea of the sublime in painting, music, and film; landscape in painting, photography, and film; post-modernism and the cinema; queer theory, gender/identity politics, and aesthetics of recent films; and specific multiple disciplinary artists such as Andy Warhol, Michael Snow, Helen Levitt, and Gunvor Nelson. Prereq., FILM 1502. Same as ARTF 5453.

College of Arts & Sciences Film Studies Topics

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## FILM-4500 (3) Cinema Production 2

Advanced exploration of creative cinema production through short production and post-production projects. Course focuses on the tactics and strategies of independent cinema production leading to the completion of a BFA thesis project exploring either documentary, experimental, or narrative genres. May be repeated up to 6 total credit hours. Prereq., FILM 3400, 3515 and 3525. Same as ARTF 5500. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

## FILM-4505 (3) Screenwriting Workshop: Long Form

Creative writing workshop in which students plan and write a feature-length screenplay with emphasis on format, dialogue, characterization, and story. Prereqs., FILM 1502 and 2000.

[College of Arts & Sciences](#) [Film Studies](#) [Workshops](#)

## FILM-4600 (3) Creative Digital Cinematography

Explores creative approaches to single camera digital cinematography through short projects, discussions, and screenings. Relates creative photography and poetic approaches to the digital camera cinema. May be repeated up to 6 total credit hours. Restricted to Film (FILM or FMST) majors only. Prereqs., FILM 2000 or 2300, 2500, and 3400 or 3600, or ARTS 4246 or 5346. Same as ARTF 5600. Prerequisites: Restricted to Film (FILM or FMST) majors only.

[College of Arts & Sciences](#) [Film Studies](#) [Production](#)

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# Courses

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FILM

## FILM-4604 (3) Colloquium in Film Aesthetics

Seminar for the serious round table discussion and critique of film as an art form, emphasizing development of appropriate verbal and written language skills for description of film. May be repeated upto 6 total credit hours. Restricted to juniors/seniors. Same as ARTF 5604. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#)
[Film Studies](#)
[Intensive and Small Courses](#)

## FILM-4959 (3-6) Honors Senior Thesis

For exceptional Film Studies majors who wish to write an honors thesis based on independent research or creative work under the direction of a faculty member.

[College of Arts & Sciences](#)
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# Courses

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FNCE

## FNCE-3010 (3) Corporate Finance

Covers the theory and practices governing the management of capital in a business firm. Examines the determinants of capital requirements, methods of obtaining capital, problems of internal financial management, and methods of financial analysis. Prereqs., BCOR 1020, 2000, and 2200. Prerequisites: Requires pre-requisite courses of BCOR 1020, 2000, & 2200. Restricted to Business Majors with 52-180 units completed.

[Leeds School of Business](#) [Finance](#)

## FNCE-4000 (3) Financial Institutions Management

Analyzes the structure, markets, and regulations of financial institutions. Studies problems and policies of internal management of funds, loan practices and procedures, investment behavior, deposit and capital adequacy, liquidity, and solvency. Prereq., FNCE 3010. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Finance](#)

## FNCE-4030 (3) Investment and Portfolio Management

Develops modern portfolio theory and applies it to pricing both individual assets and portfolios of assets. Topics include Markowitz portfolio selection model, capital asset pricing model, arbitrage pricing theory, options, futures, bonds, portfolio performance measurement, and issues of market efficiency. Prereq., FNCE 3010. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Finance](#)

## FNCE-4040 (3) Derivative Securities

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Develops the modern theory of contingent claims in a mathematical framework oriented toward applications. Examines how to use derivatives for risk management and to tailor portfolio payoffs. Provides an in-depth analysis of the properties of options. Prereq., FNCE 3010. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4050 (3) Capital Investment Analysis

Focuses on capital budgeting and investment issues. Emphasizes issues relating to cash flows, capital rationing, the investment versus financing decision, leasing, fluctuating rates of output, investment timing, capital budgeting under uncertainty, and investment decisions with additional information. Prereq., FNCE 3010. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4060 (1-6) Special Topics in Finance

Presents new subject matter in finance. The summer offering is the London Seminar in International Finance and Business. Prereqs. vary depending upon course offering. See advising office.

Leeds School of Business Finance

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## FNCE-4070 (3) Financial Markets and Institutions

Examines the economics of financial markets and the management of financial institutions, both domestic and international. Topics include an overview of U.S. and international financial markets, pricing and risk factors, interest rates, markets for securities and financial services, and markets for derivative financial instruments. Prereq., BCOR 2200. Restricted to students with 52 hours completed. Formerly FNCE 3020. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4820 (3) Topics in Finance

Offered irregularly to provide opportunity for investigation into new frontiers in finance. May be repeated up to 6 total credit hours. Restricted to 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Finance. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

Leeds School of Business Finance

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## FNCE-4830 (3) Seminar in Investment Banking

Introduces the student to a career in investment banking and provides specific modeling skills necessary and important during the first phase of such a career. Prereq., BCOR 2200. Recommended prereq., FNCE 3010. Restricted to students with 52 hours completed. Prerequisites: Requires pre-requisite course of BCOR 2200. Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4831 (3) Seminar in Investment Management

The purpose of this course is for students to understand the investment management profession. The course is designed to be a blend of theory and practice. Extends the basic principles of security analysis, asset pricing theory, portfolio construction, and portfolio performance evaluation. Students will apply these principles in determining, over the semester, how to manage the CU investment fund. Prereqs., BCOR 2000, 2300, and FNCE 3010. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4832 (3) Microfinance

In the last two decades, microfinance initiatives have provided the primary worldwide impetus to promote economic independence for the poor (1.4 billion). Microfinance seminar links the financial markets with entrepreneurship to create a platform for building a microfinance institution that facilitates financial inclusion to the poor. The students in a semester long project build a hypothetical financial institution that provides access to credit, saving, insurance and more to a segmented poor population, somewhere in the world including the U.S. Restricted to Business majors with 52-180 units completed. CESR 4010 and FNCE 4832 are the same course. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Finance

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## FNCE-4850 (3) Business Senior Seminar in Finance

Develops analytical and decision making skills necessary to address real-world business finance situations. Topics include financial analysis and forecasting, capital budgeting, valuation, capital structure policy, international finance, and financial ethics. Uses a combination of lecture and cases; team and individual work. Prereqs., ACCT 3220, FNCE 3010, 4030, and 102 hours completed. Restricted to graduating senior FNCE majors. Formerly BCOR 4002. Prerequisites: Restricted to Finance majors with 102 to 180 units completed.

Leeds School of Business Finance

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## FNCE-4900 (1-6) Independent Study

Intended only for exceptionally well qualified business seniors. Prereq., prior consent of dean and instructor under whose direction study is taken, and departmental form.

Leeds School of Business Finance

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## FNCE-6820 (1-3) Graduate Seminar

Experimental seminar offered irregularly to provide opportunity for investigation of new frontiers in finance.

Leeds School of Business Finance

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## FNCE-6900 (1-6) Independent Study

Requires consent of instructor under whose direction study is taken. Departmental form required.

Leeds School of Business Finance

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## FNCE-6950 (1-6) Master's Thesis

Leeds School of Business Finance

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## FNCE-7100 (3) Doctoral Seminar: Finance Theory

Develops the foundations for the study of modern financial economics by analyzing individuals' consumption and portfolio decisions in the context of risk and then traces the implications to market valuation of traded securities. Topics include the meaning and measurement of risk, portfolio theory, the Capital Asset Pricing Model, and arbitrage pricing arguments like those employed in Modigliani and Miller's capital structure theory and the Black-Scholes option pricing model. Prerequisites: Restricted to Business Administration graduate students only.

Leeds School of Business Finance

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## FNCE-7200 (3) Doctoral Seminar: Empirical Research Methods in Finance

Develops an understanding of current empirical methods used to examine research issues related to corporate finance and the capital markets.

Leeds School of Business Finance

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## FNCE-7330 (3) Doctoral Seminar: Corporate Finance, Theoretical, and Empirical Issues

Develops and examines theories and issues in corporate finance. Topics may include corporate control, capital structure, financial signaling, and payout policy.

## FNCE-7550 (3) Doctoral Seminar: Special Topics in Finance

Closely examines areas of specific interest to academic research in finance. Subjects vary and may include game theory, stochastic processes in finance, continuous-time modeling, derivative security pricing, the microstructure of securities markets and financial institutions, innovation, and engineering.

## FNCE-7800 (3) Doctoral Proseminar: Finance

Provides finance doctoral students with an orientation to the finance field; introduces contemporary research perspectives and priorities. Students discuss papers that illustrate academic researchers' use of various disciplinary theoretical and empirical tools to address finance problems.

## FNCE-7830 (1) Doctoral Seminar: Dissertation Research

Assists doctoral students in integrating courses and fields of study in order to apply their knowledge and skills to problems in finance. Gives special attention to development of thesis topics. Continuous enrollment required of all finance doctoral students while doing course work.

## FNCE-8820 (3) Graduate Seminar

Experimental seminar offered irregularly to provide opportunity for investigation of new frontiers in finance.

## FNCE-8900 (1-3) Independent Study

Instructor consent and departmental form required.



# Courses

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FNCE

## [FNCE-8990 \(1-10\) Doctoral Thesis](#)

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## Courses

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FREN

### FREN-1010 (5) Beginning French 1

For students with no previous knowledge of French. Presents basic grammar and most commonly used French vocabulary. Introduces students to Francophone culture. Credit not granted for this course and FREN 1050.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-1020 (5) Beginning French 2

Continuation of FREN 1010. Completes the presentation of most basic structures and French vocabulary. Prereq., successful completion of one semester of college-level French or two years of high school French. Credit not granted for this course and FREN 1050.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-1050 (5) Beginning French Review

Covers the material of FREN 1010 and 1020 in one accelerated semester. Intended for students who know some French (i.e., four to five semesters in high school) but do not have skills adequate for 2000-level courses. Credit not granted for this course and FREN 1010 or FREN 1020.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-1200 (3) Medieval Epic and Romance

Covers the most important works of medieval literature, in English translation. Among the texts studied are the Nibelungenlied, the Song

of Roland, and Arthurian romances, including the stories of Lancelot and Guinevere and Tristan and Isolde. Offers a general introduction for nonmajors to medieval literature and society. Taught in English. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences French & Italian French

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## FREN-1400 (3) Medieval/Renaissance Women Writers in Italy and France

Introduces major literature through close readings of women's writings in their historical context. Offers a general introduction to women's status and roles in Italy and France. Taught in English. Same as ITAL 1400. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences French & Italian French

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## FREN-1500 (3) Literature and Politics in the Age of Enlightenment

Introduces political dimensions of 18th century French literature. Surveys political and social preoccupations that manifest themselves across genres (novels, scientific treatises, dialogues, erotic literature, etc.). Examines contributions made by 18th century French writers to the sociological and political imagination of Western tradition. Taught in English.

College of Arts & Sciences French & Italian French

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## FREN-1610 (3) How to Be French, 1: The Ancien Regime

Explores medieval and early modern French culture in the widest sense, encompassing masterpieces of French literature, architecture, and visual art as a key to the habits, customs, and practices of everyday life. Major themes are "living and dying," "heroes, villains, and kings," "courtliness, civility, and the art of love," and "crafty little guys." Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences French & Italian French

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## FREN-1620 (3) How To Be French? 2: Modernity

Introduces students to French culture in its widest sense and in particular to reflect on major social and cultural contradictions inherited from the French Revolution, which still define "Frenchness" today. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences French & Italian French

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## FREN-1700 (3) Francophone Literature in Translation

Studies the literary expression of French-speaking peoples of Africa, the Caribbean, and Canada. Gives special attention to oral tradition, identity, question, and cultural conflict. Taught in English.

College of Arts & Sciences French & Italian French

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## FREN-1750 (3) French Colonialism: North Africa and the Middle East

Offers a general introduction to French and Francophone literature and visual arts (painting, photography, film) from the nineteenth century to the present depicting cultures and societies of the Middle East and North Africa. In English with English translations of French texts. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences French & Italian French

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## FREN-1800 (3) Contemporary French Literature in Translation

Reviews the major philosophical, political, and aesthetic issues in the 20th century French novel and drama. Beginning with existentialist literature, discussion focuses subsequently on the Theatre of the Absurd, the new novel, World War II and the Holocaust, and recent women writers. Taught in English.

College of Arts & Sciences French & Italian French

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## FREN-1900 (3) Modern Paris in Literature, Photographs, Paintings and Movies

Introduces the rise of modern Paris from the French Revolution (1789) to today. Studies the physical and sociological changes of the city in terms of architecture and industrialization through French literature, movies, paintings and photographs. Addresses problems due to the magnitude of the city, the growing fear of urban vices, and the dilemma of controlling massive urban populations. Taught in English. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences French & Italian French

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## FREN-2110 (3) Second-Year French Grammar Review and Reading 1

A film based curriculum will expand the knowledge of francophone culture and will continue the development of communication skills begun in the first year. This third semester course will review essential beginning grammar before introducing intermediate structures, vocabulary, and cultural/literary readings. Prereqs., FREN 1020 and 1050 (min grade C-) or equivalent. Meets MAPS requirement for foreign language. Satisfies arts and sciences foreign language requirement.

College of Arts & Sciences French & Italian French

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## FREN-2120 (3) Second-Year French Grammar Review and Reading 2

Completes the film-based study of intermediate grammar begun in FREN 2110. Continued reading in French literature and culture, with considerable practice in writing and speaking French. Prereq., FREN 2110 (min grade C-). Fulfills the Graduate School language requirement for the Ph.D.

College of Arts & Sciences French & Italian French

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## FREN-2500 (3) Conversation in French

Puts into practice all that has been learned in the first four semesters of college French. Builds conversational skills and confidence through acquisition of new vocabulary and a review of grammar essential to discussing different aspects of French culture. All work is in French. Prereq., FREN 2120 or equivalent.

College of Arts & Sciences French & Italian French

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## FREN-3010 (3) French Phonetics and Pronunciation

Improves students' ability to pronounce French correctly. Coursework involves the International Phonetic Alphabet, understanding the differences between pairs of sounds, and recognizing the relationship between spelling and pronunciation. Required of all FREN majors. Prereq., FREN 2120 or equivalent.

College of Arts & Sciences French & Italian French

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## FREN-3020 (3) French Phonetics Through Musical Performance

Advanced oral practice and interpretation of a French Musical. This course of applied and corrective phonetics concentrates on developing good pronunciation and fluency through song. The course culminates with a public presentation of the musical studied in class. Prereq., FREN 3010 or equivalent and instructor consent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

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## FREN-3050 (3) French Composition 1

French third-year level composition course. Students practice and write different forms of formal French writing. They also hone their grammar skills and analytical reading of short literature pieces. Must be taken before FREN 3060. Required for French majors. Prereq., FREN 2120 or equivalent.

College of Arts & Sciences French & Italian French

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## FREN-3060 (3) French Composition 2

The second semester of a French third-year level composition course. Students build on their previous knowledge of formal writing in French and more emphasis is given to argumentative and analytical style of writing in FREN 3060. Prereq., FREN 3050 or equivalent. Required for French majors.

College of Arts & Sciences French & Italian French

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## FREN-3100 (3) Introduction to Critical Reading and Writing in French Literature

Study of French literature through close readings of representative examples of major literary forms (poetry, fiction, drama, essay) and through the composition of critical writings in French. Required for French majors. Prereq., FREN 3060. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

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## FREN-3110 (3) Main Currents of French Literature 1

Surveys French literature from the Middle Ages through the 18th century. Students are expected to acquire a fairly detailed knowledge of principal writers and schools of the periods covered. Required for majors. Prereq., FREN 3100. May be taken with FREN 3120. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

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## FREN-3120 (3) Main Currents of French Literature 2

Surveys 19th and 20th century French literature. Close reading of selected texts of the principal writers and schools. Required for majors. Prereq., FREN 3100. May be taken before, after, or with FREN 3110. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

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## FREN-3200 (3) Introduction to Literary Theory and Advanced Critical Analysis

Introduces important aspects of both classical and modern literary theory as an aid to reading and understanding literary texts. Covers theoretical works by figures ranging from Plato and Aristotle to modern French critics such as Barthes, Foucault, and Derrida in conjunction with selected literary works. Offers students more sophisticated means of understanding issues like gender, ethnicity, the roles of both author and reader in constructing meaning, the nature and functions of signs, and the relationship between literature and the larger society. Conducted in English, though French majors are required to read the texts in the original language. Required for students taking honors in French or Italian. Prereq., FREN 3100 or instructor consent. Approved for arts and sciences core curriculum: literature and the arts.

## FREN-3500 (3) French Current Events: Conversation and Composition

For students who have spent fewer than four months in a French-speaking environment. Focuses on presentations, debates, discussions, readings, and written work. Prereq., FREN 3060 or equivalent.

## FREN-3600 (3) Business French 1

Gives students the tools needed to function in a French-speaking work environment. A culminating project involves creating a business in a francophone country. Prereq., FREN 2120 or equivalent.



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FREN

### FREN-3700 (3) French-American Cultural Differences

Through readings, films, discussion, and activities, students learn the defining values of their own country, those of France, and key differences between the two cultures. Taught in French. Prereq., FREN 3060 or equivalent.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-3800 (3) France and the Muslim World

Introduces students to the polemic colonial, social, and cultural interactions of France and Islam. Close attention will be paid to paradigms of identities of one of the major European nations and the Islamic world. Readings and discussion topics for this course cover the social, cultural, and literary depictions of Islamic and French interactions, negotiations, and contradictions. Taught in English. Restricted to juniors and seniors. Cannot be used for French major or minor credit. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-4030 (3) Advanced Oral Practice and Interpreting

Concentrates on developing (or preserving) speaking fluency, correct pronunciation, and a good working vocabulary. May be repeated once for credit. Prereq., FREN 3060 and/or 3500, or instructor consent.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-4110 (3) French Special Topics

Topics vary each semester. Consult the online Schedule Planner for specific topics. See also FREN 4120.

College of Arts & Sciences French & Italian French

## FREN-4120 (3) French Special Topics

Topics vary each semester. Consult the online Schedule Planner for specific topics. See also FREN 4110.

College of Arts & Sciences French & Italian French

## FREN-4170 (3) Francophone Literature

Studies the literary expression of French-speaking peoples of Africa, the Caribbean, and French Canada. Gives special attention to oral tradition, identity question, and cultural conflict. Prereqs., FREN 3100, 3110, and 3120, or instructor consent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

## FREN-4200 (3) Studies in Contemporary French Culture

Through a wide variety of texts and audio-visual documents, students learn the structures of contemporary French society and study the cultural phenomena of that society. Prereqs., FREN 3050 and 3060.

College of Arts & Sciences French & Italian French

## FREN-4250 (3) Medieval and Renaissance Readings

Explores the complex and evolving cultural and historical contexts of medieval and Renaissance French. Introduces the masterpieces of French medieval and Renaissance literature, including the Chanson de Roland and Arthurian romance. Also focuses on the work of Marie de France, Guillaume de Lorris, and Jean de Meun, Christine de Pisan, Machaut, Villon, Louise Labe, and the poets of the Pliade, Rabelais, and Montaigne. Prereqs., FREN 3100, 3110, and 3120 or instructor consent.

College of Arts & Sciences French & Italian French

## FREN-4300 (3) Theatre and Modernity in 17th Century France

Readings of plays by Corneille, Moliere, and Racine introduce students to theatre's role as a mirror of the multifarious tensions shaping modern Western experience. Taught in English with English translations. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences French & Italian French

College of Arts & Sciences French & Italian French

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## FREN-4330 (3) Moliere and 17th Century French Comedy

Close readings of farces and comedies of Moliere in context with selected comedies by Corneille, Rotrou, and Cyrano de Bergerac and selected satires by Boileau and La Fontaine. Themes include comedy as a form of social criticism and the sociocultural significance of such episodes of Moliere's career as the scandalous quarrels of L'ecole des Femmes and Tartuffe. Prereqs., FREN 3100, 3110, and 3120 or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-4350 (3) French Enlightenment

Studies fiction, essays, theatre, and philosophical tales. Emphasizes the Enlightenment in France through the texts of its major representatives: Montesquieu, Voltaire, Marivaux, Diderot, and Rousseau. Prereqs., FREN 3100, 3110, and 3120, or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-4360 (3) Survey of 18th Century French Literature

Close readings of texts by Voltaire, Rousseau, Diderot, Marivaux, and Beaumarchais. Focuses on the evolution of literary genres and the influence of philosophy, politics, and social change on belles lettres. Prereqs., FREN 3100, 3110, and 3120, or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-4430 (3) Survey of 19th Century French Literature

Examines fiction, poetry, and theatre in 19th century France. Focuses on developing and changing literary styles and subject matter throughout the century in historical, philosophical, and social context. Prereqs., FREN 3100, 3110, and 3120, or instructor consent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences French & Italian French

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## FREN-4470 (3) 20th Century French Theatre and Poetry

Close readings of plays from the turn of the century to the contemporary period introduce the principal themes and techniques of modernist and postmodernist French theatre. Students are encouraged to consider problems commonly evoked by these texts, and to compare the positions that each text takes on such problems as the status and uses of language, the function and limits of the theatre, and the dialectic of appearance and reality. Prereqs., FREN 3100, 3110, and 3120, or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-4480 (3) 20th Century French Novel

Close readings of novels from the 1930s to the contemporary period introduce the principal themes and techniques of the modernist and postmodernist French novel. Students are encouraged to analyze a variety of questions commonly evoked in these texts, such as the problem of representation, the uses and abuses of writing, the relation of fiction and history, and the status of the subject in the world. Prereqs., FREN 3100, 3110, and 3120 or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-4600 (3) Topics in French Film

Covers various topics in the French and some other Francophone cinemas (Belgian, Swiss, Quebecois) from 1895 to the present. Focuses on periods, schools, themes, and directors from Melies to Duras, and the critical approaches by which they are studied. Varies from year to year. May be repeated up to 6 total credit hours on different topics. Prereqs., junior standing and 6 hours in French literature, other literature, or film studies.

College of Arts & Sciences French & Italian French

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## FREN-4750 (3) Methods of Teaching French and Professional Orientation

Presents current methodology and techniques for teaching foreign language for proficiency. Areas of study include ACTFLFL guidelines, National Standards, assessment, classroom activities, curriculum, and syllabus design. Prereqs., FREN 3100, 3110 or 3120, an additional course above FREN 3060, and admission to the teacher certification program or instructor consent. Restricted to juniors/seniors.

College of Arts & Sciences French & Italian French

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## FREN-4800 (3) Postmodernist French Novel in Translation

Focuses upon recent innovations in the French novel, and upon the postmodernist literary aesthetic. Students will examine a variety of avant-garde novels, and analyze the kinds of literary experimentation that those novels propose. They will be asked to consider a series of questions concerning the changing nature of literary representation and the status of the novel as a cultural form. Taught in English. Restricted to juniors/seniors. Cannot be used for major or minor credit. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences French & Italian French

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## FREN-4840 (1-6) Independent Study: Language

Upon consultation only and at the undergraduate level. May be repeated up to 7 total credit hours.

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## FREN-4860 (3) War, Trauma, and Memory: Amnesias, Revisions, and Representations of Traumatic History

Attempts to investigate how extreme historical events (war, genocides, terror attacks) function as "Trauma" and how these extreme events are dealt with by personal and collective memory in historical narratives, literary and cinematic fiction, and memorials. Amnesia and other types of historical negations or revisions will be analyzed, along with representations of trauma and the difficulties raised by this memorializing. Taught in English. Restricted to juniors/seniors. Cannot be used for major or minor credit. Approved for arts and sciences CORE curriculum: ideals and values.

## FREN-4960 (6) High School French Teaching

Offered as part of the supervised student teaching in a secondary school required for state certification to teach French. These hours do not count toward student hours in the major nor in the maximum departmental hours allowed. Prereq., FREN 4750 or 5770 and admission to the secondary teaching education program. Coreq., EDUC 4712. Pass/fail only. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

## FREN-4980 (3) French Senior Honors Thesis

The senior honor thesis is a 40 to 45 page original research paper, written in French, and constitutes a requirement for graduating with departmental honors. Prereqs., all third-year course requirements including FREN 3200. Recommended prereq., at least one course numbered FREN 4100 or above.

## FREN-4990 (3) Senior Seminar

Preparation of a 15-page research paper in French presented to two members of the department faculty and defended orally in class. Prereq., all third-year requirements and advisor consent. Recommended prereq., at least one course numbered FREN 4100 or above.

## FREN-5110 (3) French Special Topics

Different topics are offered and, in a number of cases, cross-listed with other departments. Prereq., graduate standing or instructor consent. May be repeated up to 6 total credit hours on different topics. Prerequisites: Restricted to Graduate Students only.

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## FREN-5120 (3) French Special Topics

Different topics are offered and, in a number of cases, cross-listed with other departments. Prereq., graduate standing or instructor consent. May be repeated up to 6 total credit hours on different topics.

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

FREN

### FREN-5170 (3) Francophone African Literature

Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-5250 (3) Medieval and Renaissance Readings

Through close readings of masterpieces of French medieval and Renaissance literature in conjunction with contemporary criticism and theory, explores the contexts of medieval and Renaissance France. Readings in French. May be taught in English to accommodate students in other programs. May be repeated up to 12 total credit hours on different topics. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-5310 (3) 17th Century French Tragedy and Poetry

Close readings of tragedies by (among others) Corneille and Racine, placed in the context of baroque and neoclassical political and artistic culture as illustrated by philosophy, painting, and science. Drawing on recent criticism and theory, explores heroic drama's role as a symptom and agent of early modern French social and intellectual history. Readings in French, but may be taught in English. Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [French & Italian](#) [French](#)

### FREN-5320 (3) 17th Century French Prose

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Close readings of major works by, e.g., Descartes, Pascal, La Fayette, La Rochefoucauld, and La Bruyere. Themes include 17th century theories of self, early modern epistemology, notions of honnetete and the critical analysis of human motives and behavior, the emerging novel, and the critique of heroic idealism and of the monarchic absolutism of the Sun King, Louis XIV. Readings in French, but may be taught in English. Prereq., graduate standing or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-5330 (3) Moliere and 17th Century French Comedy

Close readings of the comedies in context with the works of, e.g., Corneille, Rotrou, Cyrano, Boileau, and La Fontaine. Themes include Moliere and the institution of literary authorship, comedy's role as social critique, the deconstruction of the early modern subject, and the cultural politics of the scandals surrounding L'ecole des femmes and Tartuffe. Readings in French, but may be taught in English. Prereq., graduate standing or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-5350 (3) French Enlightenment

Focuses on the uses of literature to address the revolutionary philosophical, scientific, religious, and/or sociopolitical questions of the day. Explores Diderot and d'alembert's Encyclopedie, Voltaire and Diderot's philosophical tales and dialogues, Rousseau's Discours, and other writings. Discusses the development of specific literary forms to promote the ideas and goals of the philosophers to reach a changing and diverse readership and to fight censorship. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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## FREN-5360 (3) 18th Century French Literature

Focuses on the study of a specific literary genre (e.g., theatre, the novel) or on the global production of a major author (e.g., Voltaire, Diderot, Rousseau). Discussion stresses both the uniqueness of the genre/writer and their significance as representatives of the century's changing society and culture. May be repeated up to 6 total credit hours during a student's graduate career. Prereq., graduate standing or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-5420 (3) 19th Century French Literature

A survey of principal works and movements, intended as an introductory course. Prereq., graduate standing or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-5430 (3) Topics in 19th Century French Prose, Poetry, and Theatre

Topics vary. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent.

College of Arts & Sciences French & Italian French

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## FREN-5440 (3) Literary Ludics

Taught in French and English. Focuses on literary structures proposed by author to reader as games. Considers critical texts, both practical and theoretical, with a view toward defining the relation between criticism and its objects. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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## FREN-5470 (3) 20th Century French Theatre and Poetry

Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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## FREN-5770 (2) College Foreign Language Teaching

Required for teaching assistants and graduate part-time instructors. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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## FREN-6840 (1-3) Independent Study

May be repeated up to 3 total credit hours, except with permission of the director of graduate studies. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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## FREN-8990 (1-10) Doctoral Dissertation

All doctoral students must register for no fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences French & Italian French

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

FRSI

## FRSI-1010 (5) Beginning Farsi I

Provides a grounding in basic Persian Farsi grammar. The morphological and phonological nuances of the language will be introduced, along with Persian culture. Basic conversation is re-enforced on a daily basis with strong emphasis and reiteration upon the homework and covered grammar.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-1011 (3) Introduction to Persian Civilization

An introduction to the history, literature and art of Iranian (Persian) civilization with a focus on the social and cultural aspects of contemporary Iran. Taught in English.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-1020 (5) Beginning Farsi II

Continuation of FRSI 1010. Completes the presentation of basic structures of Farsi. Continued acquisition of vocabulary and practice of speaking, listening, reading, and writing. Class conducted largely in Farsi. The second half of the course will introduce authentic texts of Persian prose literature. Some poetry may be included. Prereq., FRSI 1010 (min. grade C) or instructor consent required.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-2110 (4) Intermediate Farsi I

Provides an intensive introduction to cultural and literary texts of Iran, along with an introduction of the grammatical and rhetorical complexities of Persian prose and poetry. Students continue to develop speaking, listening, and writing skills through activities based on the readings. Prereq., FRSI 1020 (min. grade C) or instructor consent required. Meets MAPS requirement: foreign language. Approved for arts and sciences core curriculum: foreign language. Formerly FRSI 2010.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-2120 (4) Intermediate Farsi II

Continuation of FRSI 2010. Incorporates more readings in Persian literature, both poetry and prose, and cultural readings. Students continue developing speaking, listening and writing skills based on the readings. Prereq., FRSI 2010 (min. grade C) or instructor consent required. Formerly FRSI 2020.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-3110 (3) Advanced Farsi I

An intensive introduction to both Persian philology and the contemporary novel. Textual analysis of texts ranging from complex to very complex will enable the students to gain a strong grounding in Persian literary texts. Students continue developing speaking, listening, and writing skills through activities based on the readings. Prereq., FRSI 2020 (min. grade C). Formerly FRSI 3010.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)

## FRSI-3120 (3) Advanced Farsi II

This course is the continuation of Farsi 3010. The focus will be on textual analysis and discussion of authentic texts in a wide variety of genres and a wide range of topics. Students continue developing speaking and listening skills through activities based on the readings and develop the ability to write short papers (3-5 pages) in Farsi. Prereq., FRSI 3010 (min. grade C). Formerly FRSI 3120.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Farsi](#)



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

GEEN

## GEEN-1100 (3) Social Impact of Technology

Introduces undergraduate students to the social impact of technology and how technology impacts all aspects of life, the health of planet Earth, and how people interact with each other. Fulfills Engineering social science requirements. Prerequisites: Restricted to students with 0-56 (Freshmen or Sophomore) College of Engineering majors only.

[College of Engineering & Applied Science](#) | [Engineering Administration](#)

## GEEN-1235 (4) Pre-Calculus for Engineers

Prepares students for the challenging content and pace of the calculus sequence required for all engineering majors. The course covers algebra, trigonometry and selected topics in analytical geometry. It prepares students for the calculus courses offered for engineering students. It requires students to engage in rigorous work sessions as they review topics that they must be comfortable with to pursue engineering course work. The course is structured to accustom students to the pace and culture of learning encountered in engineering math courses.

[College of Engineering & Applied Science](#) | [Engineering Administration](#)

## GEEN-1300 (3) Introduction to Engineering Computing

Introduces the use of computers in engineering problem solving, including elementary numerical methods. Teaches programming fundamentals, including data and algorithm structure, and modular programming. Software vehicles include Excel/Vba and Matlab. Coreq., APPM 1350 or equivalent. Restricted to ENGR majors. Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) | [Engineering Administration](#)

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## GEEN-1350 (1) Calculus 1 Work Group

Provides problem-solving assistance to students enrolled in APPM 1350. Student groups work in collaborative learning environment. Student participation is essential. Grading under pass/fail option only. Coreq., APPM 1350.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1360 (1) Calculus 2 Work Group

Provides problem solving assistance for students enrolled in APPM 1360. Conducted in a collaborative learning environment. Student work groups solve calculus problems with assistance of facilitator. Grading under pass/fail option only. Prereq., APPM 1350. Coreq., APPM 1360.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1400 (3) Engineering Projects

First-year engineering students work to solve real engineering design problems in interdisciplinary teams. Completed projects are exhibited at an end-of-semester design expo. In lieu of a textbook (available online), each student is expected to contribute up to \$75 towards their design project and poster, and purchase his/her own pair of safety glasses. Restricted to Engineering majors with 75 or fewer cumulative hours. Prerequisites: Restricted to College of Engineering majors with 75 or less cumulative hours.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1410 (3) Social Innovation and Design for Sustainable Communities

Learn to apply principles of sustainability to designs. Student teams design solutions to real-world problems, integrating scientific and social science perspectives. Emphasis is on the social, economic, cultural, and political context shaping the effectiveness of technical solutions. Restricted to students in the Williams Village North RAPs. Prerequisites: Restricted to Sustainable by Design Residential Academic Program (PSBD) or SEEDS Residential Academic Program (PSEE) students only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1500 (2) Introduction to Engineering

Provides an introduction to the engineering profession, to include a focus on the engineering grand challenges of the future, professional and ethical expectations, and an examination of current disciplines specializations. Provides sufficient knowledge of the engineering disciplines necessary to make an informed major choice. Restricted to Engineering Majors with 75 or less cumulative hours. Prerequisites: Restricted to College of Engineering majors with 75 or less cumulative hours.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1510 (1) Self Management and Leadership Principles 1

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Develops group cohesiveness, mutual support, multicultural awareness, and leadership skills. Topics include collaborative learning, motivation, time management and study skills, personal assertiveness, and career awareness. Open to new freshmen and transfer students. Controlled enrollment. Fulfills one credit hour of the Engineering social science requirement. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1520 (1) Self Management and Leadership Principles 2

Continuation of GEEN 1510. Controlled enrollment. Prereq., GEEN 1510. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-1550 (1) YOU'RE@CU: Undergraduate Career Seminar

Exposes first or second year undergraduate students to engineering research careers through a partner program (YOU'RE@CU), panel discussions with researchers in academics and industry, and exposure to research labs. Restricted to YOU'RE@CU participants. Restricted enrollment; offered pass/fail only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-2050 (3) Engineering Leadership Gateway

Examines concepts of engineering leadership and the essential skills required to become an effective leader. Together students will explore leadership principles, creative and critical thinking, interpersonal skills (e.g. collaboration, conflict resolution, leading in diverse communities), intrapersonal development (e.g. self-appraisal, reflective practice, personal leadership philosophy), organizational competencies (e.g. planning, sustainability, climate), effective communication and ethical decision-making. Instructor consent required. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-2350 (1) Calculus 3 Work Group

Provides problem solving assistance to students enrolled in APPM 2350. This course is conducted in a collaborative learning environment. Student work groups solve calculus problems with the assistance of a facilitator. Grading only under pass/fail option. Prereq., APPM 1360. Coreq., APPM 2350.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-3400 (3) Invention and Innovation

Introduction to invention and product innovation with a hands-on approach. Students explore the invention process, hone their engineering design skills, and explore entrepreneurship (patenting, intellectual property, marketing, raising capital). Student teams design,

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create, and test a potentially commercial product, and exhibit at an end-of-semester design expo. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-3851 (3) Statics for Engineers

Examines vector treatment of force systems and their resultants; equilibrium of frames and machines, including internal forces and three-dimensional configurations; static friction; properties of surfaces, including first and second moments; hydrostatics; and minimum potential energy and stability. Prereq., PHYS 1110. Recommended coreq., APPM 2350. Same as CVEN 2121.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-3852 (3) Thermodynamics for Engineers

Explores fundamental concepts and basic theory, including first and second laws of thermodynamics, properties, states, thermodynamic functions and cycles. Prereq., APPM 2350. Same as MCEN 3012.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-3853 (3) Fluid Mechanics for Engineers

Introduces fluid mechanics and momentum transfer, emphasizing the application of these principles to engineering systems. Prereqs., APPM 2350 or 2360, and GEEN 1300 or CSCI 1300. Same as CHEN 3200.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-3930 (6) Engineering Co-op

Students enrolled in this course participate in a previously arranged, department-sponsored cooperative education program with a university, government agency, or industry. This course is offered only through Continuing Education and may be repeated up to 24 credit hours (four co-op terms). GPA higher than 2.75 is required. GPA higher than 3.00 is strongly recommended.

College of Engineering & Applied Science | Engineering Administration

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## GEEN-4830 (3) Special Topics

May be repeated up to 6 total credit hours. Restricted to engineering students.

College of Engineering & Applied Science | Engineering Administration

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject    Number**

GEOG

## GEOG-1001 (4) Environmental Systems 1---Climate and Vegetation

MLect. and lab. Introduces the atmospheric environment of the Earth: elements and controls of climate and their implications for hydrology, vegetation, and soils. Emphasizes distribution of physical features across the Earth's surface and interactions between humans and their environment, especially those leading to global change on the decade to century time scale. Meets MAPS requirement for natural science: nonlab or lab. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#) [Geography](#) [Physical Geography](#)

## GEOG-1011 (4) Environmental Systems 2---Landscapes and Water

MLect. and lab. Introduces landscapes and flowing water, emphasizing the formation and geographic distribution of mountains, volcanoes, valleys, and deserts, and their shaping by rivers and glaciers. Includes field trips. Meets MAPS requirement for natural science: nonlab or lab. Approved for arts and sciences CORE curriculum: natural science.

[College of Arts & Sciences](#) [Geography](#) [Physical Geography](#)

## GEOG-1982 (3) World Regional Geography

Involves an intellectual journey around the globe, stopping at major regions to study the people, their environments, and how they interact. Topics include the political/economic tensions in changing Europe, conflicts in Brazilian rain forests, transitions facing African peoples, and rapid changes in China. Meets MAPS requirement for social science: geography.

[College of Arts & Sciences](#) [Geography](#) [Human and Cultural Geography](#)

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## GEOG-1992 (3) Human Geographies

Examines social, political, economic, and cultural processes creating the geographical worlds in which we live, and how these spatial relationships shape our everyday lives. Studies urban growth, geopolitics, agricultural development and change, economic growth and decline, population dynamics, and migration exploring both how these processes work at global scale as well as shape geographies of particular places. Meets MAPS requirement for social science: geography.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-2002 (3) Geographies of Global Change

Familiarizes students with spatial and ecological perspectives on economic, political, social, cultural, and environmental changes. Examines roles of transnational corporations, global media, world cities, food security, labor, migration, human rights, ethnicity, nationalism, resources, environmental degradation, and sustainable development in global change. Meets MAPS requirement for social science: geography.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-2053 (4) Mapping a Changing World

Overviews the vital role cartography plays in modern society and contemporary science. Includes fundamentals of reading and creating maps for research and enjoyment. Lab provides hands-on experience with computer-based methods for creating useful maps.

College of Arts & Sciences | Geography | Techniques (Skills)

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## GEOG-2412 (3) Environment and Culture

Examines nature-culture interactions and the effects of development and resource use on environmental quality, as well as practical efforts to manage and protect the environment. Meets MAPS requirement for social science: geography.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-3023 (4) Statistics for Geography

Introduces parametric and distribution-free statistics, emphasizing applications to earth science problems. Not open to students who have taken a college-level statistics course. Same as GEOL 3023. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Conservation (EVOC), Geography (GEOG), Geology (GEOL) or Environmental Studies (ENVS) majors only.

College of Arts & Sciences | Geography | Techniques (Skills)

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## GEOG-3053 (4) Cartography: Visualization and Information Design

Introduction to the fundamentals of cartography--the science and art of map design. Emphasis on map projections, symbolization, and the design of maps with computers. Students produce series of thematic maps with modern computer-assisted techniques. Basic familiarity with computers strongly recommended. Introductory course in statistics recommended (may be taken concurrently). Restricted to junior or senior GEOG/ENVS majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Studies (ENVS) or Geography (GEOG) majors only.

College of Arts & Sciences | Geography | Techniques (Skills)

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## GEOG-3251 (3) Mountain Geography

Surveys mountain environments and their human use with illustrations from temperate and tropical mountain areas.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-3301 (3) Analysis of Climate and Weather Observations

Prereqs., ATOC 1050 and 1060, or GEOG 3601/ATOC 3600/ENVS 3600, or GEOG 1001 and 1-semester calculus. Same as ATOC 3300. Approved for arts and sciences CORE curriculum: natural science.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-3351 (3) Biogeography

Surveys and analyzes plant and animal distributions on a world scale from ecological and historical perspectives. Emphasizes human impact on species. Prereq., GEOG 1001.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-3402 (3) Natural Hazards

Explores the impacts of extreme geophysical events on human society. Emphasizes adaptations to extreme events and ways of reducing vulnerability and damage.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-3412 (3) Conservation Practice and Resource Management

Studies inventory, policy, and management of natural resources. Emphasizes practical approaches to the conservation and management of soil, land, water, and air resources. Restricted to geography and environmental studies majors.

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College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-3422 (3) Conservation Thought

Lect. and rec. Provides an historical survey of human consumption of earthly materials; environmental and global considerations of population growth, cultural attitude, and technological development; and diverse goals and philosophy of conservation movements intimate and place.

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College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-3511 (4) Introduction to Hydrology

Examines hydrologic processes in the surface environment, emphasizing the environment of the western United States. Emphasizes natural processes and their management to augment water resources. Prereq., GEOG 1001 and 1011. Approved for arts and sciences core curriculum: natural science. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Geography (GEOG), Environmental Studies (ENVS) or Ecology and Evolutionary Biology (EBIO) majors only.

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College of Arts & Sciences | Geography | Physical Geography

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## GEOG-3601 (3) Principles of Climate

Describes the basic components of the climate system: the atmosphere, ocean, cryosphere, and lithosphere. Investigates the basic physical processes that determine climate and link the components of the climate system, including the hydrological cycle and its role in climate, climate stability, and global change. Covers forecasting climate, its applications, and human dimensions. Restricted to Geography or Environmental Studies majors only. Prereqs., ATOC 1050 and 1060, or GEOG 3301/ATOC 3300, or GEOG 1001 and 1-semester calculus. Same as ATOC/ENVS 3600. Approved for arts and sciences core curriculum: natural science. Prerequisites: Restricted to Geography or Environmental Studies majors only.

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College of Arts & Sciences | Geography | Physical Geography

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## GEOG-3612 (3) Geography of American Cities

Introduces geography of American cities. Includes demographic and ideological contexts of urban development, emergence of the city system, location theory and rent models, and urban-economic problems.

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College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-3662 (3) Economic Geography

Presents several theories of location of economic activity: general theory of land use, agricultural location theory, plant location theory, central place theory, location of systems of cities, and geographical organization of industries. Studies aggregate geographical structure of regions as the geography of three major markets: labor, product, and capital, including the banking system. Explores the economic

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growth of regions and policies designed to influence regional growth and welfare.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-3672 (3) Gender and the Global Economy

Examines the role of gender in global economy. Explores the impacts of colonialism and modern global economy on gender relations, with particular emphasis on third world societies. Also focuses on related issues of population politics, environmental crisis, women's sexual exploitation, and women's social movements worldwide. Prereqs., GEOG 1982, 1992, 2002, 2412, WMST 2000 or 2050. Same as WMST 3672. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-3682 (3) Geography of International Development

Compares and contrasts global characteristics and processes of development, emphasizing the developing countries of the world. Integrates theories of development, specific development topics, and case studies to explore the problems of development. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-3742 (3) Place, Power, and Contemporary Culture

Presents a radical reexamination of the geography of culture. Examines the relationship between places, power, and the dynamics of culture. Explores how the globalization of economics, politics, and culture shapes local cultural change. Looks at how place-based cultural politics both assist and resist processes of globalization. Recommended prereq., GEOG 1982, 1992, or 2002. Approved for arts and sciences CORE curriculum: contemporary societies.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-3812 (3) Mexico, Central America, and the Caribbean

Introduces the geography of Latin America, focusing on the lands and peoples of Mexico, Central America, and the Caribbean. Examines regional and national culture, history, environment, and population, as well as ongoing environmental and socioeconomic changes. Recommended prereqs., GEOG 1982, 1992, 2002, or 2412.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-3822 (3) Geography of China

Surveys the world's most populous country, examining physical and historical geography, urbanization and regional development, agriculture, population, energy, and the environment. Seeks to situate China's development in a broader Asian and global context. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Geography](#) [Human and Cultural Geography](#)

## GEOG-3840 (1-6) Undergraduate Independent Study

Provides an independent study opportunity, by special arrangement with faculty, for students presenting strong geography preparation. May be repeated up to 8 total credit hours. Restricted to geography majors. Prerequisites: Restricted to Geography majors only.

[College of Arts & Sciences](#) [Geography](#)

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## Courses

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Search by Course Number

Subject Number

GEOG

### [GEOG-3862 \(3\) Geography of Africa](#)

Studies physical and cultural regions of Africa. Analyzes and compares natural and cultural regions and the development of present nation-states. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412.

[College of Arts & Sciences](#) [Geography](#) [Human and Cultural Geography](#)

### [GEOG-3930 \(3\) Internship](#)

Provides an academically supervised opportunity for advanced geography or environmental conservation majors to work in public and private organizations on projects related to the student's career goals and to relate classroom theory to practice. May be repeated up to 6 total credit hours. Restricted to geography and environmental studies majors. Prerequisites: Restricted to Geography or Environmental Studies majors only.

[College of Arts & Sciences](#) [Geography](#)

### [GEOG-4023 \(4\) Introduction to Quantitative Methods in Human Geography](#)

Introduces fundamental statistical and quantitative modeling techniques widely used in geography today. Emphasizes geographic examples and spatial problems, as are statistical routines now available on most computers. Prereq., GEOG 3023 or equivalent. Same as GEOG 5023. Prerequisites: Requires pre-requisite course of GEOG 3023.

[College of Arts & Sciences](#) [Geography](#) [Techniques \(Skills\)](#)

### [GEOG-4043 \(4\) Cartography 2: Interactive and Multimedia Mapping](#)

An advanced course in interactive, multimedia, animated, and Web-based cartography stressing the important role digital cartography

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plays in cyberspace. Focuses on principles of effective cartographic design in multimedia and hypertext environments. Labs are organized around hands-on active learning projects. Prereq., GEOG 3053. Same as GEOG 5043.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-4093 (4) Remote Sensing of the Environment

Covers acquisition and interpretation of environmental data by remote sensing. Discusses theory and sensors as well as manual and computerized interpretation methods. Stresses infrared and microwave portions of the spectrum. Same as GEOG 5093 and GEOL 4093.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-4100 (1-3) Special Topics in Geography

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. See also GEOG 4110 and 4120. May be repeated up to 6 total credit hours. Prereq., instructor consent.

College of Arts & Sciences Geography

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## GEOG-4103 (4) Introduction to Geographic Information Science

Examines construction and use of an information system and its data specifically designed for representing and manipulating geographical data. Emphasizes modern geographical information systems including computer hardware/software with a collection of methods/procedures for recording, transforming, storing/retrieving, analyzing, and mapping geographic data. Prereq., GEOG 2053 or GEOG 3053 and introductory course in statistics. Same as GEOG 5103. Prerequisites: Requires pre-requisite courses of GEOG 2053 or 3053 and introductory course in statistics. Restricted to Junior or Senior Geography (GEOG) or Environmental Studies(ENVS) majors only.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-4110 (1-4) Special Topics in Geography

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. See also GEOG 4100 and 4120. May be repeated up to 6 total credit hours. Prereq., instructor consent.

College of Arts & Sciences Geography

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## GEOG-4120 (1-3) Special Topics in Geography

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. See also GEOG 4100 and 4110. May be repeated up to 6 total credit hours. Prereq., instructor consent.

## GEOG-4173 (3) Research Seminar

Examines the nature of research and develops pregraduate skills for geographic research, emphasizing problem definition, methods, sources, data interpretation, and writing. Recommended for students pursuing honors. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Geography (GEOG) or Environmental Studies (ENVS) majors only.

## GEOG-4201 (3) Biometeorology

Interdisciplinary science, studying the interactions between atmospheric processes and living organisms (plants, animals, and humans). Discusses how organisms adapt to a changing environment. Uses a practical, problem-solving approach to explore these interactions. Prereq., GEOG 1001. Same as ENVS 4201.

## GEOG-4203 (4) Geographic Information Science: Modeling Applications

Extends basic GIS concepts and mechanics. Develop GIS models for human and environmental applications. Grid and vector data models, tessellated and hierarchical data structures, terrain representation, interpolation and kriging, spatial regression. Small group projects design, implement and run GIS models. Prereq., GEOG 4103/5103 or instructor consent. Recommended prereq., working knowledge of GIS software. Same as GEOG 5203.

## GEOG-4241 (4) Principles of Geomorphology

Studies weathering, mass-wasting, fluvial, wind, and marine processes and the resulting landforms. Prereq., GEOG 1011 or any 1000-level sequence in geological sciences. Same as GEOL 4241. Approved for arts and sciences core curriculum: natural science.

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Environmental Conservation (EVOC), Geography (GEOG), Geology (GEOL) or Environmental Studies (ENVS) majors only.

## GEOG-4251 (4) Fluvial Geomorphology

Emphasizes landscapes formed by running water. Includes basic fluid mechanics, sediment transport, hillslope and channel erosion, and sediment yield. Prereqs., Geog 1011 and 3511. Recommended prereq., Geog 3023. Same as Geog 5251.

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## GEOG-4261 (3) Glaciers and Permafrost

Surveys the major terrestrial components of the cryosphere, including permafrost, glaciers, and ice sheets. Emphasizes physical processes involving ice, including thermal behavior, ice deformation, and mass balance, but also considers biogeochemical processes and landforms associated with ice. The climate context, including human interactions and recent climate history, will be considered. The course will be taught in a combination lecture-seminar format. Prereq., GEOG 1011 or GEOL 1010. Recommended prereq., GEOG 4241.

## GEOG-4271 (3) The Arctic Climate System

Understanding the climate of the Arctic requires a synthetic, system oriented approach. The course focuses on the intimate linkages between the atmosphere, ocean and land that give the Arctic region its unique character, link the Arctic to the larger global climate system, and promote understanding the rapid changes occurring in the Arctic. Prereq., GEOG 1001. GEOG 4271 and 5271 are the same course.

## GEOG-4292 (3) Migration, Immigrant Adaptation, and Development

Examines historical and current patterns of migration with an emphasis in international movement. Looks at leading migration theories related to both origin- and destination-based explanations while critically looking at the role of development as a potential cause and consequence of population movement. Finally, covers some aspects of immigrants' social and economic adaptation to their host society. Recommended prereqs., GEOG 1982, 1992, 2002, or 2412. Same as GEOG 5292 and ECON 4292.

## GEOG-4303 (4) GIS Programming for Spatial Analysis

Focuses on the extension of geographic information systems (GIS) through programming as well as on the development of algorithms for spatial analysis and information extraction in vector and raster data. Covers concepts, principles and techniques of programming and solving spatial problems in physical and human Geography. Prereq., GEOG 4103/5103. Recommended prereq., GEOG 4203/5203. Same as GEOG 5303.

## GEOG-4311 (3) Watershed Biogeochemistry

Emphasizes terrestrial-aquatic linkages in headwater catchments, focusing on hydrologic pathways, isotopic and geochemical tracers,

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nutrient cycling, water quality, experimental manipulations, and modeling. Prereq., GEOG 1011 and 3511. Recommended prereq., parametric statistics.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-4321 (3-4) Snow Hydrology

Offers a multidisciplinary and quantitative analysis of physico-chemical processes that operate in seasonally snow-covered areas, from the micro- to global-scale: snow accumulation, metamorphism, ablation, chemical properties, biological aspects, electromagnetic properties, remote sensing, Gis, and quantitative methods. Prereqs., GEOG 1001 or 1011, and any statistics course. Same as GEOG 5321.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-4331 (3-4) Mountain Climatology

Surveys and analyzes climatic characteristics of mountain environments worldwide. Prereq., GEOG 1001 or ATOC 1050 or 1060. Same as GEOG 5331.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-4371 (3) Forest Geography: Principles and Dynamics

Surveys principles of forest geography and ecology. Includes both individual tree responses to environmental factors and species interactions within communities. Emphasizes forest dynamics and their relation to management problems. Prereq., GEOG 1001. Same as GEOG 5371.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-4401 (3) Soils Geography

Discusses chemical and physical properties of soils, soil development, distributions, and management relevant to understanding plant-soil relationships in natural and human-altered landscapes. Prereq., GEOG 1011. Recommended prereq., inorganic chemistry. Same as GEOG 5401.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-4430 (3) Seminar: Conservation Trends

Provides environmental studies or geography majors with an undergraduate format for interdisciplinary discussion and research into

current and future directions of conservation. May be repeated up to 6 total credit hours. Restricted to junior and senior geography and environmental studies majors.

[College of Arts & Sciences](#) [Geography](#)

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## GEOG-4501 (3) Water Resources and Water Management of Western United States

Interprets and analyzes hydroclimatic data, surface, and groundwater. Critically evaluates water use, emphasizing problems associated with geographic maldistribution, appropriations, irrigation, industry, pollution, and regional development. Same as GEOG 5501.

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# Courses

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GEOG

## GEOG-4622 (3) City Life

Analyzes social, behavioral, political, and demographic factors that influence development and maintenance of communities in contemporary urban environments, with primary emphasis on U.S. cities. Recommended prereqs., GEOG 1982, 1992, 2002, or 2412. Same as GEOG 5622.

[College of Arts & Sciences](#)
[Geography](#)
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## GEOG-4632 (3) Development Geography

Provides an overview of development policy and practice, surveying foundational works in Development Studies as well as critical interventions. Required for Graduate Certificate in Development Studies. Prereqs. for GEOG 4632 are GEOG 1982, 1992, 2002 or 2412. Recommended prereq., GEOG 3682. GEOG 4632 and 5632 are the same course.

[College of Arts & Sciences](#)
[Geography](#)
[Human and Cultural Geography](#)

## GEOG-4712 (3) Political Geography

Systematic study of relations between geography and politics, especially as background for better understanding of international affairs. Includes topics such as frontiers and boundaries, power analysis, geopolitics, international political economy, and strategic concepts. Recommended prereqs., GEOG 1982, 1992, 2002, 2412, IAFS 1000, PSCI 2012 or 2223. Restricted to GEOG, IAFS, ENVS, junior/senior majors. Same as GEOG 5712.

[College of Arts & Sciences](#)
[Geography](#)
[Human and Cultural Geography](#)

## GEOG-4722 (3) Field Methods in Human Geography

Examines research methods associated with field work in human geography. Prepares students for fieldwork by focusing on geographic and interdisciplinary field work techniques; interpretation of field data; and discussion of the politics, ethics and gender, race, class, and cross-cultural issues related to field work. Prereqs., 15 credit hours in human geography. Same as GEOG 5722.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4732 (3) Population Geography

Emphasizes spatial aspects of population characteristics including fertility, mortality, migration, distribution, and composition. Includes both theoretical and empirical considerations, in addition to field work and computer simulations. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412. Same as GEOG 5732.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4742 (3) Environments and Peoples

Studies the interaction of people and the environment, including human adaptation and modification of environments, cultural interpretation and construction of landscapes, and natural resources and land management. May be taken twice. Topics vary. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4812 (3) Environment and Development in South America

Presents theoretical approaches to the links between environment and development in Latin America and focuses on analytical discussion of contemporary (and controversial) issues in sustainable development in South America. Examines social, ecological, economic, and political forces influencing the use of natural resources. Recommended prereqs., GEOG 1982, 1992, 2002, 3812, 3422, ANTH 3110, or PSCI 3032.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4822 (3) Environment and Development in China

Examines key environmental problems in relation to China's rapid modernization and development. Recommended prereqs., GEOG 1982, 1992, 2002 or HIST 1608.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4832 (3) Geography of Tibet

Rigorously examines contemporary Tibetan society, culture, and nature from a geographical perspective. Uses readings on contemporary Tibet as an entry point into scholarly research about nationalism, representation, diaspora, landscape and place, sustainable development, natural resource management, identity, and environmentalism. Prereqs., GEOG 3822 or other classes on China. Same as GEOG 5832.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4852 (3) Health and Medical Geography

Examines geographical patterns of health and disease with an emphasis on global health issues. Focuses on three major approaches to medical geographic research: ecological approaches, which systematically analyze relationships between people and their environments; social approaches, including political economy and socio-behavioral approaches; and spatial approaches, which employ maps and spatial analysis to identify patterns of health and disease. Recommended prereqs., GEOG 1001 or 1011, and GEOG 1992, 2002 or 2412. Restricted to juniors/seniors. GEOG 4852 and 5852 are the same course.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4892 (3) Geography of Western Europe

Provides a regional survey of cultural, political, economic, social, and physical geography of Western Europe, emphasizing the distinctive character and problems of each major area and the relationship of the region to the world. Recommended prereqs., GEOG 1982, 1992, 2002 or 2412.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-4990 (3) Senior Thesis

Offers thesis research under faculty supervision. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Geography (GEOG) or Environmental Studies (ENVS) majors only.

College of Arts & Sciences | Geography

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## GEOG-5003 (4) Elements of Geographic Information Systems

Discusses incorporating GIS methods into graduate thesis or dissertation research. Reviews basic mapping concepts (scale and projections), acquiring different types of spatial data (raster and vector), building an error-free database, making simple queries, overlays, charts, and maps. Intended for students who want to learn GIS but lack background skills in computing or cartography. Recommended prereq., some experience with Mac or Windows. Restricted to graduate students.

College of Arts & Sciences | Geography | Techniques (Skills)

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## GEOG-5023 (4) Introduction to Quantitative Methods in Geography

Restricted to graduate students. Same as GEOG 4023.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-5043 (4) Cartography 2: Interactive and Multimedia Mapping

Restricted to graduate students. Same as GEOG 4043. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-5093 (4) Remote Sensing of the Environment

Restricted to graduate students. Same as GEOG 4093 and GEOL 5093. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-5100 (1-4) Special Topics: Geography

Covers various topics outside of the normal curriculum; offered intermittently depending on student demand and availability of faculty.

May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography

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## GEOG-5103 (4) Geographic Information Systems

Prereqs., introductory course in statistics and instructor consent. Restricted to graduate students. Same as GEOG 4103. Prerequisites:

Restricted to Graduate Students only.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-5113 (3) Seminar: Geographic Information Systems

Focuses on the current research topics in geographical information systems and selected areas of application. Includes major journal articles related to each topic. Students complete and present a seminar paper. Prereq., GEOG 4103, 5103, or instructor consent.

Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography Techniques (Skills)

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## GEOG-5152 (3) History and Theory of Geography

History of ideas and institutions that have shaped contemporary geographic inquiry. Examines the evolving relations among human geography, physical geography, environment-society relations, and geographic information processing. Designed to situate graduate student research within major subfields and intellectual currents of geography. Restricted to graduate students. Prerequisites: Restricted to Geography (GEOG) graduate students only.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5161 (3) Research Design in Geography

The human section reads and discusses contemporary research philosophies and methodologies in human geography. Practices the development of research proposals and presentation of research ideas and results. The physical section reads and discusses contemporary research philosophies and methodologies in physical geography (climatology, geomorphology, biogeography, and soils geography). Practices the development of research proposals and presentation of research ideas. Restricted to geography graduate students.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5203 (4) Geographic Information Science: Modeling Applications

Prereq., GEOG 4103/5103 or instructor consent. Restricted to graduate students. Recommended prereq., working knowledge of Gis software. Same as GEOG 4203. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography | Techniques (Skills)

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## GEOG-5211 (3) Seminar: Physical Climatology

Involves a research seminar concerned with problems of mass and energy exchange in the Earth-atmosphere system. Selects topics from such areas as air quality, bioclimatology, hydrology, climate change, and the climates of urban, agricultural, and natural environments. Restricted to graduate students.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5221 (3) Synoptic and Dynamic Climatology

Examines global climates from the standpoint of synoptic and dynamic climatology. Prereqs., GEOG 3201 or equivalent, 3000-level course in climate/atmospheric sciences, and instructor consent. Restricted to graduate students.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5241 (1-3) Topics in Physical Geography

Presents recent research topics that vary from year to year. Consult the online Schedule Planner for specific topics. May be repeated up to 6 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geography](#) [Physical Geography](#)

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GEOG

## GEOG-5251 (4) Fluvial Geomorphology

Restricted to graduate students. Same as GEOG 4251.

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[Geography](#)
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## GEOG-5271 (3) The Arctic Climate System

Understanding the climate of the Arctic requires a synthetic, system oriented approach. The course focuses on the intimate linkages between the atmosphere, ocean and land that give the Arctic region its unique character, link the Arctic to the larger global climate system, and promote understanding the rapid changes occurring in the Arctic. Prereq., GEOG 1001. GEOG 4271 and 5271 are the same course. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Geography](#)
[Physical Geography](#)

## GEOG-5292 (3) Migration, Immigrant Adaptation, and Development

Restricted to graduate students. Same as GEOG 4292 and ECON 4292. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Geography](#)
[Human and Cultural Geography](#)

## GEOG-5303 (4) GIS Programming for Spatial Analysis

Same as GEOG 4303.

[College of Arts & Sciences](#)
[Geography](#)
[Techniques \(Skills\)](#)

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## GEOG-5321 (3-4) Snow Hydrology

Restricted to graduate students. Same as GEOG 4321.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5331 (3-4) Mountain Climatology

Restricted to graduate students. Same as GEOG 4331.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5371 (3) Forest Geography: Principles and Dynamics

Restricted to graduate students. Same as GEOG 4371. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5391 (3) Seminar: Biogeography

Considers in detail current research themes in biogeography. Includes intensive reading of current research literature and preparation of research papers. Restricted to graduate students. Topics vary; may be taken twice.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5401 (3) Soils Geography

Restricted to graduate students. Same as GEOG 4401.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5501 (3) Water Resources and Water Management of Western United States

Restricted to graduate students. Same as GEOG 4501.

College of Arts & Sciences | Geography | Physical Geography

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## GEOG-5622 (3) City Life

Restricted to graduate students. Same as GEOG 4622.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5632 (3) Development Geography

Provides an overview of development policy and practice, surveying foundational works in Development Studies as well as critical interventions. Required for Graduate Certificate in Development Studies. Prereqs. for GEOG 4632 are GEOG 1982, 1992, 2002 or 2412. Recommended prereq., GEOG 3682. GEOG 4632 and 5632 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5642 (3) Seminar: Urban Geography

Restricted to graduate students. Surveys current research topics in urban geography. Emphasizes definition of possible student thesis topics.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5712 (3) Political Geography

Restricted to graduate students. Same as GEOG 4712. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5722 (3) Field Methods in Human Geography

Restricted to graduate students. Same as GEOG 4722.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5732 (3) Population Geography

Restricted to graduate students. Same as GEOG 4732. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5762 (3) Sustainable Development: Theory and Classic Issues

Provides an assessment of sustainable development primarily as it relates to the Third World. Follows a sequence from development theory through facts, approaches, and goals. Investigates specific topical problems and closes with analyses of case studies. Restricted to graduate students.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5772 (3) Sustainable Development: Institutions and Policy

Investigates the links between social theory, development practice, and policy. Restricted to graduate students.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5782 (3) Sustainable Development: Critique

Investigates historical and contemporary theories and critiques of development and their implications for geographic theory and method. Focuses on the role of representation in evaluating case studies and examining the potential for a sustainable development. Prereq., graduate standing. Recommended prereq., GEOG 5762.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5832 (3) Geography of Tibet

Same as GEOG 4832.

College of Arts & Sciences | Geography | Human and Cultural Geography

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## GEOG-5840 (1-3) Graduate Independent Study

Offers independent research for master's students only. May be repeated up to 6 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Geography

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## GEOG-5852 (3) Health and Medical Geography

Examines geographical patterns of health and disease with an emphasis on global health issues. Focuses on three major approaches to medical geographic research: ecological approaches, which systematically analyze relationships between people and their environments; social approaches, including political economy and socio-behavioral approaches; and spatial approaches, which employ maps and

spatial analysis to identify patterns of health and disease. Recommended prereqs., GEOG 1001 or 1011, and GEOG 1992, 2002 or 2412. Restricted to juniors/seniors. GEOG 4852 and 5852 are the same course.

[College of Arts & Sciences](#) [Geography](#) [Human and Cultural Geography](#)

## GEOG-5930 (3) Advanced Internship

Provides an academically supervised opportunity for graduate-level geography majors to work in public and private organizations on advanced projects related to geographic theory and their career goals. May be repeated up to 7 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geography](#)

## GEOG-5961 (3) Theories of Climate and Climate Variability

Critically reviews current theories of climatic variability based on analysis of the different physical processes affecting climate. Restricted to graduate students. Same as ATOC 5960.

[College of Arts & Sciences](#) [Geography](#) [Physical Geography](#)

## GEOG-6180 (1-3) Seminar: Geographic Problems

Applies research methods to selected problems. Topics vary with instructor. Restricted to graduate students. May be repeated up to 7 total credit hours.

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GEOG

### [GEOG-6211 \(1-3\) Readings in Climatology](#)

Discusses selected topics in current climatological literature. Specific themes vary. Restricted to graduate students. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geography](#) [Physical Geography](#)

### [GEOG-6402 \(3\) Seminar: Comparative Environmental Studies](#)

Critically examines cross-cultural experience with adjustments to natural hazards and political management of resource exploitation. Restricted to graduate students. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geography](#) [Human and Cultural Geography](#)

### [GEOG-6443 \(2\) Remote Sensing Field Methods](#)

Theory and practical field measurements for validation of airborne and spaceborne spectral image acquisition. Emphasizes radiative scattering properties of soil, vegetation, cryosphere, and atmosphere. Also focuses on characterization and calibration of instrumentation to measure these properties. Restricted to graduate students. Prereqs., GEOL/GEOG 4093/5093. Recommended prereq., GEOL 5240. Same as EBIO 6440.

[College of Arts & Sciences](#) [Geography](#) [Techniques \(Skills\)](#)

### [GEOG-6712 \(3\) Seminar: Political Geography](#)

Considers in detail history and methodology of the field, including an analysis of selected systematic topics such as frontiers and boundaries, international rivers, conflicting claims to territory, and electoral geography. Restricted to graduate students. May be repeated

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up to 7 total credit hours.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-6732 (3) Formal Population Geography: Analysis and Forecasting

An in-depth introduction to formal Demography. In addition to learning the basic demographic tools used nowadays in fertility, marriage, mortality, migration, and forecasting/projections, it also looks at some potential links between formal and statistical demographic work that would enable the student to apply some of the methods learnt in an econometric or multivariate setting. Prereqs., GEOG 4023/5023 or equivalent. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-6742 (3) Seminar: Cultural Geography

Explores various geographic topics emphasizing the concept of culture. Emergence of several points of view in the development of cultural geography. Restricted to graduate students. May be repeated up to 7 total credit hours.

College of Arts & Sciences Geography Human and Cultural Geography

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## GEOG-6940 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography

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## GEOG-6950 (1-6) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography

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## GEOG-7840 (1-3) Graduate Independent Study

Offers independent research for doctoral students only. Restricted to graduate students. May be repeated up to 6 total credit hours.

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geography

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## GEOG-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geography](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

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GEOL

## GEOL-1010 (3) Introduction to Geology

Introductory geology for majors and nonmajors. Studies Earth, its materials, its characteristics, its dynamic processes, and how it relates to people. Separate lab (GEOL 1030) is optional. Meets MAPS requirement for natural science: nonlab. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#)

[Geological Sciences](#)

## GEOL-1020 (3) Introduction to Earth History

Examines how Earth's interior and surface, the atmosphere and climate, the oceans, and life interact and have changed over the immensity of geologic time. For majors and non-majors. Separate lab (GEOL 1030) is optional. Prereq., GEOL 1010. Credit not granted for this course and GEOL 1040. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#)

[Geological Sciences](#)

## GEOL-1030 (1) Introduction to Geology Laboratory 1

Features field trips to local points of geologic interest. Studies rocks and topographic and geologic maps. Prior or current registration in 1000-level geology recommended. Meets MAPS requirements for natural science lab, if taken with GEOL 1010. Approved for arts and sciences core curriculum: natural science. Formerly GEOL 1080.

[College of Arts & Sciences](#)

[Geological Sciences](#)

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## GEOL-1040 (3) Geology of Colorado

Reviews the geologic evolution and history of Colorado. It first develops the basic concepts needed to interpret the geology, and then systematically shows how the state evolved through geologic time. The course is designed for those who enjoy understanding the beauty and splendor of the state. Prereq., GEOL 1010. Credit not granted for this course and GEOL 1020. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-1060 (3) Global Change---An Earth Science Perspective

Focuses on evidence for planetary warming, climate change, glacier and ice-sheet melting, and sea level rise both now and in the recent past. Attempts to develop understanding of the interactions within the coupled Earth system that regulate such changes. Utilizes examples from the geological and instrumental records, and evaluates the global warming forecast. Prereq., GEOL 1010. Meets MAPS requirement for natural science: nonlab. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-2001 (4) Planet Earth

Explores the dynamics of planet Earth with particular emphasis on the factors that make the planet habitable. Includes examination of heat balance, hydrology, geomorphology, biogeochemistry and climate history through both lecture and lab-based activities. The course is required for the Environmental Geoscience track within the Geology major and will introduce students to the major concepts in contemporary Earth system science. Prereqs., GEOL 1010, 2100 or ENVS 1000 or instructor consent required.

College of Arts & Sciences Geological Sciences

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## GEOL-2100 (3) Environmental Geology

Introduces the influences of geologic processes on human lives and the changes human actions cause in geologic systems. Uses examples and case studies from Colorado and the West. Approved for the arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-2700 (2) Introduction to Field Geology

Introduces basic field techniques necessary to collect geologic data and samples, and necessary to map geologic units. Prereqs., GEOL 1030 and either GEOL 1010 and 1020; or GEOL 1010 and 1040; or GEOL 1010 and 1060; or GEOG 1001 and 1011.

College of Arts & Sciences Geological Sciences

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## GEOL-3010 (3) Introduction to Mineralogy

Two lects. and one lab per week. Origin, occurrence, identification, classification, and uses of minerals. Applications of mineralogy to economic geology and petrology are emphasized. Prereq., Chem 1111 and Math 1300.

College of Arts & Sciences Geological Sciences

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## GEOL-3020 (3) Petrology

Field relations, petrography, petrology, chemistry, and origins of igneous and metamorphic rocks are studied by means of lectures, reading, and lab and field experience. Labs include instruction in the fundamentals of optical petrography and the study of rocks in thin section. Prereq., GEOL 3010.

College of Arts & Sciences Geological Sciences

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## GEOL-3023 (4) Statistics for Geography

Introduces parametric and distribution-free statistics, emphasizing applications to earth science problems. Same as GEOG 3023.

College of Arts & Sciences Geological Sciences

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## GEOL-3030 (3) Introduction to Hydrogeology

Introduces groundwater flow concepts, hydrologic cycle, physical and chemical properties, flow net, hydraulic potential, geologic controls on heterogeneity and anisotropy, aquifers and aquitards in a geologic system, saturated and unsaturated flow, flow to a well, pumping tests, and role of groundwater in geologic processes. Prereqs., GEOL 1010 or 2001, and MATH 1300; or instructor consent.

College of Arts & Sciences Geological Sciences

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## GEOL-3040 (3) Global Change: The Recent Geological Record

Geological records in lakes, oceans, deserts, and around glaciers indicate the significant changes in the global systems that have taken place over the last few hundred or thousand years. Explores the timing and nature of these changes. Prereqs., any two-course sequence of natural science core courses. Credit not granted for this course and GEOL 4070. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-3050 (2) GIS for Geologists

Introduction to Geographic Information Systems (GIS) techniques focused on geological applications. GIS analyzing, mapping, and GPS use are covered. Basic computer skills are a plus before entering the class.

College of Arts & Sciences Geological Sciences

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## GEOL-3070 (3) Introduction to Oceanography

Investigates the broad-scale features and dynamics of Earth's oceans. The course is roughly divided amongst the four major, interrelated disciplines of oceanography: marine geology, marine chemistry, physical oceanography (i.e. circulation), and marine biology. Specific topics include seafloor spreading, marine sediments, salinity, biogeochemical cycles, currents, waves, tides, primary production, marine ecology, marine resources, global warming, and much more. Prereq., any two-course sequence of natural science courses. Same as ATOC 3070. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-3090 (3) Developing Scientific Writing Skills

Focuses on the development of scientific writing skills. Enhances student ability to write professionally, revise text, and review the work of others. Writing assignments integrate the subject matter of different topics in earth science. Prereq., a lower division writing course and one of the following: GEOL 2001, 2700, 3010, 3030, 3120, 3230, 3320, 3430, or 3820. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Geological Sciences

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## GEOL-3120 (4) Structural Geology

Geometrical techniques for describing and illustrating geological structures. Major topics include graphic methods and geometry of fractures and folds. Prereqs., any 1000-level sequence in geological sciences.

College of Arts & Sciences Geological Sciences

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## GEOL-3130 (3) Global Warming: Understanding the Forecast

Uses the example of man-made climate change to develop an analytical understanding of the Earth system (solid, fluid, and living) that can be used to interpret the complex and uncertain forecast. Emphasis is given to the concepts of forcing, feedback and response in order to examine natural vs. man-made environmental changes and climate change mitigation strategies.

College of Arts & Sciences Geological Sciences

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## GEOL-3230 (3) Earth Materials

Provides introduction to the classification, composition and properties of Earth rocks and minerals, with emphasis on near surface Earth materials. Two lectures and one lab per week. Labs include instruction on optical mineralogy and on the study of rocks in thin section. Prereqs., CHEM 1111 and MATH 1300.

College of Arts & Sciences Geological Sciences

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## GEOL-3300 (3) Extraterrestrial Life

Discusses the scientific basis for the possible existence of extraterrestrial life. Includes origin and evolution of life on Earth; possibility of life elsewhere in the solar system, including Mars; and the possibility of life on planets around other stars. Prereq., one-year sequence in a natural science. Same as ASTR 3300.

College of Arts & Sciences Geological Sciences

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## GEOL-3320 (3) Introduction to Geochemistry

Introduces chemical principles as applied to geologic processes. Includes an introductory discussion of mineral and rock chemistry, aqueous geochemistry, and organic geochemistry. Prereqs., CHEM 1111 , CHEM 1133, and MATH 1300.

College of Arts & Sciences Geological Sciences

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## GEOL-3410 (3) Paleobiology

Surveys morphology, ecology, and evolution of ancient animal and plant life and their interactions on Earth. Fossils used to solve geological and biological problems. Prereqs., any 1000-level sequence in geological science or environmental, population, and organismic biology or instructor consent.

College of Arts & Sciences Geological Sciences

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## GEOL-3430 (4) Sedimentology and Stratigraphy

Introduces the study of sedimentary rocks emphasizing their origin, characteristics, and interpretation; and the principles and techniques for establishing the temporal order and spatial distribution of sedimentary layers. Prereq., GEOL 1010 and GEOL 1020 or 1040, and GEOL 1030, and GEOL 2700 or 3010, or instructor consent.

College of Arts & Sciences Geological Sciences

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## GEOL-3500 (3) Earth Resources and the Environment

Examines Earth's most important natural resources and their impact on society and the environment. Addresses the geology, occurrence, production, and use of petroleum, coal, mineral, and water resources. Future world energy supply and demand, conservation, and the transition from fossil fuels to non-polluting renewable resources are discussed. Prereq., GEOL 1010 or 1060. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

## GEOL-3520 (3) Energy & Climate Change: An Interdisciplinary Approach

Examines sources of energy and other resources in light of their availability, use, environmental impact, as well as their impact on policy, economics and values. As fossil fuels are the dominant energy source today, particular emphasis is placed on climate impacts and the carbon cycle. All material is assessed through the lenses of the physical sciences, policy, ethics and economics. Prereq., a two-course sequence in any natural science. May be repeated up to 6 total credit hours. Same as ENVS 3520. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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# Courses

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GEOL

## GEOL-3540 (3) Introduction to Petroleum Geology

Discusses the origin and distribution of conventional and unconventional petroleum resources, source rocks, types of traps and seals, reservoir rock properties, exploration methods (seismic data analysis and interpretation, formation evaluation, subsurface mapping), reservoir characterization and modeling, reserves calculations. Prereqs., GEOL 1010 and MATH 1300 or APPM 1350, or instructor consent.

[College of Arts & Sciences](#) [Geological Sciences](#)

## GEOL-3720 (3) Evolution of Life: The Geological Record

Discusses the evolution of life on Earth, beginning with the earliest origins and surveying the major steps that led to the rise of higher plants and animals. Covers modern ideas on the causes of periodic mass extinctions in both the marine and terrestrial realms. Emphasizes geologic evidence for the pathways of evolution, using examples from the ordinary to the bizarre. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Geological Sciences](#)

## GEOL-3820 (3) The Fluid Earth

Examines the myriad forms of fluid behavior found on Earth, from the atmosphere to the inner core. Explores how basic principles of fluid physics may be used to understand a broad range of earth processes, including mantle convection, atmosphere and ocean dynamics, stream flow, lava spreading, and glacier motion, among others. Covers fundamental fluid concepts such as viscosity, pressure, convection, friction, and free-surface flow. Prereqs., MATH 1300, or APPM 1340 and 1345, or APPM 1350, or equivalent. Recommended prereq., GEOL 1010 or equivalent.

[College of Arts & Sciences](#) [Geological Sciences](#)

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## GEOL-3930 (1-6) Internship

Offers an academically supervised opportunity for geological sciences majors to work with public or private organizations. Projects are usually associated with students' career goals; each project has an academic emphasis. Prereq., junior standing and completion, with a B or better, of at least two courses for geology majors.

College of Arts & Sciences Geological Sciences

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## GEOL-3950 (3) Natural Catastrophes and Geologic Hazards

Surveys historic and prehistoric natural disasters, their cause, and potential for recurrence. Meteorite impact, earthquakes, volcanic eruptions, tsunamis, landslides, floods, magnetic reversals, and major extinction events. Course formerly numbered as GEOL 4950. Prereq., one year science. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-4060 (4) Oceanography

Examines the ocean as a system influencing the Earth's surficial processes and climate. Composition and properties of seawater, ocean circulation, waves, tides, coastal-, shallow-, and deep-water processes, biogeochemical cycles, deep sea sediments. Laboratory emphasizes the use of oceanographic data. Prereq., one semester chemistry, physics, or geology. Same as GEOL 5060.

College of Arts & Sciences Geological Sciences

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## GEOL-4070 (3) Paleoclimatology

Covers the primary forcings and feedbacks that determine Earth's energy balance and the resultant climate system on decadal to millennial time scales. Covers ocean/atmosphere circulation, the role of ice sheets in the climate system, monsoons, Holocene climate change and 20th Century warming. Includes coverage of the proxies available to reconstruct climates of the past and the archives that contain these proxies. Recommended for natural science majors only and recommended prerequisite of ENVS or GEOL introduction sequence. Credit not granted for this course and GEOL 3040.

College of Arts & Sciences Geological Sciences

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## GEOL-4093 (4) Remote Sensing of the Environment

Covers acquisition and interpretation of environmental data by remote sensing. Discusses theory and sensors, as well as manual and computerized interpretation methods. Stresses infrared and microwave portions of the spectrum. Same as GEOL 5093 and GEOG 4093.

College of Arts & Sciences Geological Sciences

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## GEOL-4130 (3) Principles of Geophysics

Students are introduced to fundamental geophysics including seismology, geomagnetism, gravity, radiometric dating, and heat flow with applications to plate tectonics and exploration of the subsurface. Prereqs., MATH 1300 and PHYS 1110 and any 1000-level sequence in geological sciences; GEOL 3120 recommended.

College of Arts & Sciences Geological Sciences

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## GEOL-4160 (3) Introduction to Biogeochemistry

Covers fundamentals of biogeochemical cycling, emphasizing water, carbon, and nutrient dynamics in terrestrial ecosystems; chemical interactions of atmosphere, biosphere, lithosphere, and hydrosphere; and natural and human-managed environments. Prereqs., GEOL 3320 or EBIO 3270, and CHEM 1011 or higher. Same as ENVS 4160 and EBIO 4160.

College of Arts & Sciences Geological Sciences

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## GEOL-4241 (4) Principles of Geomorphology

Studies weathering, mass-wasting, fluvial, wind, and marine processes and the resulting landforms. Prereq., GEOG 1011 or any 1000-level sequence in geological sciences. Same as GEOG 4241. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Geological Sciences

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## GEOL-4270 (3) Marine Chemistry and Geochemistry

Examines the chemical, biological, geological, and physical processes affecting (and affected by) the chemistry of the oceans. Topics include: chemical separation in seawater; the marine carbon cycle and its long-term control on atmospheric CO<sub>2</sub>; the large-scale interdependence of nutrient distributions and biological productivity, chemical tracers of ocean circulation; and the chemistry of marine sediments, including early diagenesis. Prereq., CHEM 1113/1114 and intro geology and/or oceanography or equivalent. Restricted to juniors/seniors.

College of Arts & Sciences Geological Sciences

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## GEOL-4330 (3) Cosmochemistry

Investigates chemical and isotopic data to understand the composition of the solar system: emphasis on the physical conditions in various objects, time scales for change, chemical and nuclear processes leading to change, observational constraints, and various models that attempt to describe the chemical state and history of cosmological objects in general and the early solar system in particular. Prereq., upper-div undergrad or grad standing in physical science. Recommended prereq., upper-div undergrad Chem, Phys, or Math. Same as GEOL 5330 and ASTR 4330.

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College of Arts & Sciences Geological Sciences

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## GEOL-4474 (4) Vertebrate Paleontology

Discusses the history and evolution of the vertebrates, including the phylogenetic relationships and evolutionary patterns of the major groups. Lab focuses on comparative vertebrate osteology and fossil representation of major groups. Prereqs., GEOL 1010, 1020, and 3410, or instructor consent. Restricted to juniors and seniors. Same as GEOL 5474. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Geological Sciences

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## GEOL-4500 (3) Critical Thinking in the Earth Sciences

Deals with controversies within the broad realm of geological sciences, including planetary geology, evolution, paleobiology, global change, environmental issues, plate tectonics, resources, other societal problems, or geologic thought in general. Students are provided the opportunity to analyze and debate scientific issues in the earth sciences. May be repeated up to 6 total credit hours. Prereq., any 1000-level geological science sequence.

College of Arts & Sciences Geological Sciences

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## GEOL-4550 (3) Petroleum Reservoir Characterization and Modeling

Introduces concepts and methods of petroleum reservoir analysis and 3-D reservoir modeling using subsurface data (cores, well logs, 3-D seismic) and outcrop analogs. Examines petroleum system, petrophysics (lithology, porosity, permeability, capillary pressure, flow units), and sequence-stratigraphic, facies, and structural controls on reservoir properties, heterogeneity, and recovery efficiency. Deterministic and stochastic reservoir modeling methods are addressed. Prereqs., GEOL 1010, 1020, and 3430 or instructor consent. Restricted to juniors/seniors. Same as GEOL 5550. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Geological Sciences

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## GEOL-4670 (3) Isotope Geology

Introduces principles of stable and radiogenic isotope systematics in inorganic and organic geochemistry. Emphasizes application of isotope data to problems in igneous, metamorphic, and sedimentary petrology, geobiochemistry, and petroleum genesis. Prereqs., CHEM 1131, MATH 1300, and GEOL 3020. Same as GEOL 5670.

College of Arts & Sciences Geological Sciences

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## GEOL-4700 (1-4) Special Geological Topics

Studies in selected geological subjects of special current interest (for undergraduates). May be repeated up to 9 total credit hours within a term. Prereq., instructor consent. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or

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Senior).

College of Arts & Sciences Geological Sciences

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## GEOL-4711 (2) Igneous and Metamorphic Field Geology

Applies field techniques to interpretation of igneous and metamorphic rocks. Field exercises and lectures focus on collecting data required to map igneous and metamorphic rock units. Prereqs., GEOL 2700 or 2001 and GEOL 3020.

College of Arts & Sciences Geological Sciences

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## GEOL-4712 (2) Structural Field Geology

Methods of field study of structure of rocks, including observations, data collection, and interpretation to understand geometry of deformation and causative processes and kinematics. Field projects are mapped using different scales, air photos, topographic maps, and compass and tape. Prereqs., GEOL 2700 or 2001, and GEOL 3120.

College of Arts & Sciences Geological Sciences

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## GEOL-4714 (2) Field Geophysics

Applies geophysical field techniques and data interpretation to studying geological and engineering problems. Fieldwork includes seismic, gravity, magnetic, and electrical measurements. Prereqs., GEOL 2700 or 2001, and MATH 1300 and PHYS 1110, or instructor consent.

College of Arts & Sciences Geological Sciences

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## GEOL-4715 (2) Field Techniques in Hydrogeology

Introduces various field techniques and data analysis methods in hydrogeologic studies for students in geology, environmental studies, geography, and civil engineering. Exercises include mapping ground water levels, conducting slug and pumping tests, measuring stream flows, interpreting aquifer parameters from geophysical measurements, and using field data for water budget analysis. Prereq., GEOL 2001 or 2700.

College of Arts & Sciences Geological Sciences

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## GEOL-4716 (2) Environmental Field Geochemistry

Develops basic field skills in the most commonly performed tasks required for the environmental characterization of solid and aqueous wastes. Media of study include soils, stream sediments, surface waters, ground waters, and atmospheric particulates. Prereqs., GEOL 2700 or 2001, and CHEM 1011/1031, or CHEM 1113/1133, and GEOL 3320 or instructor consent.

## GEOL-4717 (2) Field Seminar in Geology and Tectonics

Studies geologic features in and around Colorado to gain an overview of the geologic and tectonic evolution of the western U.S. Prereqs., GEOL 2700 or 2001, and one or more of GEOL 3120, 3320, or 3430.

## GEOL-4721 (2) Field Methods in Active Tectonics

Analysis of active geologic structures, including strike slip fault systems, secondary structures in stepovers and related eruptive centers. Includes the use of digital imagery, elevation models, offset geomorphic features and Quaternary deposits to determine local deformation rates and their relation to plate motions. Prereqs., GEOL 2700 or 2001 and GEOL 3120. Recommended prereq., GEOL 4712.



## Courses

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GEOL

### GEOL-4840 (1-3) Independent Study in Geology

Time and credit to be arranged. Numbered GEOL 4840 through GEOL 4849. For advanced undergraduates who have high scholastic standing. Open only upon consultation with department advisor. May be repeated up to 7 total credit hours.

[College of Arts & Sciences](#) [Geological Sciences](#)

### GEOL-4851 (1-3) Independent Study in Geoscience Education

May be repeated up to 3 credit hours.

[College of Arts & Sciences](#) [Geological Sciences](#)

### GEOL-4960 (1) Writing in Geosciences

Emphasizes strategies of literature research and scientific writing in the geosciences. Includes small writing assignments and a larger library research paper. Prereq., 15 hours of upper-division course work in geological sciences.

[College of Arts & Sciences](#) [Geological Sciences](#)

### GEOL-4990 (1-3) Honors Thesis

Supervised project involving original research in any area of the geological sciences. The thesis is submitted to the Honors Program of the College of Arts and Sciences and is orally defended. The candidate must have a cumulative GPA of 3.30 or better and must be accepted by the departmental honors committee.

College of Arts & Sciences Geological Sciences

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## GEOL-5060 (4) Oceanography

Same as GEOL 4060.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5080 (3) Advanced Hydrogeology and Modeling Concepts

Introduces advanced groundwater flow and modeling concepts, equations for steady state and transient flow, saturated and unsaturated flow, finite difference method, application of modeling in geologic processes, radial flow and aquifer parameters, infiltration and groundwater recharge, model calibration, verification, and prediction. Prereqs., MATH 2300, Fortran, or instructor consent.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5093 (4) Remote Sensing of the Environment

Same as GEOL 4093 and GEOG 5093. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5110 (3) Geomechanics

Introduces fundamental physical processes important to the transport of heat and mass in the Earth and on Earth's surface. Provides practice with quantitative treatment of geological problems. Solutions for each problem are derived from first principles, including conservation and flux laws. Emphasizes heat conduction and viscous fluid flow. Prereq., calculus. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5270 (3) Marine Chemistry and Geochemistry

Same as GEOL 4270.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5280 (3) Aqueous and Environmental Geochemistry

Explores the fundamentals of low-temperature geochemistry to investigate element speciation and chemical behavior in waters, soils and sediments. Topics include water-rock interaction and weathering, mineral dissolution and precipitation reactions, aqueous complexation, mineral surface chemistry, kinetics, element cycles, and redox biogeochemistry. Includes exposure to spectroscopic tools, computer simulations, and microbial geochemistry. Prereq., GEOL 3320 or 1 year of college chemistry or instructor consent.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5305 (3) Global Biogeochemical Cycles

Focuses on the cycling of elements at the global scale with a particular emphasis on human modification of biogeochemical cycles. Major biogeochemical cycles, their past dynamics, present changes, and potential future scenarios will be addressed. Ecosystem to global-scale model of the earth system will be discussed along with global scale measurements of element fluxes from satellites, aircraft, and measurement networks. Prereq., general chemistry, some organic chemistry. Same as ENVS 5840. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5330 (3) Cosmochemistry

Same as GEOL 4330 and ASTR 5330.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5420 (3) Quaternary Dating Methods

In-depth survey of standard and experimental dating methods that provide absolute ages for events of the last two million years of Earth history. Includes theory and application of radiocarbon, uranium series, amino acid, thermo-luminescence, fission track, potassium/argon, hydration, light stable isotopes, and other radioactive techniques. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5430 (3) Paleoceanography and Paleoclimatology

Examines scientific tools, data, and theories related to the dramatically varied past climate of Earth. Focus will be on marine records of climate change and ocean circulation, but ice core and continental archives will also be discussed. Course will cover the Cretaceous Period to the present, with particular emphasis on the past 150,000 years (the last ice age cycle). Prereq., intro geology or equivalent. Recommended prereq., intro oceanography or atmospheric science. Prerequisites: Restricted to Graduate Students only.

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## GEOL-5474 (4) Vertebrate Paleontology

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Same as GEOL 4474 and MUSM 5474.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5550 (3) Petroleum Reservoir Characterization and Modeling

Restricted to graduate students. Same as GEOL 4550.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5670 (3) Isotope Geology

Same as GEOL 4670.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5690 (3) Tectonic History of the Western United States

Provides students with the practical tools needed to make tectonic interpretations through study of the geologic history of the western United States and the geodynamic models used in interpreting that history. Paleomagnetism, geobarametry, geothermometry, geodynamic modeling, and elements of structural geology and stratigraphy are topics considered in this class. Prereqs., GEOL 3120 and PHYS 1110.

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## GEOL-5700 (1-4) Geological Topics Seminar

Seminar studies in geological subjects of special current interest are offered primarily for graduate students, as departmental staff and facilities permit. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5711 (1-3) Igneous and Metamorphic Field Geology

Applies field techniques to interpretation of igneous and metamorphic rocks. Field exercises and lectures focus on collecting data required to map igneous and metamorphic rock units. Prereqs., GEOL 2700 or 2011 and GEOL 3020 or equivalent. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5712 (1-3) Structural Field Geology

Methods of field study of structure of rocks, including observations, data collection, and interpretation to understand geometry of deformation and causative processes and kinematics. Field projects are mapped using different scales, air photos, topographic maps, and compass and tape. Prereqs., GEOL 2700 or 2001 and GEOL 3120 or equivalent. May be repeated up to 6 total credit hours.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5714 (1-3) Field Geophysics

Applies geophysical field techniques and data interpretation to studying geological and engineering problems. Fieldwork includes seismic, gravity, magnetic, and electrical measurements. Prereqs., GEOL 2700 or 2001 and MATH 1300 and PHYS 1110 or equivalent or instructor consent required. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5715 (1-3) Field Techniques in Surficial Geology and Geohydrology

Introduces various field techniques and data analysis methods in hydrogeologic studies for students in geology, environmental studies, geography, and civil engineering. Exercises include mapping ground water levels, conducting slug and pumping tests, measuring steam flows, interpreting aquifer parameters from geophysical measurements, and using field data for water budget analysis. Prereqs., GEOL 2001 or 2700 or equivalent. May be repeated up to 6 total credit hours.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5716 (1-3) Environmental Field Geochemistry

Develops basic field skills in the most commonly performed tasks required for the environmental characterization of solid and aqueous wastes. Media of study include soils, stream sediments, surface waters, ground waters, and atmospheric particulates. Prereqs., GEOL 2700 or 2001 and CHEM 1011 and 1031, or CHEM 1113 or 1133 and GEOL 3320 or equivalent or instructor consent required. May be repeated up to 6 total credit hours.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5717 (1-3) Field Seminar in Geology and Tectonics

Studies geologic features in and around Colorado to gain an overview of the geologic and tectonic evolution of the western U.S. Prereqs., GEOL 2700 or 2001 and one or more of GEOL 3120, 3320 or 3430 or equivalent. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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# Courses

Search by College, Department & Category

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Search by Course Number

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GEOL

## GEOL-5800 (3) Planetary Surfaces and Interiors

Examines processes operating on the surfaces of solid planets and in their interiors. Emphasizes spacecraft observations, their interpretation, the relationship to similar processes on Earth, the relationship between planetary surfaces and interiors, and the integrated geologic histories of the terrestrial planets and satellites. Prereq., graduate standing in physical sciences or instructor consent. Same as ASTR 5800. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

## GEOL-5810 (3) Planetary Atmospheres

Covers the structure, composition, and dynamics of planetary atmospheres. Includes the origin of planetary atmospheres, chemistry and cloud physics, greenhouse effects, climate, and the evolution of planetary atmospheres---past and future. Same as ATOC 5810 and ASTR 5810.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

## GEOL-5820 (3) Origin and Evolution of Planetary Systems

Considers the origin and evolution of planetary systems, including protoplanetary disks, condensation in the solar nebula, composition of meteorites, planetary accretion, comets, asteroids, planetary rings, and extrasolar planets. Applies celestial mechanics to the dynamical evolution of solar system bodies. Prereq., graduate standing in physical sciences or instructor consent. Same as ASTR 5820 and ATOC 5820. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

## GEOL-5830 (3) Topics in Planetary Science

Current topics in planetary science, based on recent discoveries, spacecraft observations, or other developments. Focuses on a specific topic each time it is offered, such as Mars, Venus, Galilean satellites, exobiology, comets, or extrasolar planets. May be repeated up to 6 total credit hours, provided the topics vary. Prereq., graduate standing in physical sciences or instructor consent. Same as ATOC/ASTR 5830.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5835 (1) Seminar in Planetary Science

Studies current research on a topic in planetary science. Students and faculty give presentations. Subjects may vary each semester. May be repeated up to 4 total credit hours to meet candidacy requirements. Prereq., graduate standing or instructor consent. Same as ATOC 5835 and ASTR 5835. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5840 (1-3) Independent Study-Quaternary Geology

Numbered GEOL 5840 through GEOL 5851. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-5852 (1-3) Independent Study--GIS Applications in Quaternary Geosciences

Leads students through quantitative spatial analysis of environmental and paleoclimatic problems. Each student will develop a project from start to finish, with emphasis on raster GIS for building large empirical databases that bear on process and variability.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-6060 (4) Petroleum Geology of Turbidite Systems

Covers the exploration and production aspects of petroleum submarine fans and turbidite systems. A one-week field trip to Arkansas is included. Students are responsible for part of the trip expenses. Prereq., GEOL 6330.

College of Arts & Sciences Geological Sciences Graduate Course

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## GEOL-6310 (3) Sedimentary Petrology

Interpretation of depositional and diagenetic history of sedimentary rocks as determined from thin-section studies. Prereqs., GEOL 3010,

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3020, and 3430. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6330 (4) Applied Sequence Stratigraphy and Basin Analysis

Develops skills in the stratigraphic interpretation of seismic reflection data, recognition of sequence stratigraphy in well logs and outcrop, and their applications to basin analysis in petroleum exploration. Prereqs., graduate standing, introductory undergraduate physics, and sedimentology/stratigraphy. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6610 (3) Earth and Planetary Physics 1

Offered alternate years. Mechanics of deformable materials, with applications to earthquake processes. Introduces seismic wave theory. Inversion of seismic data for the structure, composition, and state of the interior of Earth. Same as ASTR 6610 and PHYS 6610.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6620 (3) Earth and Planetary Physics 2

Offered alternate years. Space and surface geodetic techniques, as well as potential theory, are covered. Other topics are definition and geophysical interpretation of the geoid and of surface gravity anomalies; isostasy; post-glacial rebound; tides and the rotation of the Earth. Same as ASTR 6620 and PHYS 6620. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6630 (3) Earth and Planetary Physics 3

Offered alternate years. The solar system: theories of its origin, meteorites. Distribution of radioactive materials; age dating. Heat flow through continents and the ocean floor; internal temperature distribution in Earth; mantle convection. Origin of the oceans and atmosphere. Same as ASTR 6630 and PHYS 6630.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6650 (1-3) Seminar in Geophysics

Advanced seminar studies in geophysical subjects for graduate students. Same as ASTR 6650 and PHYS 6650. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Geological Sciences](#) [Graduate Course](#)

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## GEOL-6670 (2) Geophysical Inverse Theory

Principles of geophysical inverse theory as applied to problems in the Earth sciences, including topography, Earth structure, and earthquake locations. Prereqs., calculus and computer programming (any language). Same as PHYS 6670.

College of Arts & Sciences Geological Sciences Graduate Course

## GEOL-6940 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Geological Sciences Graduate Course

## GEOL-6950 (1-6) Master's Thesis

College of Arts & Sciences Geological Sciences Graduate Course

## GEOL-6960 (3) Plan II Master's Research

College of Arts & Sciences Geological Sciences Graduate Course

## GEOL-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Geological Sciences Graduate Course

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## Courses

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GRMN

### GRMN-1010 (4) Beginning German 1

For students with no previous training in German. Credit not granted for this course and GRMN 1030.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

### GRMN-1020 (4) Beginning German 2

Prereq., GRMN 1010 (min grade of C-). Credit not granted for this course and GRMN 1030.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

### GRMN-1030 (5) Intensive Beginning German

Covers the same material as GRMN 1010 and GRMN 1020 in one course. Focuses on acquiring ability to understand and speak everyday German; on developing reading and writing skills; and on learning about the cultures of the German-speaking countries. Credit not granted for this course and GRMN 1010 and GRMN 1020.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

### GRMN-1500 (3) German for Reading Knowledge

Designed especially for graduate students. Emphasizes analytical skills for acquiring reading proficiency in specialized and technical German in one's field of research. Recommended for pass/fail registration. Does not satisfy the arts and sciences foreign language requirement. Does not count towards the German major.

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[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

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## GRMN-1601 (3) Germany Today

Introduces the culture of contemporary German-speaking central Europe, examining historical processes, social and political patterns, and the intellectual and artistic responses to problems of the 20th and 21st centuries. Taught in English. Approved for arts and sciences core curriculum: contemporary societies.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-1602 (3) Metropolis and Modernity

An interdisciplinary introduction to the modern industrial city in Europe and the USA, with particular attention to the representation of urbanism in the visual arts. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-1701 (3) Nature and Environment in German Literature and Thought

Critically examines titles in German literature and thought. Nature and environment are used to explore alienation, artistic inspiration, nihilism, exploitation, sexuality, rural versus urban, meaning of the earth, cultural renewal, identity and gender. This "Green" survey of German classics spans Romanticism's conception of nature as unconscious spirit to the politics and values of contemporary Germany's Green Party. Taught in English. Same as HUMN 1701. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-2010 (4) Intermediate German 1

Review and continuation of basic skills begun in the first year: reading, writing, speaking, and oral comprehension. Prereq., GRMN 1020 or 1030 (min grade C-). Meets MAPS requirement for foreign language. Satisfies arts and sciences language requirement. Credit not granted for this course and GRMN 2030.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

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## GRMN-2020 (4) Intermediate German 2

Prereq., GRMN 2010 (min grade C-). Credit not granted for this course and GRMN 2030.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

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## GRMN-2030 (5) Intensive Intermediate German

Covers the same material as GRMN 2010 and GRMN 2020 in one semester. Offers review and continuation of basic skills begun in the first year: reading, writing, speaking and oral comprehensive. Prereq., GRMN 1020 or GRMN 1030 (min grade C-), or instructor consent. Credit not granted for this course and GRMN 2010 and GRMN 2020. Meets MAPS requirement for foreign language. Approved for arts and sciences core curriculum: foreign language.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-2301 (3) Inside Nazi Germany: Politics, Culture, and Everyday Life in the Third Reich

Examines social culture and everyday life in Nazi Germany. Topics include the role of propaganda in the media and entertainment industries, anti-Semitism and suppression of ethnic, social and religious minorities, the role of education and youth organizations, as well as the role of women, the churches, and the effects of a controlled economy before and during World War II. Taught in English. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-2501 (3) 20th-Century German Short Story

Short stories by Thomas Mann, Kafka, Boell, and Grass, such as Death in Venice, Metamorphosis, and Cat and Mouse. Emphasizes literary themes, their traditions, and their cultural significance. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-2502 (3) Representing the Holocaust

Examines how the memory of the Holocaust in Nazi Germany is increasingly determined by the means of its representation, e.g., film, autobiography, poetry, architecture. Taught in English. Same as JWST 2502. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-2503 (3) Fairy Tales of Germany

Explores the origins, cultural significance, stylistic and thematic features of the German fairy tale, with emphasis on the Brothers Grimm; on artistic fairy tales by Goethe, Tieck, Brentano, and others; and, on modern retellings in literature and popular culture. Taught in

English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-2601 (3) Kafka and the Kafkaesque

Exposes the students to a wide selection of Kafka's literary output and aims to define the meaning of the Kafkaesque, by looking not only for traces of Kafka's influence in the verbal and visual arts, but also for traces left in Kafka's own work by his precursors in the literary tradition. Taught in English. Same as HUMN 2601. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-2603 (3) Moral Dilemmas in Philosophy and Literature

Examines the moral dilemmas that arise when opportunities afforded by basic freedoms or advances in technology clash with the ethical imperatives that issue from the Enlightenment and the social contract. Guiding questions include: When does the quest for knowledge legitimate transgression of prevailing morality? By what standard do we adjudicate the ambitions of the individual when they compete with the interests of the state? Taught in English. Approved for art and sciences core curriculum: ideals and values.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-3010 (3) Advanced German 1

Reviews special grammatical topics, reading, and conversation. Students have the option of taking the internationally recognized exam Zertifikat Deutsch in GRMN 3010. Prereq., four semesters of college German or equivalent. Open to freshmen with instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3020 (3) Advanced German 2

Expands and refines skills acquired in GRMN 3010. Students acquire a varied, precise, and idiomatically advanced vocabulary; an understanding of different registers, from the casual to the very formal; and an ability to communicate effectively in spoken and written German in a variety of social situations, including professional life. Prereq., GRMN 3010 or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3030 (3) Business German

Introduces students to the language of German business and economic life. Provides insights into everyday business practices and institutions, including Germany's position in the European and world markets. Emphasizes acquiring basic business vocabulary and

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writing business letters and resumes in German. Prepares students for the exam Deutsch fuer den Beruf, a diploma recognized worldwide by business and industry. Prereq., GRMN 2020 or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3110 (3) German Literature from the Avant-garde to the Postmodern

Examines selected literary texts. Emphasizes longer unedited texts as well as critical skills. May be taken either before or after GRMN 3120. Prereq., GRMN 2020 or equivalent, or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3120 (3) German Literature from the Enlightenment to Expressionism

Examines selected literary texts of various periods. Emphasizes longer texts and critical skills. May be taken either before or after GRMN 3110. Prereq., GRMN 2020 or equivalent, or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3130 (3) Issues in German Philosophy and Literature

Examines selected interdisciplinary texts from the German literary and philosophical tradition. Topics address issues central to philosophical inquiry, and may include knowledge and its limits, mind and body, determinism and free will, reason and religious belief, and ethical problems. Prereqs., GRMN 2020 and 2030, or equivalent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3140 (3) Current Issues in German Literature

Examines issues pervading contemporary German literature, such as concerns of youth, gender, stereotyping as it affects women and men in their relations with one another, loneliness and sexual frustration, work experiences, and other issues. Prereq., ability to read unedited German and to speak German.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3150 (3) Issues in German Politics and Literature

Examines literary and theoretical texts in German about the relationship between literature and politics. Topics may include history and revolution, political theater, feminist aesthetics, or terrorism. Readings and discussion in German. Prereqs., GRMN 2020 and GRMN

2030, or equivalent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

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## GRMN-3501 (3) German-Jewish Writers: From the Enlightenment to the Present

Provides insight into the German-Jewish identity through essays, autobiographies, fiction, and journalism from the Enlightenment to the post-Holocaust period. Examines the religious and social conflicts that typify the history of Jewish existence in German-speaking lands during the modern epoch. Taught in English. Same as JWST 3501. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## Courses

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GRMN

### GRMN-3502 (3) Literature in the Age of Goethe

Features the writings of Germany's major literary figures from 1749 to 1832. Special attention is paid to the formation of literary periods, genres, aesthetic, and socio-historical developments contributing to the birth of modernism in German intellectual history and literature. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#)

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[German Courses Taught in Engl](#)

### GRMN-3503 (3) German Film Through World War II

History and theory of Weimar and Nazi film with sociocultural emphasis. Taught in English. Same as FILM 3503.

[College of Arts & Sciences](#)

[Germanic & Slavic Languages & Literature](#)

[German Courses Taught in Engl](#)

### GRMN-3504 (3) Topics in German Film

A comparative analysis of key issues in German culture as they are represented in film and other media, e.g., technology, architecture, women, and the Holocaust. May be repeated up to 6 total credit hours when topic varies. Taught in English. Same as FILM 3504.

[College of Arts & Sciences](#)

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### GRMN-3505 (3) The Enlightenment: Tolerance and Emancipation

Examines Enlightenment notions of reason, humanity, and social progress. Topics include 18th century views on government, science, education, religion, slavery, and gender roles. Taught in English. Same as HUMN 3505. Approved for arts and sciences core curriculum:

ideals and values.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

## GRMN-3513 (3) German Film and Society 1945-1989

Introduces issues in German society through film during the Cold War. Focus on East and West Germany, though some other German language films may be included. Emphasis is on reading films in their social, historical, and political contexts. Taught in English. Same as FILM 3513.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

## GRMN-3514 (3) German Film & Society After 1989

Introduces post-1989 German culture through film. The course emphasizes films in their socio-historical contexts and explores developments in German culture during and after the unification. Taught in English. Same as FILM 3514.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

## GRMN-3520 (3) Open Topics in the Cultural Context

Examines topics in the cultures of German-speaking central Europe. Contact the departmental office for specific course offerings. May be repeated up to 6 total credit hours when topic varies. Prereq., GRMN 3020 or equivalent, or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

## GRMN-3601 (3) German Women Writers

Explores writing by German/Austrian women from 1945 to the present, with special attention to the representation of the Holocaust, the continuation of avant-garde traditions, innovations in literary form, and feminism. Visual arts, film, and feminist theory will also be considered in their relation to literature. Taught in English. Same as WMST 3601. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

## GRMN-3702 (3) Dada and Surrealist Literature

Surveys the major theoretical concepts and literary genres of the Dada and Surrealist movements. Topics include Dada performance and cabaret, the manifesto, montage, the ready made, the Surrealist novel, colonialism and the avant-garde, and literary and philosophical precursors to the avant-garde. Taught in English. Same as HUMN 3702. Approved for arts and sciences core curriculum: literature and

the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-3802 (3) Politics and Culture in Berlin 1900-1933

Examines early 20th century German culture, with emphasis on the Weimar Republic (1918-1933) in light of contemporaneous political discussions. The course presents modern art and literature (Expressionism, Dada, Brecht's epic theater) and architecture and design (Bauhaus, Werkbund) as well as political movements of women, sexual minorities, and Berlin's Jewish communities. Taught in English. GRMN 3802 and HUMN 3802 are the same course. Offered through CU Study Abroad Program. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature German Courses Taught in Engl

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## GRMN-3900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-3930 (1-6) Internship

Provides an academically supervised opportunity for upper-division students to earn credit while working for public or private organizations. Students apply skills and knowledge earned in the major, and supplement their work experience through directed readings and assignments. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) German Studies (GRMN) majors only.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-4010 (3) Advanced Grammar and Stylistics

Offers a complete final review of German grammar and syntax and its more complex aspects. Prepares students for the Goethe-Zertifikat C1. Prereq., GRMN 3020 or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature German

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## GRMN-4051 (3) Critical Theory of the Frankfurt School

Serves as an introduction to the "Frankfurt School" and Critical Theory with particular emphasis upon rationality, social psychology, cultural criticism, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward a critical understanding of the analytical tools they developed and consider their validity. Taught in

English. GRMN 4051, 5051 and COML 5051 are the same course.

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## GRMN-4251 (3) Marxism

Historical and systematic study of principal themes of Marxist thought, from its Hegelian origins to its contemporary varieties, emphasizing the works of Marx and Engels. Taught in English. Prereq., 12 hours of GRMN or PHIL course work or instructor consent. Same as PHIL 4250. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-4253 (3) Philosophy of Language

Surveys seminal essays from Frege to the present on the philosophy of language. Taught in English.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-4301 (3) Gender, Race and Immigration in Germany and Europe

Introduce students to debates surrounding migration and race in contemporary Germany. Emphasis on reading texts in context using tools of cultural studies, integrating analyses of gender, race, nation, and sexuality. Texts may include film, literature, television, magazine images, etc. Topics include: questioning "multiculturalism," self-representation, integration, Islam, citizenship, violence, public space, youth culture, racism and nationalism. Taught in English. Same as GRMN 5301 and WMST 4301. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-4330 (3) The Age of Goethe

German literature from 1770 to 1830. Close examination of representative texts from the periods of Sturm und Drang, classicism, and romanticism. Emphasizes philosophical and social background. Prereq., GRMN 3020 or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

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## GRMN-4340 (3) Seminar in German Literature

Intensive study of a particular literary period, author, or genre. Secondary sources are used. Course content differs each time. May be repeated up to 6 total credit hours when topic varies. Prereq., GRMN 3020 or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

## GRMN-4450 (3) Methods of Teaching German

Required of students who desire the recommendation of the department for secondary school teaching positions. For student teaching in German, see EDUC 4712 under the School of Education. Restricted to students who have been admitted to the teacher education program in the School of Education. Prerequisites: Restricted to EDUC Majors only.

## GRMN-4460 (6) High School German Teaching

Part of the supervised student teaching in a secondary school required for state certification to teach German. Restricted to students who have been admitted to the teacher education program in the School of Education. Prerequisites: Restricted to EDUC Majors only.

## GRMN-4501 (3) Seminar: Literature in Cultural Context

Provides a broader basis for the work of literature, viewing it from various cultural perspectives. Specific content of course is defined by the instructor. May be repeated up to 6 total credit hours when topic varies. Taught in English.

## GRMN-4502 (3) Nietzsche: Literature and Values

Emphasizes Nietzsche's major writings from 1872 to 1888 with particular attention to the critique of Western values. Includes a systematic exploration of doctrines, concepts, and ideas leading to the values of creativity. Taught in English. Same as HUMN 4502. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

## GRMN-4503 (3) Issues in German Thought

Provides the opportunity to examine major issues in German philosophical, social, and religious thought from the end of German idealism to existentialism and critical theory. Emphasizes the relationship between ideas and social and political action. May be repeated up to 6 total credit hours when topic varies. Taught in English.

## GRMN-4504 (3) Goethe's Faust

Systematic study of the Faust motif in Western literature, with major emphasis on Faust I and II by Goethe and Thomas Mann's Doctor Faustus. Taught in English. Same as GRMN 5504, COML 5504 and HUMN 4504. Approved for arts and sciences core curriculum: literature and the arts.

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## Courses

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GRMN

### GRMN-4550 (3) Senior Seminar: The Roles of Intellectuals and Academics in German Culture

Examines the articulation of the German bourgeoisie during critical periods in German history. Looks at specific groups and their participation in German public culture, e.g., writers, artists, journalists, academics, and political figures. Students work closely with a faculty advisor during the semester and are expected to produce a major research paper. Prereq., GRMN 3020 or instructor consent. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) German (GRMN) or School of Education (EDUC) majors only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

### GRMN-4900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German](#)

### GRMN-5010 (3) Bibliography and Methods of Research

Required of all German MA students. Training in the use of reference works for conducting research in the humanities and social sciences. Analysis of, and hands-on practice with, bibliographic tools specific to German, as well as reference tools inclusive of German-area materials but broader in their scope. Students learn proper procedure for manuscript preparation and submission. Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5020 (3) Applied Linguistics and Foreign Language Teaching Methodology

Required of all graduate teaching assistants, this course provides a knowledge of the aspects of German linguistics that are important for teaching German and a survey of foreign language teaching methods and second language acquisition research. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5030 (3) Foundations of Critical Theory

An introductory study of nineteenth-century German philosophy (especially Kant, Hegel, and Marx). Required course for the graduate certificate in Critical Theory. GRMN 5030 and COML 5030 are the same course.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5051 (3) Critical Theory of the Frankfurt School

Serves as an introduction to the "Frankfurt School" and Critical Theory with particular emphasis upon rationality, social psychology, cultural criticism, and aesthetics. Through close readings of key texts by members of the school (Horkheimer, Benjamin, Adorno, Habermas) we will work toward a critical understanding of the analytical tools they developed and consider their validity. Taught in English. GRMN 4051, 5051 and COML 5051 are the same course.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Courses Taught in Engl](#)

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## GRMN-5210 (3) Seminar: The Age of Enlightenment

Examines the influence of the emerging middle class on the transformation of aesthetic and societal values. Major works of theory, philosophy, literature, and criticism by Lessing, Herder, Kant, J. E. Schlegel, and others. Examines major literary and cultural influences from France and Great Britain. Prereq., graduate standing or instructor consent.

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## GRMN-5220 (3) Seminar: Topics in the Age of Goethe

Examines various aspects of German-speaking society from the 1770s to 1830s. Topics may include Sturm und Drang as social commentary; romantic theory in the wake of the French Revolution; romantic nationalism; the Faust theme; Weimar as a cultural center; and others. May be repeated up to 6 total credit hours when topic varies. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5301 (3) Gender, Race, and Immigration in Germany and Europe

Introduces students to debates surrounding migration and race in contemporary Germany. Emphasis on reading texts in context using tools of cultural studies, integrating analyses of gender, race, nation, and sexuality. Texts may include film, literature, television, magazine images, etc. Topics include: questioning "multiculturalism," self-representation, integration, Islam, citizenship, violence, public space, youth culture, racism and nationalism. Taught in English. Same as GRMN 4301.

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## GRMN-5310 (3) Seminar: Topics in the 19th Century

Examines the transformation of realism from Buechner to Gerhart Hauptmann. Topics may include literary responses to the Restoration; intellectuals and the Revolution of 1848; philosophy and literature; theatrical representations of woman, family, and gender; and others. May be repeated up to 6 total credit hours when topic varies. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5320 (3) Seminar: The German Novel from 1901--1956

Beginning with T. Mann's *Buddenbrooks*, charts the rise of the German novel in the early 20th century and examines such topics as Wilhelminian society; intellectuals and World War I; dehumanization and alienation; national socialism and literary exile; and others. Authors include T. Mann, H. Hesse, R. Rilke, F. Kafka, A. Seghers, and A. Zweig. Prereq., graduate standing or instructor consent.

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## GRMN-5330 (3) Seminar: German Intellectuals and Society Between the Wars

Examines the period of social crisis and the intellectual responses to the collapse of the prewar order. Gives attention to the antidemocratic thought of Spengler, Juenger, Stefan George and his circle, to the emergence of existentialism with Scheler and Heidegger, and to the search for a new political humanism as evidenced by the work of Thomas Mann. Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5410 (3) Seminar: Topics in Early 20th Century German Society

Focuses on major issues, events, movements, and figures prior to World War II. Topics may include the ontology of lyric poetry; Berlin in the 1920s; exiles, their communities, and their writings; women writers from Andreas-Salome to Anna Seghers; topics in German film; and others. May be repeated up to 6 total credit hours when topic varies. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5420 (3) Seminar: Topics in Later 20th Century German Society

Analyzes major currents and events such as the Holocaust, coming to terms with the past (Vergangenheitsbewältigung), German Democratic Republic (GDR) literature, and responses to the reunification. Topics may include the Austrians from Anschluss to Haider; Paul Celan; East German writers between Wolf Biermann and Christa Wolf; topics in German film; and others. May be repeated up to 6 total credit hours when topic varies. Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5504 (3) Goethe's Faust

Systematic study of the Faust motif in Western literature, with major emphasis on Faust I and II by Goethe and Thomas Mann's Doctor Faustus. Taught in English. Same as GRMN 4504 and COML 5504. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5510 (3) Seminar: Open Topics in German Civilization

Focuses on cultural issues that cross lines of literary periodization. Topics may include the theater as social criticism from Lessing to Handke; forms of German protest from Luther to Thomas Mann; nihilism from Bonaventura to Thomas Bernhard; topics in German film; and others. May be repeated up to 6 total credit hours when topic varies. Prereq., graduate standing or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-5520 (3) Seminar: Current Issues in German Literature and Media

Examines issues pervading contemporary German literature and media, such as concerns of youth, xenophobia, stereotyping as it affects women and men in their relations, work experience, feminism, problems connected with the reunification, and other issues. Prereq., graduate standing or instructor consent.

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## GRMN-5900 (1-6) Independent Study

May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-6900 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [German Graduate Courses](#)

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## GRMN-6940 (1) Master's Degree Candidate

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# Courses

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GRTE

## GRTE-5010 (1-5) Graduate Humanities for Teachers

Addresses special topics in arts and humanities with an emphasis on building conceptual understanding of content and enhancing teacher's practice in teaching this content.

[School of Education](#) | [Education](#) | [Graduate Teacher Education](#)

## GRTE-5020 (1-5) Graduate Mathematics for Teachers

Addresses special topics in mathematics with an emphasis on building conceptual understanding of content and enhancing teacher's practice in teaching this content.

[School of Education](#) | [Education](#) | [Graduate Teacher Education](#)

## GRTE-5030 (1-5) Graduate Natural Sciences for Teachers

Addresses special topics in natural sciences with an emphasis on building conceptual understanding of content and enhancing teacher's practice in teaching this content.

[School of Education](#) | [Education](#) | [Graduate Teacher Education](#)

## GRTE-5040 (1-5) Graduate Social Sciences for Teachers

Addresses special topics in social sciences with an emphasis on building conceptual understanding of content and enhancing teacher's practice in teaching this content.



# Courses

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GSAP

## GSAP-1000 (3) World Politics and Society

Explores the history leading up to-and away from-the attacks of 9/11 within an American framework. Topics to be covered include: America's relationship with key countries since 1945; the rise of Muslim extremism; modern terrorism and its meaning; the importance of oil; and the events of 9/11 and the Bush Administration's response to it, at home and abroad. Restricted to G-RAP students.

[College of Arts & Sciences](#) [Global Studies Residential Academic Program](#)

## GSAP-1500 (1) Community Engagement

Facilitates community-level service and volunteer opportunities in the University, Boulder-Denver area, and Colorado communities for first-year students. Participants will learn how to conduct basic community research and will design their own volunteer, service, or internship plan in conjunction with the instructor and the class, targeting a university center, community nonprofit, local business, government agency, or international institution.

[College of Arts & Sciences](#) [Global Studies Residential Academic Program](#)

## GSAP-2010 (3) Introduction to National Security

Introduces national and international security studies to students. The course examines the influence of history, domestic politics, and international events and actors on the development of security policy. Restricted to G-RAP students.

[College of Arts & Sciences](#) [Global Studies Residential Academic Program](#)

## GSAP-2020 (3) Topics in National Security

Intensive look at specific security issues. This course focuses on the specifics of policy development related to functional issues (political, military, and non-traditional ) as well as threats within specific regions. In addition to class, each student will focus on an issue of their choosing. Recommended prereq., GSAP 2010. Restricted to G-RAP students.

[College of Arts & Sciences](#) [Global Studies Residential Academic Program](#)

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## GSAP-2500 (3) Global Society: The International Rights of the Child

Students will employ tools of social science research to engage in critical thinking about human rights as they apply to children in a global context. A variety of interrelated questions will be addressed such as: What are human rights? Do children have rights that are distinct from the rights of adults? What human rights challenges do children face around the world? A variety of global challenges to the rights of children will be considered, with special focus on issues of child trafficking and participation in armed conflict.

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## GSAP-3000 (3) Historic and Contemporary Barcelona

Students will be invited to link their own knowledge of and experiences in Boulder, Colorado, and the United States to Barcelona, Catalonia and Spain-all within the larger framework of globalization. Key themes include national and imperial history, peace and security, trade and economics, and the mosaic of cultures that comprise Barcelona, Catalonia, and Spain as seen through the arts, governance, and diplomacy.

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GSL

## GSL-3401 (3) The Heart of Europe: Filmmakers and Writers in 20th Century Central Europe

Surveys the major works of 20th century central and central east European film and literature. Examines cultural production in the non-imperial countries and non-national languages of the region including Yiddish, Belarusian, Czech, Hungarian, Polish and Romanian, among others. Traces the rise of nationalism over the course of the century from the age of empires through the "Cold War." Taught in English. Same as JWST 3401.

[College of Arts & Sciences](#)
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[Germanic and Slavic Courses](#)

## GSL-5230 (3) Russian Cultural Idioms

Focuses on the critical analysis of the Russian cultural discourse through Russian idioms. Taught in Russian. Same as RUSS 4230.

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[Germanic & Slavic Languages & Literature](#)
[Germanic and Slavic Courses](#)

## GSL-5352 (3) Russian Novel: Theory and Practice

Examines the Russian novel and its evolution as well as Western and Russian theories of the novel as they engage and reflect upon the claims of modernity. Taught in English. May be repeated up to 6 total credit hours. Same as COML 5352.

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## GSSL-5421 (3) Gogol

Explores major fictional and dramatic texts of great Russian writer Nikolai Vasil'evich Gogol (1809-52) -- "The strangest prose-poet Russia ever produced" (Nabokov). Works will be analyzed in the context of Western and Russian Romanticism. Relevant nonfiction texts will also be introduced when appropriate. Class will be run largely as group discussion, with necessary historical and critical background provided. Taught in English. Recommended prereq., RUSS 4811.

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## GSSL-5431 (3) Dostoevsky

Focuses on close reading of major novels and other works by Dostoevsky, one of the most important psychological novelists in modern literature, a profound religious thinker, and the greatest crime novelist in the world. Taught in English. Same as RUSS 4431.

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## GSSL-5441 (3) Tolstoy

Examines the development of Tolstoy's thought and literary style through study of the novel War and Peace and short works from different periods of Tolstoy's writing. Taught in English. Same as RUSS 4441.

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## GSSL-5451 (3) Chekhov

Analyzes the life and creative works of the author of some of the funniest and some of the gloomiest stories in Russian literature. Examines Chekhov's major plays that laid the foundation for modernist theatre. Taught in English. Same as RUSS 4451.

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## GSSL-5471 (3) Women in 20th Century Russian Culture

Acquaints students with major issues concerning women in 20th century Russian culture. Examines sources from folk culture, popular culture, and high culture (poetry, prose, songs, tales, visual art, and cinema) that mythologize or question women's images and societal roles. All texts and films are offered in English translation. Taught in English. Same as RUSS 4471 and WMST 4471.

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## GSSL-5830 (3) Topics in Literature and History

May be repeated up to 6 total credit hours. Taught in English. Same as COML 5830.

## GSSL-5851 (3) Critical Thinking: Russian Film and Society

Through structured discussions, selected readings, and written assignments, examines topics in Russian film from socio-historical and cultural studies perspectives. Identification and critical analysis of concepts and assumptions underlying differing cinematic approaches to controversial topics. Taught in English. Same as RUSS 4851.

## GSSL-5861 (3) Absurd and Supernatural in Russian Literature

Studies themes of grotesque, bizarre, surreal, absurd, supernatural, and fantastic in Russian short stories and novels of the 19th and 20th centuries. Discusses works by Pushkin, Gogol, Dostoevsky, Kharmis, Bulgakov, Siniavskii, Petrushevskaia, and Pelevin, within contexts of Russian folklore, Freud and Jung's interpretations of jokes and dreams, and Romanticism. Recommended prereq., one upper division humanities course. Taught in English. Same as RUSS 4861.

## GSSL-5900 (1-6) Independent Study

May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent required. Prerequisites: Restricted to Graduate Students only.



# Courses

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HEBR

## HEBR-1010 (4) Beginning Hebrew 1

First semester Hebrew is a beginning level course designed for students who have little or no prior knowledge of Hebrew. Begins with learning the Hebrew alphabet and immediately starts developing rudimentary Hebrew conversational, reading and writing skills. By the end of the semester students are expected to have attained basic understanding and expressive abilities in Hebrew.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Hebrew](#)

## HEBR-1020 (4) Beginning Hebrew 2

Second semester builds on Hebrew skills introduced in the first semester, with a focus on speaking, comprehension, reading and writing. Students learn new verbal tenses and paradigms. The course blends a communicative method with formal grammatical instruction. By the end of this semester students are expected to be able to converse in, comprehend, and produce written basic Hebrew. Prereq., HEBR 1010 (min. grade C-) or instructor consent.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Hebrew](#)

## HEBR-1030 (3) Biblical Hebrew 1

This course is designed to enable students to read the Hebrew Bible in the original language. The focus will be the ability to read the various genres of the text, utilizing both the tools of modern language acquisition and the study of classical grammar methods. Same as JWST 1030.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Hebrew](#)

## HEBR-1040 (3) Biblical Hebrew 2

Building on HEBR/JWST 1030, this course continues to build expertise in reading the Hebrew Bible. Modern language acquisition and classical grammar study methods equip students with the tools to translate and read the various genres of the Biblical material. Prereq., HEBR/JWST 1030 or instructor consent. HEBR 1040 and JWST 1040 are the same course.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-2110 (4) Intermediate Hebrew 1

Third semester Hebrew builds on skills introduced in the first two semesters and focuses on speaking, comprehension, reading and writing. Students learn new verbal tenses and paradigms, modes of expression and syntactical forms. The course blends a communicative method with formal grammatical instruction. By the end of the semester students are expected to be able to converse in, comprehend, and produce written Hebrew at an intermediate level. Meets MAPS requirement for foreign language. Prereq., HEBR 1020 (min. grade C-) or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-2120 (4) Intermediate Hebrew 2

Focuses on texts, while still developing speaking, comprehension and writing skills. Students build on grammatical understanding while learning some of the more sophisticated verbal paradigms and nominal patterns. The course blends a communicative method with some formal grammatical instruction. By the end of this semester students are expected to converse in, comprehend, and produce written Hebrew at an intermediate level. Prereq., HEBR 2110 (min. grade C-) or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-2350 (3) Introduction to Jewish Culture

Explores the development and expressions of Jewish culture as it moves across the chronological and geographical map of the historic Jewish people, with an emphasis on the variety of Jewish ethnicities and their cultural productions, cultural syncretism, and changes. Sets the discussion in a historical context, and looks at cultural representations that include literary, religious, and visual texts. Taught in English. Same as JWST 2350. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-2352 (3) Introduction to Modern Jewish History

Explores the major historical events and socio-cultural themes in modern Jewish history including the French Revolution, the rise of modern anti-semitism, the international migration of Jews, the Holocaust, and the establishment of Israel. Taught in English. Recommended prereq., HEBR 2350.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-2551 (3) Secular Jewish Literature, Modern to Contemporary Jews Coming of Age

Studies the literary expression of Jewish writers throughout the world in English translation. Gives special attention to questions of secularity versus tradition, identity, cultural change, diaspora and exile. Taught in English. HEBR 2551 and JWST 2551 are identical courses. Approved for arts and sciences core curriculum: literature and the arts. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-3010 (3) Third Year Hebrew, First Semester

Focuses on students' active Hebrew language skills acquired in the first four semesters of Hebrew at CU Boulder in weekly conversation and composition sessions. Develops grammatical understanding with a further exploration of the root, verbal and noun systems. Students are introduced to texts in contemporary Hebrew fiction and poetry, as well as some biblical readings. Prereq., HEBR 2120 (min grade C-) or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-3020 (3) Third Year Hebrew, Second Semester

Focuses on students' Hebrew language skills acquired in the first five semesters of Hebrew at CU Boulder in weekly conversation and composition sessions. Develops grammatical understanding with a further exploration of the root, verbal and noun systems. Students are introduced to texts in contemporary Hebrew fiction and poetry, as well as some biblical readings, academic texts and Israeli newspapers. Prereq., HEBR 3010 (minimum grade C-) or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-3202 (3) Women, Gender & Sexuality in Jewish Texts & Traditions

Reads some of the ways Jewish texts and traditions look at women, gender and sexuality from biblical times to the present. Starts with an analysis of the positioning of the body, matter and gender in creation stories, moves on to the gendered aspects of tales of rescue and sacrifice, biblical tales of sexual subversion and power, taboo-breaking and ethnos building, to rabbinic attitudes towards women, sexuality and gender and contemporary renderings and rereadings of the earlier texts and traditions. Taught in English. Same as JWST 3202. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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## HEBR-3840 (3) Independent Study

Prereqs., HEBR 1010, 1020, 2110, and 2120.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

## HEBR-3850 (3) Independent Study

Prereqs., HEBR 1010, 1020, 2110, 2120, and 3840.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

## HEBR-4101 (3) Topics in Hebrew Studies

Explores topics in Hebrew and Jewish literature and cultures. These may include topics such as diasporic literatures, Jewish artists and thinkers, courses on specific authors, figures or communities. Topics change each semester. May be repeated up to 9 total credit hours. Taught in English. HEBR 4101 and JWST 4101 are the same course.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

## HEBR-4301 (3) Venice: the Cradle of European Jewish Culture.

Explores the development of European Jewish culture from the late Middle Ages to the present by focusing on Jewish life in the city of Venice, Italy. Emphasis is on the development of Venetian print culture and emergence of Italy as a center of Jewish publishing in both the religious and secular world. The course examines a variety of cultural and historical material including early printings of the Talmud, the creation of Yiddish popular literature, Hebrew rabbinic literature, responses to political turmoil, and the aftermath of the Nazi genocide. Taught in English. Prereq., HEBR/JWST 2350. HEBR 4301 and JWST 4301 are the same course. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Hebrew

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# Courses

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HIND

## HIND-1010 (5) Beginning Hindi 1

Provides a thorough introduction to the modern Hindi language, emphasizing speaking, listening, reading, and writing skills. This course is proficiency-based. Activities aim to place the student in the context of the native-speaking environment from the very beginning. Students will be provided with opportunities to participate in local South Asian cultural events. Credit not granted for this course and ASIA 1420. Formerly HNDI 1010.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Hindi](#)

## HIND-1011 (3) Introduction to South Asian Civilizations

Survey of traditional and modern world views and experiences of people on the Indian subcontinent through literature and film, beginning with the Ramayana and including medieval tales, modern novels, and feature films. Formerly HNDI 1011. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Hindi](#)

## HIND-1020 (5) Beginning Hindi 2

Continuation of HNDI 1010. Provides a thorough introduction to the modern HNDI language, emphasizing speaking, listening, reading and writing skills. Proficiency-based course aims to place the student in the context of the native-speaking environment from the beginning of the course. Provides opportunities to participate in local South Asian cultural activities and events. Prereq., HNDI 1010 (min. grade C). Formerly HNDI 1020.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Hindi](#)

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## HIND-2110 (5) Intermediate Hindi 1

Emphasizes speaking, listening, reading and writing skills and culturally appropriate language use. Credit not granted for this course and ASIA 2420. Prereq., HIND 1020 (min grade C). Meets MAPS requirement for foreign language. Formerly HIND 2010.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-2120 (5) Intermediate Hindi 2

Continuation of HNDI 2010. Enhances students' speaking, listening, reading and writing skills and culturally appropriate language use. Prereq., HNDI 2010 (min. grade C) or equivalent. Formerly HIND 2020.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-2441 (3) Screening India: A History of Bollywood Cinema

Provides a critical overview of one of the world's largest and most beloved film industries, the popular Hindi cinema produced in Bombay (Mumbai) and consumed around the world under the label "Bollywood". Focus on the post-Independence era to the present, with introduction to key films, directors, stars, genres, formal techniques, and themes, as well as critical analyses of these and other topics. Formerly HNDI 2441.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3110 (3) Advanced Hindi 1

Emphasizes speaking, listening and conversational fluently in Hindi, with a focus on cultural appropriate expression and practical knowledge. . Prereq., HIND 2020 (min. grade C). Formerly HIND 3010.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3120 (3) Advanced Hindi 2

Continuation of HIND 3110. Emphasizes reading, listening, and speaking fluency in Hindi-Urdu, with a focus on literary, cinematic and cultural themes in modern and contemporary Hindi-Urdu media and culture. Thematic focus of the course may change each semester. An effort will be made to encourage students to put their language skills into literary and cultural context. Prereq., HNDI 3110 (min. grade C). Formerly HIND 3020.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3651 (3) Living Indian Epics: The Ramayana and the Mahabharata in the Modern Political Imagination

Explores the Ramayana and Mahabharata, two fundamental mythological pillars of Indian society, through literature, comic books, film, television, and political rhetoric as a means of examining major issues of religion, gender, popular culture, and social politics in contemporary India.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3661 (3) South Asian Diasporas: Imagining Home Abroad

Examines fundamental questions of home, nation, identity, ethnicity, and foreignness in the context of the enormous South Asian diaspora. By means of literature, ethnography, and film, the various connotations of diaspora will be explored along with the cultural productions of members of the South Asian diaspora (both Indian and Pakistani).

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3811 (3) The Power of the Word: Subversive and Censored 20th Century Indo-Pakistani Literature

Provides an overview of a selection of writings by important 20th century Indo-Pakistani authors, which will permit students to get acquainted with Indian literature. Provides insight into the experience of social and political events in the 20th century and the reaction of the government to the critical analysis and portrayal of these events. Taught in English. Formerly HNDI 3811. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3821 (3) The Mahabharata as Literature, Performance, Ideology

Offers an in-depth introduction to the Mahabharata, reputedly the world's longest epic and one of the foundational works of Indian civilization. Synopsis of the full text and selected excerpts will be read, including a translation of the spiritual classic, Bhagavad Gita. Recent scholarship on the poem's historical, ritual, and mythic contexts as well as on its performance traditions will also be examined. Formerly HNDI 3821.

College of Arts & Sciences East Asian Languages & Civilizations Hindi

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## HIND-3831 (3) The Many Faces of Krishna in South Asia Literature and Culture

Using both textual and visual sources, the multiple facets of Krishna in Indian religious experience will be explored through poetry and prose, painting and sculpture, music, dance, and drama. Formerly HNDI 3831.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

HIST

## HIST-1010 (3) Western Civilization 1: From Antiquity to the 16th Century

Surveys the development of Western civilization from its beginnings in the ancient near East through the Reformation of the 16th century. Also available through correspondence study. Credit not granted for this course and HIST 1030. Meets MAPS requirement for social science: general and world history. Approved for arts and sciences core curriculum: historical context.

[College of Arts & Sciences](#)
[History](#)
[Methodo, Comparative, Global](#)

## HIST-1015 (3) History of the United States to 1865

Surveys American history from first settlement until end of the Civil War. Also available through correspondence study. Meets MAPS requirement for social science: general and U.S. history. Approved for arts and sciences CORE curriculum: United States context.

[College of Arts & Sciences](#)
[History](#)
[US: Chronological Periods](#)

## HIST-1018 (3) Introduction to Early Latin American History to 1810

Introduces students to the history of what is now called Latin America from about 1450 to the wars of independence in the nineteenth century. The course examines pertinent aspects of the societies and cultures of indigenous people, the history of European conquest, and the most salient features of the Spanish and Portuguese colonial empires in America. Students who have taken HIST 1038 may not receive credit for either HIST 1018 or 1028. Approved for arts and sciences core curriculum: historical context.

[College of Arts & Sciences](#)
[History](#)
[World Areas: Specific Regions](#)

## HIST-1020 (3) Western Civilization 2: 16th Century to the Present

Surveys political, economic, social, and intellectual developments in European history from the 16th century to the present. Similarities and contrasts between European states are underscored, as is Europe's changing role in world history. Also available through correspondence study. Credit not granted for this course and HIST 1040. Meets MAPS requirement for social science: general and world history. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-1025 (3) History of the United States since 1865

Surveys social, economic, political, and cultural development of the United States from the close of the American Civil War to the present. Also available through correspondence study. Meets MAPS requirement for social science: general and U.S. history. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-1028 (3) Introduction to Modern Latin American History since 1800

Introduces students to the history of Latin America from independence to the present. The course investigates the social implications of various models of economic development, the opportunities and difficulties resulting from economic ties with wealthier countries, the consequences of ethnic, gender and class divisions, and the struggles of Latin Americans to construct equitable political systems. Students who have taken HIST 1038 may not receive credit for HIST 1018 or 1028. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1051 (3) The World of the Ancient Greeks

Surveys the emergence, major accomplishments, failures, and decline of the world of the ancient Greeks, from Bronze Age civilizations of the Minoans and Mycenaeans through the Hellenistic Age (2000--30 B.C.) Same as CLAS 1051. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-1061 (3) The Rise and Fall of Ancient Rome

Surveys the rise of ancient Rome in the eighth century B.C. to its "Fall" in the fifth century A.D. Emphasizes political institutions, foreign policy, leading personalities, and unique cultural accomplishments. Same as CLAS 1061. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-1113 (3) Introduction to British History to 1660

Deals with Roman, medieval, and early modern periods. Covers the demographic, economic, and social patterns, political and religious developments, and cultural changes that contributed to the formation of the English nation. Formerly HIST 2103. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-1123 (3) Introduction to British History Since 1660

Deals with the period from the 17th century to the present. Political, economic, social, and imperial developments that contributed to creation of the modern industrial and democratic state are the major issues covered. Formerly HIST 2123. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-1208 (3) Sub-Saharan Africa to 1800

Introduces the peoples of Africa south of the Sahara and some major developments in the region up to A.D. 1800. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1228 (3) Introduction to Sub-Saharan African History Since 1800

Introduces students to the history of Sub-Saharan Africa from 1800 to the present. Major topics of study included the trans-Atlantic slave trade, African state-building, European colonialism, African responses to colonialism and issues facing independent African nations, ranging from debt to HIV/AIDS. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1308 (3) Introduction to Middle Eastern History

Interdisciplinary course that focuses on medieval and modern history of the Middle East (A.D. 600 to the present). Introduces the Islamic civilization of the Middle East and the historical evolution of the region from the traditional into the modern eras. Covers social patterns, economic life, and intellectual trends, as well as political development. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1528 (3) Introduction to South Asian History since 1757

Introduces the history of modern South Asia from 1757 to the present. Examines themes such as the nature of British colonial state formation in South Asia, social transformation under British rule, modes of anticolonial resistance movements, particularly Mahatma Gandhi's nonviolent civil disobedience movement, Muslim nationalism and the formation of Pakistan, and current political conflicts involving India, Pakistan and Afghanistan. Formerly HIST 1408. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1618 (3) Introduction to Chinese History to 1644

Introduces students to the history of China from Neolithic period to Ming period (1368-1644). Investigates the social patterns, gender relations, economic structure, intellectual trends, and political developments of China. Pays special attention to China's long-standing interaction with the rest of the world, which played a crucial role in the historical development of Chinese society. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1708 (3) Introduction to Japanese History

A broad interdisciplinary survey of the history of Japan from earliest times to the 20th century. Explores the development of political institutions, social structures, cultural and religious life, economic development, and foreign relations in an historical perspective. Approved for arts and sciences CORE curriculum: historical context.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-1800 (3) Introduction to Global History

Applies a broad perspective to the global past in order to illuminate how common historical patterns and processes as well as unique elements shaped the human experience. Using a thematic approach, this introductory course highlights cross-cultural interactions among societies, and, when relevant, how historical processes that began centuries ago still impact the contemporary world. Topic will vary by semester. Prereq., any other 1000-level HIST course. Restricted to History BA and History additional majors only. Prerequisites: Restricted to History (HIST) BA or ADL majors only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-1828 (3) Introduction to Modern Jewish History

Surveys the major historical developments encountered by Jewish communities beginning with the Spanish Expulsion in 1492 up until the present day. We will study the various ways in which Jews across the modern world engaged with the emerging notions of nationality, equality, and citizenship, as well as with new ideologies such as liberalism, socialism, nationalism, imperialism and antisemitism. Same as JWST 1828. Formerly HIST 1108. Approved for arts and sciences core curriculum: historical context.

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College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-2002 (3) Introduction to Central and East European Studies

Examines major themes in the history of Russia and East-Central Europe since the early modern era, introduces the literature and arts of the region, and presents current political, social, and economic issues. Same as CEES 2002. Approved for arts and sciences CORE requirement: historical context.

College of Arts & Sciences | History | Europe: Modern

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## HIST-2015 (3) The History of Early America

Examines major themes in the development of colonial societies in North America from the 15th to the early 19th centuries. Explores intercultural relations, economic development, labor systems, religion and society, and family life. Specific course focus may vary. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: United States context. Prerequisites: History majors are restricted from taking this course.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-2100 (3) Revolution in History

Examines the causes, character, and significance of political revolution in world history. Concentrating on one of the major revolutions of modern history, it examines why revolutions occur, who participates in revolution, and to what effect. Specific course focus varies. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: historical context. Prerequisites: History majors are restricted from taking this course.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-2112 (3) Early Modern Societies (1450--1700)

Examines major themes in European Early Modern history. Issues to be explored include the Renaissance and the Reformation, popular culture, social history, and states and warfare. Specific course focus may vary. Similar to HIST 2113. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: historical context. Prerequisites: History majors are restricted from taking this course.

College of Arts & Sciences | History | Europe: Modern

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## HIST-2126 (3) Modern U.S. Politics and Diplomacy

Traces the development of contemporary U.S. politics and foreign relations. Analyzes subjects such as the Cold War, the relationship between foreign and domestic politics, the developing meaning of conservatism, liberalism, and radicalism. Explains the impact of race, gender, class, and immigration. Specific course focus may vary. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: United States context or contemporary societies. Prerequisites: History majors are restricted from taking

this course.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

## HIST-2166 (3) The Vietnam Wars

Traces the causes, course, and outcome of the wars in Vietnam from 1940 until 1975. Explains the successes of the revolutionaries and the failures of the French and Americans. Analyzes the development of Vietnamese nationalism, French colonialism, and U.S. intervention. Similar to HIST 4166. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: contemporary societies or United States context. Prerequisites: History majors are restricted from taking this course.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

## HIST-2220 (3) History of War and Society

Focuses on war and society in a variety of global contexts. Explores the character, origins, and social, political, and intellectual impacts of war in contexts ranging from several centuries of international conflict to the experience of individual nations in specific wars. Topic varies in any given semester; contact Department of History for details. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: historical context. Prerequisites: History majors are restricted from taking this course.

[College of Arts & Sciences](#) [History](#) [Methodo, Comparative, Global](#)

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

HIST

### HIST-2437 (3) African American History

Surveys African American history. Studies, interprets, and analyzes major problems, issues, and trends affecting African Americans from about 1600 to the present. Same as ETHN 2432. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: human diversity or United States context. Prerequisites: History majors are restricted from taking this course.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 2](#)

### HIST-2516 (3) America through Baseball

Baseball could not have existed without America. Course explains how the game fit into the larger context of social, cultural, economic, and political history from the nineteenth century to the present. Studies the events and people who made baseball the national pastime. Similar to HIST 4556. Restricted to non-History majors only. Approved for arts and sciences core curriculum: United States context. Prerequisites: History majors are restricted from taking this course.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### HIST-2616 (3) U.S. Women's History

Examines the history of women in United States culture and society over time. Particular emphasis on the roles of women in family, economy, society, and politics. Specific course focus may vary. History majors are restricted from taking this course. Approved for arts and sciences core curriculum: human diversity. Prerequisites: History majors are restricted from taking this course.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### HIST-2629 (3) China in World History

Examines the multiple connections between Chinese history and other parts of the world over the course of China's long history. History

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majors are restricted from taking this course. Approved for arts and sciences core curriculum: historical context. Prerequisites: History majors are restricted from taking this course.

College of Arts & Sciences History World Areas: Comp and General

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## HIST-2636 (3) Women of Color and Activism

Studies the history of social activism in the United States by women of color, with an emphasis on modes of social activism, issues that have organized specific communities of color, issues that have crossed ethnic/racial boundaries, and the interaction of women from different ethnic/racial groups, including women of color and white women. Recommended prereq., WMST 2000 or 2600. Same as WMST 2400. Approved for arts and sciences CORE curriculum: United States context.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-3011 (3) Seminar in Ancient History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-3012 (3) Seminar in Modern European History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences History Europe: Modern

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## HIST-3018 (3) Seminar in Latin American History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-3019 (3) Seminar in Asian and African History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to junior/senior HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences History World Areas: Comp and General

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## HIST-3020 (3) Historical Thinking & Writing

Develops the research techniques and habits of mind required to succeed in the History major, honing students' critical, analytical, and synthetic skills while introducing them to History as a discipline and a way of understanding the world. Students practice the kinds of writing required in upper-division History classes. Topics will vary. Prereq., HIST 1080 and ARSC 1080, 1150, WRTG 1100, 1150 or 1250. Restricted to sophomore, junior and seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-3110 (3) Honors Seminar

Practical historiography for students who wish to write a senior honors thesis. Emphasizes choice of topic, critical methods, research, organization, argumentation, and writing. May be repeated up to 6 total credit hours. Prereqs., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-), honors standing, and instructor consent.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-3112 (3) Seminar in Renaissance and Reformation

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-3113 (3) Seminar in Medieval and Early Modern English History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-3115 (3) Seminar in Early American History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-3116 (3) Seminar in American Diplomatic History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-3120 (3) Honors Thesis

Prereq., HIST 3110 and instructor consent.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-3133 (3) Seminar in Britain since 1688

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-3212 (3) Seminar in Early Modern Europe

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-3218 (3) Peoples and Cultures of West Africa

Deals with the history and anthropology of selected west African societies in the period before the imposition of European colonial rule. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Same as ANTH 3218. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-3317 (3) Seminar in the American West

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-3328 (3) Seminar in Middle Eastern History

Examines selected issues in modern Middle Eastern history. Check with the department concerning the specific subject of the seminar. May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to junior/senior HIST majors.

## HIST-3414 (3) Seminar in European Intellectual History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

## HIST-3415 (3) Seminar in Recent American History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to junior/senior HIST majors. .

## HIST-3416 (3) Seminar in American Society and Thought

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

## HIST-3417 (3) Seminar in African American History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.



## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

HIST

### [HIST-3511 \(3\) Seminar in Medieval History](#)

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

[College of Arts & Sciences](#) [History](#) [Europe: Ancient and Medieval](#)

### [HIST-3516 \(3\) American Culture and Reform, 1880--1920](#)

Addresses the issues of reform, religion, and culture that emerged as a 19th century world view confronted a 20th century America. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### [HIST-3616 \(3\) Seminar in U.S. Women's History](#)

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### [HIST-3628 \(3\) Seminar in Recent Chinese History](#)

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

[College of Arts & Sciences](#) [History](#) [World Areas: Specific Regions](#)

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## HIST-3713 (3) Seminar in Russian History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-3718 (3) Seminar in Japanese History

May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-3800 (3) Seminar in Global History

Organized around themes that change year to year, this seminar allows students to explore and research processes, phenomena, and events of global significance in historical context. Stress will be upon subjects that span multiple world areas. Possible topics include: the international arms trade; slavery; health and disease; youth culture; women's rights; genocide. See department for current theme. May be repeated up to 6 total credit hours. Prereq., WRTG 3020 or an acceptable alternative upper-division writing course (min grade C-) and a History GPA of 2.0 or higher. Restricted to HIST majors. Formerly HIST 3050. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-3840 (1-3) Independent Study

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-3841 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-3842 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Modern

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## HIST-3843 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-3844 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Topical

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## HIST-3845 (1-3) Independent Study

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-3846 (1-3) Independent Study

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-3847 (1-3) Independent Study

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-3848 (1-3) Independent Study

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-3849 (1-3) Independent Study

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4013 (3) English Constitutional History to 1688

Examines the origins and developments of English legal and political institutions, including kingship, the common law, procedure, and the court and jury system from the Anglo-Saxon period to the 17th century. Emphasizes the implications of these institutions for the development of contemporary American and English legal systems. Prereq., HIST 1010, 1030, 2103 or 2543.

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College of Arts & Sciences History Europe: Specific Countries

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## HIST-4016 (3) African American History, 1619--1865

Explores the history of Africans in America from the first arrivals to emancipation, and their role in the social, cultural, economic, and political evolution of the United States. Prereq., HIST 1015 or 1035. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-4018 (3) Aztecs, Incas, and the Spanish Conquest of the Americas

Building upon contemporary texts and modern histories of both famous and ordinary people, this course examines the indigenous empires known as the Aztecs and the Incas. It also examines the encounter of Europeans and native people, following the history of exploration and conquest from the time of Columbus to about 1550. Equal consideration is given to the course's three components: Aztec, Inca and the Spanish conquest. Recommended prereqs., HIST 1018 or 3020.

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-4020 (3) Capstone: Comparative History

Explores historical themes from a comparative perspective. As a culmination of the major, it encourages students to think more analytically about historical change. Consult the online Schedule Planner for specific topics. Team-taught by several faculty. May be repeated up to 6 total credit hours within the degree. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) History (HIST) majors (excludes minors).

College of Arts & Sciences History Methodo, Comparative, Global

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## HIST-4021 (3) Athens and Greek Democracy

Studies Greek history from 800 B.C. (the rise of the city-state) to 323 B.C. (the death of Alexander the Great). Emphasizes the development of democracy in Athens. Readings are in the primary sources. Same as CLAS 4021. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-4030 (3) History of Slavery: Origins to Present

Examines slavery across the globe from its origins in ancient societies to the present. Includes the legal, social, economic, linguistic, and gender aspects of slavery, among other subjects. Restricted to sophomores/juniors/seniors. .

College of Arts & Sciences History Methodo, Comparative, Global

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## HIST-4031 (3) Alexander the Great and the Rise of Macedonia

Covers Macedonia's rise to dominance in Greece under Philip II and the reign and conquests of Alexander the Great. Prereq., one of the following: CLAS 1509, 3039, 3113, 4051, 4139, 4149, CLAS/HIST 1051, 2041, 4021, or 4041. Same as CLAS 4031.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4040 (3) The History of Space Exploration and Defense

This course examines the development and impact of American, Soviet/Russian, and European civilian and military space activities from the dawn of the space age to the space challenges of the 21st century. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | History | Methodo, Comparative, Global

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# Courses

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Search by Course Number

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HIST

## HIST-4041 (3) Classical Greek Political Thought

Studies main representatives of political philosophy in antiquity (Plato, Aristotle, Cicero) and of the most important concepts and values of ancient political thought. Prereq., CLAS/HIST 1051, CLAS/HIST 1061, HIST 1010, PSCI 2004, or PHIL 3000. Restricted to sophomores/juniors/seniors. Same as CLAS 4041 and PHIL 4210.

[College of Arts & Sciences](#)
[History](#)
[Europe: Ancient and Medieval](#)

## HIST-4050 (3) The World War II Era

The World War II era witnessed transformations in the social, political, and economic orders across the globe. Traces the domestic and international developments, including military issues, that shaped the period in Europe, Asia, and the United States and assesses the war's legacy. Restricted to juniors/seniors.

[College of Arts & Sciences](#)
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[Methodo, Comparative, Global](#)

## HIST-4053 (3) Britain and the Empire, 1688--1964

Examines the external polity of Great Britain from 1688 to 1964 in Europe, the East, Africa, and the Americas. Same as HIST 5053. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
[History](#)
[Europe: Specific Countries](#)

## HIST-4061 (3) Twilight of Antiquity

Explores the reasons for the fall of the Roman Empire in the western Mediterranean and its survival in the east as Byzantium.

Emphasizes Christianity; barbarians; social, economic, and cultural differences; contemporary views of Rome; and modern scholarship. No Greek or Latin is required. Same as HIST 5061 and CLAS 4061.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4063 (3) Women in Victorian England

Examines changing roles and status of women in a period of expansion. Studies the impact of industrialization on working women, sexuality, family planning, expansion of women in education, politics and the professions, the single women crisis, and women's rights. Restricted to sophomores/juniors/seniors. Same as WMST 4063.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4064 (3) Early Modern Spain

Surveys the history of the Iberian Peninsula from the late medieval period through early modern period. Explores the thought, art, politics, and socio-economic milieu of Spain during the Golden Age. Topics include attitudes toward minorities, the Inquisition, the establishment of a colonial empire, rituals, court culture and architecture, religious conflicts, and literary production. Prereq for HIST 4064., HIST 1010 or 1030. Same as HIST 5064. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4071 (3) Seminar in Ancient Social History

Considers topics ranging from demography, disease, family structure, and the organization of daily life to ancient slavery, economics, and law. Focuses either on Persia, Greece, or Rome and includes a particular emphasis on the methodology required to reconstruct an ancient society, especially the interpretation of problematic literary and material evidence, and the selective use of comparisons with better known societies. No Greek or Latin required. May be repeated up to 9 total credit hours. Same as CLAS 4071. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4081 (3) The Roman Republic

Studies the Roman Republic from its foundation in 753 B.C. to its conclusion with the career of Augustus. Emphasizes the development of Roman Republic government. Readings are in the primary sources. No Greek or Latin required. Same as CLAS 4081. Prerequisites: Restricted to History Majors only.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4083 (3) Revolution and Nationalism in Modern Ireland

Surveys Irish nationalist movements since the eighteenth century, treating constitutional nationalism, revolutionary republicanism, and

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Gaelic cultural movements while also examining the development of Unionism in Ulster as a response to political and cultural nationalism. Emphasizes the political, religious, and cultural roots of the current sectarian crisis in Northern Ireland, and analyzes that crisis up to the present day. Prereqs., HIST 1020, 1040, 2123, or 4053. Credit not granted for this course and HIST 2513. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4091 (3) The Roman Empire

Studies Imperial Roman history beginning with the Roman Revolution and ending with examination of the passing of centralized political authority in the western Mediterranean. Emphasizes life, letters, and personalities of the Empire. Same as CLAS 4091. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4109 (3) World War II in Asia and the Pacific

For Asia, World War II began with the Mukden Incident (1931), resulting in the Japanese domination of Manchuria and leading to a full-scale war between China and Japan in 1937. Only after the Japanese attacked the U.S. Pacific fleet at Pearl Harbor four years later did the United States enter the war. Discusses the various socioeconomic and political factors leading to the war in Asia, examines the nature of the conflict on the Asian mainland and in the Pacific, and assesses legacy of the war on all those involved. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4110 (3) Natives and Newcomers: Encounters in the Americas

Focuses on the first generations of interaction between natives and newcomers in the Americas, 1492-c.1650. Class will open with general section on colonialism and contact dynamics, then explore four contact areas (Caribbean, Valley of Mexico, St. Lawrence River Valley, Chesapeake) in depth. In-class discussion of primary sources a critical component of the course. Prereq., junior standing or successful completion of one lower-division history course.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-4116 (3) U.S. Diplomatic History, 1865-1939

Traces the rise of the United States to world power. Explores the interactions of expansionist and isolationist impulses with politics, ideology, culture, and economics. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4118 (3) History of Mexico to 1821

Studies Mexican history beginning with roots and evolution of pre-Columbian civilizations and concluding with the events of Mexican independence in 1821. Emphasizes society and culture of the Aztecs and Mayans, the Spanish conquest of Mexico, and the colonial regime of New Spain. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4119 (3) Latin American Revolutions

Examines the origins, development and continuing influence of 20th-Century Latin American revolutionary movements, with a focus on placing these struggles in comparative historical context. Explores various approaches to revolution and the general role of left political formations in Latin America. Examples will be drawn from various Latin American countries, including Mexico, Guatemala, Cuba, Chile and Nicaragua. Prereq., HIST 1038. Same as HIST 5119. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4122 (3) Europe During the Renaissance

Explores the history and culture of Western Europe, 1300--1520. Comprehensive in scope, with analysis of political, economic, social, religious, intellectual, and artistic matters. Discusses significance of the Renaissance for origins of modern civilization. Prereq., HIST 1010. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4123 (3) Medieval England

Treats the major developments in English history from the Anglo-Saxon period through the 15th century. Emphasizes late medieval English society during the 13th and 14th centuries. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4125 (3) British Colonial America, 1580--1756

Studies settlement and evolution of British Colonial America until the Seven Years' War. Prereqs., HIST 1015 or 1035. Same as HIST 5125. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4126 (3) U.S. Diplomatic History since 1940

Traces the development of the United States as a superpower. Special attention is paid to the way in which foreign policy was created

and the relationship between foreign and domestic affairs. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4128 (3) The Emergence of Modern Mexico

Study of Mexican history continues with the establishment of independence in 1821. Examines the upheavals of the Mexican Revolution and culminates with recent events in Mexico. Same as ETHN 4126 and HIST 5128. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4131 (3) The Origins of Christianity

Surveys the sources for the development of ancient Christianity from the ministry of Jesus Christ to the conversion of the emperor Constantine in the early fourth century. Through lectures and a close reading of primary source materials in translation, students will examine the social activity and theological development of early Christians in their Roman and Jewish context. Prereq., HIST 1010.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-4133 (3) Tudor England

Deals with the history of England from 1485 to 1603. Examines patterns of daily life, the impact of the Reformation and the Renaissance, and the development of Parliament and the monarchy under the Tudor rulers, especially Henry VIII and Elizabeth. Prereqs., HIST 1010, 1030, or 2103. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4134 (3) Elizabeth I and Her Times

Interdisciplinary course explores different aspects of the reign of Elizabeth I: social and political history; literature; theater; and music. Explores the role and impact of a female ruler on English culture. Restricted to juniors/seniors. Same as ENGL 4583 and THTR 4091.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4138 (3) Southwest Borderlands to 1900

Explores the history of the region that would become the American Southwest to 1900. Focusing on themes of novelty, conflict, and adaptation, class explores how changes in ecology, demography, economy, and technology transformed relations between native peoples, Spaniards, and Mexicans. Concludes with unit on causes, events, and consequences of the U.S.-Mexican War. Restricted to sophomores/juniors/seniors.

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## HIST-4143 (3) Stuart Britain

Covers the history of the British Isles from 1603 to 1714, the era of the English Civil War and the Glorious Revolution. Traces economic and social relationships, cultural change, and religious and political conflict under the Stuart monarchs. Prereq., HIST 1010, 1030, 2103, or 2123. Restricted to sophomores, juniors, and seniors.

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## Courses

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HIST

### HIST-4146 (3) Military History

Examines America's national defense and war efforts from the Spanish American War to the present, emphasizing causes and consequences of modern conflicts, and the impact of military activities on American society. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### HIST-4153 (3) Emergence of Modern Britain, 1688-1852

Surveys British history from the Revolution of 1688 to the Great Exhibition in 1851. Topics include creation of the United Kingdom, traditional popular culture, birth of a consumer society, the British Enlightenment, the Evangelical Revival, loss of the American colonies, imperial expansion in Asia, war with Revolutionary and Napoleonic France, the Industrial Revolution, and the impact of utilitarianism and political radicalism. Prereq., HIST 1020, 1040, 2103, or 2123. Restricted to sophomores/juniors/seniors.

[College of Arts & Sciences](#) [History](#) [Europe: Specific Countries](#)

### HIST-4166 (3) The War in Vietnam and Its Legacy

Traces diplomatic, military, cultural, social, and political history of the war in Vietnam from the beginning of U.S. involvement in 1950 to its aftermath in the 1980s. Credit not granted for this course and HIST 2166.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### HIST-4190 (3) French Connections: Contemporary France and America in

## Historical Context

This faculty-led Global Seminar, based in Bordeaux, France provides an opportunity to compare French history and contemporary culture, economy, and culture to that of the United States. Lectures in Boulder and Bordeaux are supplemented by interactions with officials, scholars, business leaders, interest groups, and organizations in France. Offered through Study Abroad. IAFS 3500 and HIST 4190 are the same course. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-4205 (3) The Colonial Wars and the Coming of American Independence, 1739--1776

Investigates imperial warfare and its effects during the late colonial period, concentrating on the French and Indian War (1754--1763), the disruption of Anglo-American relations, and the origins of the War of American Independence (1775--1783). Prereq., HIST 1015 or 1035. Same as HIST 5205. Credit not granted for this course and HIST 2215. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4212 (3) Reformation Europe, 1500--1648

Traces the history of Europe from the end of the Hundred Years War through the end of the Thirty Years War. While focusing on the division of Western Christendom into competing and institutionalized factions, the course contextualizes this cultural transformation within the broader socioeconomic and political changes of the period. Prereqs., HIST 1010 or 3020. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4215 (3) The Revolutionary War and the Making of the American Republic, 1775--1801

Investigates the Revolutionary War and its impact on the creation of American political institutions, as well as its cultural, social, and economic effects, from the Battles of Lexington and Concord through the inauguration of Thomas Jefferson. Prereq., HIST 1015 or 1035. Restricted to sophomores/juniors/seniors. Same as HIST 5215. Credit not granted for this course and HIST 2215.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4217 (3) The American West in the 19th Century

Explores cultural, social, and political interaction in the American West during the 19th century. Themes include environmental change; conflict and syncretism across race, class, and gender lines; and mythic images, and their relationship to the "Real" West. Prereq., HIST 1015 or 1025 or 1035 or 1045.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-4218 (3) States and Societies of West Africa to 1900

Examines the history of West Africa from the earliest times to the 19th century. Prereq., junior standing.

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-4222 (3) War and the European State, 1618--1793

Studies the development of the European states in response to international power struggles in the 17th and 18th centuries (up to the French Revolution). Restricted to sophomores/juniors/seniors. Same as HIST 5222.

College of Arts & Sciences History Europe: Modern

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## HIST-4223 (3) Revolutionary France

Examines the two questions most fundamental to any scholarly understanding of the French Revolution: What were the political, social, and cultural causes of revolution in 1789? Why did the French Revolution become increasingly radical after 1789? HIST 4223 is restricted to juniors and seniors. HIST 4223 and 5223 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences History Europe: Specific Countries

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## HIST-4225 (3) The New Nation: America, 1800--1828

History of the United States from George Washington's inauguration to the election of Andrew Jackson. Deals with the political, social, economic, and cultural currents in the life of postrevolutionary America. Prereq., HIST 1015 or 1035. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences History US: Chronological Periods

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## HIST-4227 (3) The American West in the 20th Century

Explores cultural, social, and political interaction in the American West during the 20th century. Themes include popular culture, state-federal relationships, environmental change, urbanization, immigration, and cultural formation. Prereq., HIST 1015 or 1025 or 1035 or 1045. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences History US: Topical Courses 2

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## HIST-4232 (3) From Absolutism to Revolution in Europe, 1648--1789

Studies the history of Europe from the end of the Thirty Years War through the outbreak of the French Revolution. Central themes include the establishment of more centralized, increasingly bureaucratic states; global expansion and economic commercialization; and cultural developments such as the Scientific Revolution and the Enlightenment. Prereq., HIST 1020 or 3020. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4233 (3) History of France since 1815

Examines the ongoing struggle between the revolutionary and counter-revolutionary traditions of France and how it shaped the political history and affected the social, cultural, and intellectual character of the nation from 1815 to the present. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4235 (3) Jacksonian America

Focuses on the social and cultural history of the Jacksonian Era. Issues include the transformation of the market economy, slavery, moral reform, Indian removal, changes in ideas about men's and women's natures and roles, western expansion, and political culture. Prereq. for HIST 4235 is HIST 1015 or 1035. HIST 4235 and 5235 are the same course. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4238 (3) History of Southern Africa

Examines the history of southern Africa from the earliest hunters, herders and farmers through to the present. One of the chief mediums of analysis is the novel. Short background readings and lectures cover southern Africa's history, and class discussions of novels are layered over these basics. Themes of study include: gender, migration, imperialism, religion, disease, resistance, race, ethnicity, and empire, among others. Prereq., HIST 1208. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4248 (3) Africa in the 19th Century

Juxtaposes an increasing process of indigenous state-building with increasing European presence. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4258 (3) Africa under European Colonial Rule

Focuses on the political, economic, and social dimensions of colonialism, as well as African nationalism and decolonization. Prereq.,

HIST 1208. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4259 (3) African Liberation Struggles: A Comparative History

Highlights the complexity of African decolonization by focusing on the various voices that contend for space as African begins its struggle for liberation. Examines the interrelationship between African colonizers and their colonial administrations, the liberation ideologies emanating from African Diaspora: Pan-Africanism, Garveyism, Negritude and Jamesian socialism, and African nationalist movements and leaders. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4303 (3) Venice and Florence in the Renaissance

Comparative urban study of Florence and Venice from 13th through 16th centuries. Principal subjects are the distinctive economies of the cities, political developments, Renaissance humanism, patronage of the arts, and foreign policy. Prereq., HIST 1010. Formerly HIST 4112. HIST 4303 and 5303 are the same course. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4312 (3) 19th Century Europe

Concerned with major social, political, and cultural developments in Europe from circa 1800 to the outbreak of World War I. Special emphasis is placed upon the Napoleonic experience, the rise of modern nationalism, romanticism, Darwinism and its social applications, the Industrial Revolution, imperialism, the emergence of modern ideologies, and the background of World War I. Prereq., HIST 1020 or 1040. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4313 (3) History of Italy

Survey of political, social, and intellectual history of Italy and its people. Taught in English. Same as ITAL 4250. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4314 (3) History of Science from the Ancients to Sir Isaac Newton

History of science from pre-Socratics to Isaac Newton, underscoring major intellectual themes in scientific thought and the historical context in which they developed. Prereq., HIST 1010 or 1030. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4315 (3) Civil War and Reconstruction

Describes the forces at work in the antebellum period that led to sectional warfare; social, economic, and political changes effected by the war; the American agony of reconstruction; and the long-range results of that difficult era. Prereq., HIST 1015 or 1035. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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# Courses

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HIST

## HIST-4316 (3) The Origins of American Culture, 1600--1830

Traces the development of American culture from its colonial roots to the early decades of the 19th century. Focuses on regional differences in the colonial period, the creation of a new cultural synthesis during the Revolution, and the cultural implications of the Revolutionary legacy. Prereq., HIST 1015 or 1035. Restricted to sophomores/juniors/seniors.

[College of Arts & Sciences](#)
[History](#)
[US: Topical Courses 1](#)

## HIST-4320 (3) The History of the Mediterranean, 1000-1600

Familiarizes students with the Mediterranean ecumene covering concepts such as the Renaissance, the Crusades, traders and travelers, religions and cities. Explores both conflicts (military, confessional) and exchanges (commercial, artistic, scientific) thus helping students think cross culturally, comparatively, and thematically. Emphasizes the Mediterranean contribution to historical developments of western Europe, the Middle East, and North Africa. Prereq., HIST 1010, 1061, 1308, 4061, 4071, 4081, 4091, or 4711. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
[History](#)
[Methodo, Comparative, Global](#)

## HIST-4326 (3) Health and Disease in the United States

Examines health care and disease patterns in the United States, from the colonial period through the 1980s. Topics include biomedicine and alternative therapies, changing ideas about health and disease, the patient perspective, and financing health care. Prereq., HIST 1025 or 1045. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
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## HIST-4328 (3) The Modern Middle East, 1600 to the Present

Primarily from 1800 to the present. Attention divided equally between the region's political history and international relations and its patterns of economic, social, and cultural modernization in the main countries. Prereq., HIST 1308. Same as HIST 5328. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4329 (3) Islam in the Modern World: Revivalism, Modernism, and Fundamentalism, 1800-2001

Examines the more important movements of reform in Muslim world (including Africa, the Middle East, and India) from the 18th century to the present, and their origins and intellectual import. Due to the trans-regional nature of this broad movement of reform, we will pay particular attention to how these movements related to local political, economic, and social contexts, and how they, in turn, moved across larger networks of oceanic commerce and trade. The course concludes with extended case studies of Islamic reformism in modern Egypt and India, and their ultimate influence on the politics of contemporary Islamist movements, especially the intellectual position of Ussama B. Ladin. Prereq., HIST 1308. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4336 (3) 19th Century American Intellectual History

Examines developing intellectual traditions in their social and political contexts. Addresses democracy, religion, transcendentalism, women, race, union or disunion, the Darwinian revolution, and literary realism and naturalism. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4338 (3) History of Modern Israel

Learn the history of this crossroads of Europe and Asia from the late Ottoman Empire to the present. Main topics include nationalism and colonialism, development of Zionist ideology, development of Palestinian nationalism, establishment of the Jewish settlement (Yishuv) under British rule, the founding of the Jewish nation-state, relations with neighbors, and the aftermath of the 1956, 1967, 1973, and 1982 wars. Prereqs., HIST 1108 or 1308 or JWST 2350. HIST 4338 and JWST 4338 are the same course.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4339 (3) Borderlands of the British Empire

Examines the development of the borderlands of the British empire through imperial expansion, consolidation, and early decolonization. Focuses on the 19th and early 20th centuries. Topics include domination, resistance, and negotiation in areas such as India, Afghanistan, the Palestine Mandate. Aims for students to acquire skills in comparative history and to develop a better understanding of the roots of contemporary conflicts. Prereq., HIST 1020, 1308, 1408, or 2123. Same as HIST 5339. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4346 (3) 20th Century American Intellectual History

Addresses the impacts of political, social, and economic developments on ideas about democracy, science, race, gender, faith, the supposed mission of America, and the role of intellectuals in society. Same as ETHN 4344. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4348 (3) Topics in Jewish History

Covers topics in Jewish history from biblical beginnings to present day. Topics vary each semester. Consult the online Schedule Planner for specific topics. May be repeated up to 6 total credit hours within the degree. Prereqs., HIST 1108 or 1308 or JWST 2350. Same as JWST 4348. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4349 (3) Decolonization of the British Empire

Examines the end of the British Empire. Focuses on connections between imperial territories, such as networks of anticolonial activists and links between British decision makers. Students will acquire research skills and develop a better understanding of the roots of contemporary conflict. Prior coursework in British imperial history and excellent writing skills are required. Prereq., one of the following: HIST 1308, 1408, 4053, 4238, 4258, 4328, 4329, 4538, or 4558. HIST 4349 and 5349 are the same course. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4378 (3) Jews Under Islam

Examines Jewish communities of the Mediterranean basin and Middle East in modern times. Topics covered include culture and identity of these communities, as well as their encounter with empire, westernization, and nationalism, among other political and social currents. Exploration of images and representations of Sephardi and Eastern Jewries. Sources include memoirs, diaries, films, 19th century press and correspondence, and travelogues. Same as JWST 4378.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4412 (3) Europe, 1890--1945

Examines the origins, character, and significance of the First and Second World Wars for the major nations of Europe during the first half of the 20th century. Prereq., HIST 1020. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4413 (3) German History to 1849

Cultural, political, and social history of Germany up to and including the revolutions of 1848. Emphasizes the political history of Prussia and such cultural phenomena as German romanticism. Prereq., HIST 1020. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4414 (3) European Intellectual History, 1750--1870

Explores major developments in European thought from the Enlightenment to Nietzsche. Special attention given to the individuals whose ideas have had the greatest influence on modern intellectual history, e.g., Rousseau, Hegel, Herder, Marx, Kierkegaard, Baudelaire, Darwin, and others. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4415 (3) United States History, 1877--1917

Examines the social, economic, political, and cultural history of the United States from the end of Reconstruction to the eve of World War I. Topics include the struggles of labor and industry, race and immigration, western and environmental issues, city life and new technologies, feminism and Progressivism, and Indian wars and imperialism. Prereq., HIST 1015 or 1025. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4417 (3) Environmental History of North America

Examines how people of North America, from precolonial times to the present, organized their lives within the ecological systems of the area, how they conceived of their natural world, and how they reshaped their environment according to their human needs. Prereqs., HIST 1015 or 1025 or 1035 or 1045. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-4422 (3) World War I in Europe

Examines the origins of World War I; the military, social, and cultural character of the conflict; and its enduring impact in the post-1918 world. By thinking about the war as both a military undertaking and an experience that affected domestic and global politics, the course will explore why World War I constituted an event of major importance to Europe and the twentieth-century world. Prereq., HIST 1020 or 1040. HIST 4422 is restricted to sophomores/juniors/seniors. HIST 4422 and 5422 are the same course.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4423 (3) German History Since 1849

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Cultural, political, and social history of Germany since 1849. Emphasizes German unification, Bismarkian foreign policy, the rise of neoromanticism, Weimar politics, and the rise of national socialism. Prereq., HIST 1020. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4424 (3) European Intellectual History, 1870 to Present

Emphasizes Nietzsche and the youth revolt against middle class society, the literary and artistic avant garde (impressionism to existentialism), the psychoanalytic movement, the European right and left, and post-WWII European thought. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4425 (3) United States History, 1917--1945

Examines U.S. history from World War I through World War II. Key themes include: warfare; the rise of the modern state; consumer culture; the shift from conservative politics to the New Deal liberalism; the women's movement; immigration restriction; segregation; the Great Migration, and civil rights; conflicts between secular modernism and religious fundamentalism; and new technologies such as the automobile. Prereq., HIST 1025. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4433 (3) Nazi Germany

Focuses on the political, social, cultural, and psychological roots of national socialism, with the nature of the national socialist regime, and those politics and actions that came directly out of its challenge to values central to Western civilization. Studies how Nazism came out of this civilization. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4435 (3) United States History, 1945--1973

Examines the History of the United States during the Cold War, with an emphasis on social and cultural issues at home. Also addresses the economic and political evolution of the American people and the nation's role in world affairs. Prereq., HIST 1025. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-4442 (3) Europe since 1945

Explores Europe from the end of World War II through the present day. Topics include postwar reconstruction; the cold war; anticommunist opposition and new social movements; consumer culture and punk music; the fall of communism; the Yugoslav wars; and

European unity. Prereq., HIST 1020 or 1040 or 4412, or PSCI 2012. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | Europe: Modern

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## HIST-4444 (3) Topics in Modern European Thought

Explores a selected theme in European thought since the Enlightenment. Topics vary each term. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | Europe: Topical

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## Courses

Search by College, Department & Category

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All

Search by Course Number

Subject Number

HIST

### HIST-4445 (3) United States History since 1973

Traces political, diplomatic, economic, and social developments in the United States from 1973 to the present. Prereq., HIST 1025.

Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [History](#) [US: Chronological Periods](#)

### HIST-4454 (3) Jewish Intellectual History

Takes students on a journey from Medieval Spain to contemporary United States to explore how Jews, living in different societies, have attempted to reshape and interpret central Jewish values and beliefs in accordance with the prevailing ideas of their host societies.

Focuses on the historical context of each Jewish society that produced the thinkers and ideas considered in this course. Prereq., HIST 1010 or 1020, or HIST/JWST 1108, or HEBR/JWST 2350. JWST 4454 and HIST 4454 are the same course.

[College of Arts & Sciences](#) [History](#) [Europe: Topical](#)

### HIST-4511 (3) Europe in the Dark Ages (400--1000 A.D.)

Examines the history of Europe from the fall of the Roman Empire to the turn of the first millennium. Treats social, political, and religious transformations in the barbarian kingdoms, and considers the persistence of Roman institutions and culture and the impact of Christianity in northern Europe. Prereq., HIST 1010, 1030, 2170 or 2543. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [History](#) [Europe: Ancient and Medieval](#)

### HIST-4516 (3) U.S. Society in the 19th Century

Concerned with the American family and community in the changing social environments of the 19th century. Examines families of different ethnic and class backgrounds, observing how they are changed by new economic conditions, reform, or new political institutions. Prereq., HIST 1015 or 1035. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-4521 (3) Europe in the High Middle Ages (1000--1400 A.D.)

Examines the history of Europe from the emergence of feudal institutions to the rise of nation states, with specific attention to social, intellectual and religious change, the role of law and ritual, the crusades and European expansion, and urban growth and identity in the West. Prereq., HIST 1010, 1030, 2170, or 2543. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-4526 (3) U.S. Society in the 20th Century

Primarily concerned with family roles and community values, and how they are altered by economic, demographic, and intellectual changes during the 20th century. Some of the more important themes are acculturation, the idea of success, reform, and the changing structure of opportunity. Prereq., HIST 1025 or 1045. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-4527 (3) Mexican-American History since 1848

Examines Mexican-origins people in the United States from the 19th century through the present. Focuses on Mexican-American history as both an integral part of American history and as a unique subject of historical investigation. Using primary and secondary sources, students will examine how Mexicans and Mexican-Americans have negotiated, influenced, and responded to political, social, cultural, and economic circumstances in the U.S. Prereq., HIST 1025. Recommended prereq., HIST 1015. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences History US: Topical Courses 2

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## HIST-4528 (3) Islam in South and Southeast Asia (1000 to the Present)

Examines the history of Muslim societies in South and Southeast Asia from 1000 to the present. Focuses on themes such as the rise of Islamic empires in South Asia, Sufism, trade and the spread of Islam in Southeast Asia, the rise or Muslim nationalism and religious fundamentalism, and the impact of modernization and globalization on Muslims of the region. Recommended prereq., six hours of history credit. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-4538 (3) History of Modern India

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Examines the history of India from the British conquest of India in the late 18th century to independence in 1947. Emphasizes the impact of British rule on the political, economic, and social development of modern India. Recommended prereq., at least 6 hours of history credit. Same as HIST 5538. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4544 (3) History of Yiddish Culture

Jews have produced culture in Yiddish, the vernacular language of Eastern European Jewry, for 1000 years and the language continues to shape Jewish culture today. In this course, we will look at the literature, film, theater, music, art, sound, and laughter that defined the culture of Eastern European Jewry and, in the 20th century, Jews around the world. Recommended prereqs., HIST 1108 or HEBR 2350. Same as JWST 4544.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4546 (3) Popular Culture in the Modern United States

Traces the history of cultural expression in the United States since the late nineteenth century. From art, fiction, and music to the movies, amusement parks, shopping, and sports, popular culture offers clues to decipher shifting patterns of consumption, globalization, race, gender, politics, technology, and media. Includes instruction and practice interpreting cultural materials in historical context. Prereq., HIST 1025. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4548 (3) Women in Modern India

Examines the history of women and gender in India from the late eighteenth century to the present. Explores topics such as the changing legal status of women in the colonial and postcolonial period, marriage, domesticity and patriarchy, and women's education and participation in anti-colonial and postcolonial politics, women, work, and the environment, violence against women, and women and globalization. Prereq., any 1000 level HIST course. Recommended prereq., HIST 1408. Same as HIST 5548.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4556 (3) America through Baseball

Baseball serves as a window to view the American experience. Covers U.S. history since 1830, addressing the major topics that reflect on American society, such as professionalization, labor management conflict, race, gender, culture, politics, economics, and diplomacy. Prereq., HIST 1025 or 1045. Recommended prereq., HIST 1015 or 1035. Restricted to sophomores/juniors/seniors. Credit not granted for this course and HIST 2516.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4558 (3) Modern Indian Intellectual History

Focuses on the nature and evolution of thought in modern India in the light of the encounter between pre-modern Indian and modern Western intellectual traditions in colonial and postcolonial India. Examines themes such as orientalism, nationalism, Hindu and Muslim nationalism, humanism, non-violence, and postcolonialism. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4614 (3) Women and Society in Industrial Europe

Examines impact of industrialization and related social change on women in modern European history. Topics include work, family, sexuality, and women in movements for social and political change. Prereq., HIST 1020 or 1040. Restricted to sophomores/juniors/seniors. Same as WMST 4614.

College of Arts & Sciences | History | Europe: Topical

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## HIST-4616 (3) History of Women in the United States to 1890

Examines female experience in the United States from 17th century European colonization to 19th century settlement of the frontier. Emphasizes comparison between classes, regions, and racial/ethnic groups. Women's writings provide the basis for discussions of private and public roles, definitions of femininity, interpersonal relationships, and struggles for survival and self-expression. Prereq., HIST 1025. Restricted to sophomores/juniors/seniors. HIST 4616 and 5616 are the same course. Also same as WMST 4616. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4617 (3) Native North American History I: Human Settlement to 1815

Explores the establishment and development of human societies in North America prior to 1492; the varied experiences of contact; the crises, opportunities, and transformations that attended colonialism; Indians and the inter-imperial contests of the eighteenth century; and the struggles of native peoples confronting the newly-independent United States. Prereq., HIST 1015 or 1035. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-4618 (3) Traditional China

Examines major traditions in philosophy, art, politics, society, and economy of China during the premodern period. Prereq., HIST 1608 or EALC 1011. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4619 (3) Women in Asian History

Considers major issues in the history of Asian women in the 18th, 19th, and 20th centuries. Focuses on gender roles in Asian family, state, and religious systems. Same as WMST 4619 and HIST 5619. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-4623 (3) History of Eastern Europe Since 1914

Examines the struggle of nations of eastern Europe to assert their independence, from break-up of the imperial system at the end of World War I, through the Soviet bloc that emerged after World War II, to the establishment of democratic governments after the 1989 revolutions. Prereq., HIST 1020 or 1040 or PSCI 2012. Restricted to sophomores, juniors or seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4626 (3) History of Women in the United States since 1890

Examines what it means to be female in 20th century United States, emphasizing comparison between classes and racial/ethnic groups. Women's writings serve as the basis for discussions of private and public roles, definitions of womanhood, interpersonal relationships, and struggles for autonomy and equality. Restricted to sophomores, juniors or seniors.. Same as WMST 4626. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-4627 (3) Native North American History II: 1815 to Present

Explores the longevity and continuity of human history in North America by discussing pre-European social and cultural developments. By examining ways in which Indian societies west of the Mississippi River responded to Euro-Americans, the Indians' role in western North American history is demonstrated. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-4628 (3) Modern China

Examines China from 1750 to 1949. Focuses on such issues as the influence of imperialism, the emergence of nationalism, and the meaning of revolution. Same as HIST 5628. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4636 (3) Lesbian and Gay History: Culture, Politics, and Social Change in the United States

Considers current theoretical approaches to the history of sexuality and traces the changing meaning of same-sex sexuality in the United States through investigation of lesbian/gay identity formation, community development, politics, and queer cultural resistance. Prereq., HIST 1015 or 1025 or 1035 or 1045 or WMST 2000. Same as HIST 5636 and WMST 4636.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

## HIST-4638 (3) Contemporary China

Examines the history of the People's Republic of China from 1949 to the present. Focuses on such issues as the nature of Maoism, foreign policy, political campaigns such as the Cultural Revolution and the Democracy Movement, and recent economic developmental efforts. HIST 4638 and HIST 5638 are the same course. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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# Courses

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Search by Course Number

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HIST

## HIST-4640 (3) Women, Gender and War

Study of how women experience war, and how the structure, practice and memory of war, and the rights and obligations of military service structure gender (masculinity and femininity) and are structured by the gender system. Prereq., HIST 1020 or 1025 or 1040 or 1045, or WMST 2000. Same as WMST 4640. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
[History](#)
[Methodo, Comparative, Global](#)

## HIST-4643 (3) Poland since the 16th Century: Democracy and Nation

Traces themes of democracy and nationalism in Polish history from the "Noble Republic" of the early modern era, through the struggles with fascism and communism in the 20th century, to Poland's current position on the eastern edge of Western Europe. Restricted to sophomores/juniors/seniors.

[College of Arts & Sciences](#)
[History](#)
[Europe: Specific Countries](#)

## HIST-4648 (3) History of Modern Chinese Intellectual Thought

Examines major intellectual movements in modern China from Ch'ing neo-Confucianism, empiricism, and nationalism to Chinese communism. Prereq., HIST 1608.

[College of Arts & Sciences](#)
[History](#)
[World Areas: Specific Regions](#)

## HIST-4658 (3) China and Islam from the 7th Century to the 20th Century

This course traces how "Muslims in China" transformed themselves into "Chinese Muslims" while at once accommodating and conflicting with Chinese states and people throughout history until the present time. Recommended prereq., HIST 1608. HIST 4658 and 5658 are the same course. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4688 (3) Beijing: Window on Modern China

Learn about modern Chinese history, emphasizing Beijing's important role. Think critically about ways the past is made use of in the present; how memorials capture and present meanings; how to view museums with a critical eye; and about the way Beijing works and exudes power as one of the most important capital cities in the world. Offered through Study Abroad.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4711 (3) The Medieval Crusades: Holy War and Its History, 1095--1400

Studies the innovation, impact and meaning of holy war and the expansion of Christendom during the High Middle Ages. Topics include the definition of crusade and crusaders, religious persecution and tolerance, the expansion of European modes of government, war memory, colonization and its aftermath, the meaning of the Holy Land and the home front. Prereq., HIST 1010 or 3020. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-4713 (3) History of Russia through the 17th Century

Introduces the history and culture of Russia from the 9th to the 17th century. Emphasizes selected topics in social, economic, religious, and cultural history, including the formation of the Russian state conversion to Orthodox Christianity, the Mongol invasion, and the reign of Ivan the Terrible. Restricted to juniors and seniors.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4718 (3) Ancient, Classical, and Medieval Japanese History

Begins with the prehistoric and protohistoric periods. Explores the development of Japan's classical age and traces the rise and attenuation of an elite warrior government. Restricted to juniors and seniors.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-4723 (3) Imperial Russia

Surveys major cultural, social, and economic changes from the reign of Peter the Great through World War I. Restricted to juniors and

seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences History Europe: Specific Countries

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## HIST-4726 (3) U.S. Immigration History

Focuses on economic, social, and cultural history of immigration, return migration, and permanent settlement in the U.S. during the 19th and 20th centuries. Examines the ways in which race, class, ethnicity, gender, and sexuality shape social relations. Prereq., HIST 1015 or 1025 or 1035 or 1045. Restricted to junior/senior HIST or ETHN majors.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-4728 (3) Modern Japanese History

Begins with early modern Japan, proceeds through the era of rapid modernization after the Meiji Restoration in the mid-19th century, and concludes with Japan's gradual descent into prolonged war, first with China and then in the Pacific. Restricted to juniors and seniors. HIST 4728 and 5728 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-4733 (3) The Russian Revolution and the Soviet Regime

Covers in detail the significant social, economic, and political events of Soviet Russia from the February Revolution of 1917 to the present. Prereq., junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences History Europe: Specific Countries

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## HIST-4738 (3) History of Early Modern Japan (1590-1868)

Covers the history of early modern Japan (1590-1868). Explores the political, social, cultural, and economic context of Japan's history from the era of Warring States through the rise and fall of the Tokugawa military government (Shogunate). Restricted to juniors and seniors. Same as HIST 5738. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-4761 (3) Roman Law

Same as HIST 5761 and CLAS 4761.

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-4803 (3) Special Topics in European History

Covers specialized topics in early modern and modern European history, usually focusing on one country. May be repeated up to 6 total credit hours. Prereq., HIST 1010, 1020, 1030, or 1040. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-4820 (3) Human Rights: Historical Perspectives

Examines the history of modern ideas of human rights. Focuses on themes such as the universalism/cultural relativism debate, colonialism, nationalism, refugees and stateless peoples, the United Nations and humanitarianism, ethnic genocide in Rwanda, and human rights abuses by the Taliban regime in Afghanistan. Prereq., 6 hours of HIST credit. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-4827 (3) Modern U.S. Jewish History

Explores the experience of Jews in the United States from the 1880's when the great migration of Jews from Eastern Europe began, through the twentieth century. Students will explore the changing ways in which Jews adapted to life in the U.S., constructed American Jewish identities, and helped to participate in the construction of the United States as a nation. Recommended prereqs., HIST 1025 or HIST/JWST 1108 or HEBR/JWST 2350. JWST 4827 and HIST 4827 are the same course.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-4930 (1-3) History Internship

Matches selected students with supervised internships in professional archives research libraries, historical associations, and special projects. Interns apply their academic area specialty to their work in the field. Internships have a work and academic (reading and writing) component. May be repeated up to 6 total credit hours. Recommended prereq., completion of lower-level HIST course work (HIST 1015/1025, etc.). May be taken pass/fail only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) History (HIST) majors only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-5000 (3) Historical Methods: Introduction to the Professional Study of History

Introduces purposes, materials, and techniques of historical scholarship. Theory, practice, and criticism. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-5012 (3) Graduate Colloquium in European History

Acquaints students with key works in the literature of European history, and addresses matters of method and interpretation. May be repeated up to 6 total credit hours. Prereq., admission to the graduate program in history. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-5014 (3) Law and Legal History in Early Modern Europe

Explores use of legal records as a source for writing not only political and economic history, but social and cultural history as well. Traces the historiographic and methodological trajectory of legal history in early modern European countries. Prereq., graduate standing.

College of Arts & Sciences | History | Europe: Topical

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## HIST-5053 (3) Britain and the Empire, 1688--1964

Same as HIST 4053.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-5061 (3) Twilight of Antiquity

Same as HIST 4061 and CLAS 5061.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-5064 (3) Early Modern Spain

Surveys the history of the Iberian Peninsula from the late medieval period through early modern period. Explores the thought, art, politics, and socio-economic milieu of Spain during the Golden Age. Topics include attitudes toward minorities, the Inquisition, the establishment of a colonial empire, rituals, court culture and architecture, religious conflicts, and literary production. Prereq for HIST 4064., HIST 1010 or 1030. Same as HIST 5064. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Europe: Topical

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## HIST-5106 (3) Graduate Colloquium in United States History

Students gain an acquaintance with major works in the field and discuss current issues of interpretation and methodology. May be repeated up to 9 total credit hours. Prereq., graduate standing. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | US: Topical Courses 1



# Courses

Search by College, Department & Category

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Search by Course Number

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HIST

## HIST-5119 (3) Latin American Revolutions

Same as HIST 4119.

[College of Arts & Sciences](#)
[History](#)
[World Areas: Comp and General](#)

## HIST-5128 (3) The Emergence of Modern Mexico

Same as HIST 4128.

[College of Arts & Sciences](#)
[History](#)
[World Areas: Specific Regions](#)

## HIST-5129 (3) Colloquium in Modern Asian History

Introduces major topics and themes in Asian history. Analyzes readings relating to topics such as imperialism, cultural agency, gender, race, nationalism, decolonization, and revolution. May be repeatable for up to 6 total credits hours provided the topics vary. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[History](#)
[World Areas: Comp and General](#)

## HIST-5205 (3) The Colonial Wars and the Coming of American Independence, 1739--1776

Prereq., graduate standing. Same as HIST 4205. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[History](#)
[US: Chronological Periods](#)

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## HIST-5215 (3) The Revolutionary War and the Making of the American Republic, 1775--1801

Prereq., graduate standing. Same as HIST 4215.

College of Arts & Sciences History US: Chronological Periods

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## HIST-5222 (3) War and the European State, 1618-1793

Same as HIST 4222. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences History Europe: Modern

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## HIST-5223 (3) Revolutionary France

Examines the two questions most fundamental to any scholarly understanding of the French Revolution: What were the political, social, and cultural causes of revolution in 1789? Why did the French Revolution become increasingly radical after 1789? HIST 4223 is restricted to juniors and seniors. HIST 4223 and 5223 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences History Europe: Specific Countries

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## HIST-5235 (3) Jacksonian America

Focuses on the social and cultural history of the Jacksonian Era. Issues include the transformation of the market economy, slavery, moral reform, Indian removal, changes in ideas about men's and women's natures and roles, western expansion, and political culture. Prereq. for HIST 4235 is HIST 1015 or 1035. HIST 4235 and 5235 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences History US: Chronological Periods

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## HIST-5248 (3) History of Anglo-American Criminal Justice

Explores the social, cultural, and legal history of Anglo-American criminal justice from the 17th to the 20th centuries. Also examines tensions between various methods that historians employ to study crime and law.

College of Arts & Sciences History World Areas: Specific Regions

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## HIST-5303 (3) Venice and Florence in the Renaissance

Comparative urban study of Florence and Venice from 13th through 16th centuries. Principal subjects are the distinctive economies of the

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cities, political developments, Renaissance humanism, patronage of the arts, and foreign policy. Prereq., HIST 1010. Formerly HIST 4112. HIST 4303 and 5303 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-5328 (3) The Modern Middle East, 1600 to the Present

Prereq., graduate standing. Same as HIST 4328. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-5339 (3) Borderlands of the British Empire

Prereq., graduate standing. Same as HIST 4339.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-5349 (3) Decolonization of the British Empire

Examines the end of the British Empire. Focuses on connections between imperial territories, such as networks of anticolonial activists and links between British decision makers. Students will acquire research skills and develop a better understanding of the roots of contemporary conflict. Prior coursework in British imperial history and excellent writing skills are required. Prereq., one of the following: HIST 1308, 1408, 4053, 4238, 4258, 4328, 4329, 4538, or 4558. HIST 4349 and 5349 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-5422 (3) World War I in Europe

Examines the origins of World War I; the military, social, and cultural character of the conflict; and its enduring impact in the post-1918 world. By thinking about the war as both a military undertaking and an experience that affected domestic and global politics, the course will explore why World War I constituted an event of major importance to Europe and the twentieth-century world. Prereq., HIST 1020 or 1040. HIST 4422 is restricted to sophomores/juniors/seniors. HIST 4422 and 5422 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-5538 (3) History of Modern India

Same as HIST 4538.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-5548 (3) Women in Modern India

Same as HIST 4548.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-5616 (3) History of Women in the United States to 1890

Examines female experience in the United States from 17th century European colonization to 19th century settlement of the frontier. Emphasizes comparison between classes, regions, and racial/ethnic groups. Women's writings provide the basis for discussions of private and public roles, definitions of femininity, interpersonal relationships, and struggles for survival and self-expression. Prereq., HIST 1025. Restricted to sophomores/juniors/seniors. HIST 4616 and 5616 are the same course. Also same as WMST 4616. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-5619 (3) Women in Asian History

Same as HIST 4619. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-5628 (3) Modern China

Prereq., graduate standing. Same as HIST 4628.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-5636 (3) Lesbian and Gay History: Culture, Politics, and Social Change in the United States

Restricted to graduate students. Same as HIST 4636 and WMST 4636.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-5638 (3) Contemporary China

Examines the history of the People's Republic of China from 1949 to the present. Focuses on such issues as the nature of Maoism, foreign policy, political campaigns such as the Cultural Revolution and the Democracy Movement, and recent economic developmental efforts. HIST 4638 and HIST 5638 are the same course. Prerequisites: Restricted to Graduate Students only.

## HIST-5658 (3) China and Islam from the 7th Century to the 20th Century

This course traces how "Muslims in China" transformed themselves into "Chinese Muslims" while at once accommodating and conflicting with Chinese states and people throughout history until the present time. Recommended prereq., HIST 1608. HIST 4658 and 5658 are the same course. Prerequisites: Restricted to Graduate Students only.

## HIST-5728 (3) Modern Japanese History

Begins with early modern Japan, proceeds through the era of rapid modernization after the Meiji Restoration in the mid-19th century, and concludes with Japan's gradual descent into prolonged war, first with China and then in the Pacific. Restricted to juniors and seniors. HIST 4728 and 5728 are the same course. Prerequisites: Restricted to Graduate Students only.

## HIST-5738 (3) History of Early Modern Japan (1590--1868)

Same as HIST 4738. Prerequisites: Restricted to Graduate Students only.

## HIST-5761 (3) Roman Law

Same as HIST 4761 and CLAS 5761.



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# Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

**Subject**    **Number**

HIST

## HIST-5840 (1-3) Independent Study

Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [History](#) [Methodo, Comparative, Global](#)

## HIST-5841 (1-3) Independent Study

[College of Arts & Sciences](#) [History](#) [Europe: Ancient and Medieval](#)

## HIST-5842 (1-3) Independent Study

[College of Arts & Sciences](#) [History](#) [Europe: Modern](#)

## HIST-5843 (1-3) Independent Study

[College of Arts & Sciences](#) [History](#) [Europe: Specific Countries](#)

## HIST-5845 (1-3) Independent Study

[College of Arts & Sciences](#) [History](#) [US: Chronological Periods](#)

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## HIST-5846 (1-3) Independent Study

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-5847 (1-3) Independent Study

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-5848 (1-3) Independent Study

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-5849 (1-3) Independent Study

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-6012 (3) Readings in Modern European History

Prerequisites: Restricted to History graduate students only.

College of Arts & Sciences | History | Europe: Modern

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## HIST-6019 (3) Readings in World History

Prereq., graduate standing.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-6020 (3) Modern Empires: Readings in Imperial History

Introduces major topics and themes in imperial history. Reviews central theories of modern colonial empire, ranging from economic and political motivations for expansion, to the cultural and social impact of empire, to post-colonialism.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-6028 (3) Readings in Modern Latin American History

Examines major themes and topics in the social, political and economic history of Latin America. Possible topics include nationalism and state-building, neocolonialism, revolution and reaction, race, and gender. Recommended prereq., HIST 5128 or 5118. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-6030 (3) Readings: Frontiers and Borderlands in the Americas

Introduces classic and recent scholarship on frontiers and borderlands in the Americas. Chronological focus will vary by semester, from contact through twentieth century. A hemispheric approach encourages comparative insights about topics such as colonialism and ecological change, war and violence, indigenous resistance, acculturation, ethnogenesis, and evolving ideas about race, gender, and identity at the margins of empires and nation-states. Restricted to graduate students.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-6113 (3) Readings in English History to 1714

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-6115 (3) Readings in American Colonial History

Prereq., graduate standing.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-6116 (3) Readings in American Diplomatic History

Prereq., undergraduate work in American history.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6122 (3) Readings in 16th Century Europe

College of Arts & Sciences | History | Europe: Modern

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## HIST-6123 (3) Readings in English History Since 1688

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-6146 (3) Readings in U.S. Political History

Explores the history of politics in the U.S., with an emphasis on the period since 1865. Key themes include the relations between state and society, the origins and nature of social movements, and the role played by political culture. Prereq., graduate standing.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6150 (3) Critical and Theoretical Issues in Museums

Investigates key problems facing museum institutions and studies the staging and representation of historical knowledge, the ethics of collecting and display, the changing nature and uses of historical evidence, and relations between curatorial practice, collecting, and field work. Critically examines different approaches to museums and museology in various disciplines, both past and present. Prereq., MUSM 5011 or instructor consent. Same as MUSM 6150, ARTH 6150, and ANTH 6150.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-6212 (3) Readings in 17th Century Europe

College of Arts & Sciences | History | Europe: Modern

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## HIST-6317 (3) Readings in the American West

Prereq., graduate standing.

College of Arts & Sciences | History | US: Topical Courses 2

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## HIST-6326 (3) Readings in United States Intellectual History

Examines the history of ideas and the social history of intellectuals in American society during the 19th and 20th centuries. Stresses social and political dimensions and the changing cultural and institutional contexts of intellectual discourse. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to History graduate students only.

College of Arts & Sciences | History | US: Topical Courses 1

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# HIST-6329 (3) Readings in Comparative Ethnohistory

Prereq., graduate standing.

College of Arts & Sciences | History | World Areas: Comp and General

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# Courses

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HIST

## HIST-6330 (3) History of Sex and Sexuality

Examines major historical trends in the study of meanings and practices of sex and sexuality. Focuses on emergence and negotiation of sexual matters in circumstances where sex and identity were not coterminous. Restricted to graduate students.

College of Arts & Sciences History Methodo, Comparative, Global

## HIST-6413 (3) Readings in Modern German History

Prereq., general background in European history.

College of Arts & Sciences History Europe: Specific Countries

## HIST-6414 (3) Readings in European Intellectual History

Prereq., graduate standing or instructor consent.

College of Arts & Sciences History Europe: Topical

## HIST-6417 (3) Readings in Environmental History

Offers historical perspective on the complex and interdependent relationship between human social and cultural institutions and the natural world. Considers interdisciplinary methodologies incorporating history, biology, geography, law, and other disciplines. Same as EPOB 6410.

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College of Arts & Sciences History US: Topical Courses 2

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## HIST-6427 (3) Readings in African American History

Introduces classic and recent scholarship, and critical issues in African American history, from slavery to the present. Prereq., graduate standing.

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College of Arts & Sciences History US: Topical Courses 2

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## HIST-6500 (3) Comparative Labor History

Examines major issues in labor history through comparative study of Europe, the United States, and Latin America. Issues to be studied include working-class formation, the development of worker identities, and workers and the state.

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College of Arts & Sciences History Methodo, Comparative, Global

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## HIST-6511 (3) Readings in Medieval History

Prereq., instructor consent.

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College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-6526 (3) Readings in U.S. Social History, 1880--1940

Prereq., graduate standing or instructor consent.

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College of Arts & Sciences History US: Topical Courses 1

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## HIST-6536 (3) Readings in 20th Century U.S. Labor History

Prereq., graduate standing.

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College of Arts & Sciences History US: Topical Courses 1

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## HIST-6546 (3) Readings in Cultural History and Theory

Introduces standard works and recent developments in cultural history. Explores structuralism and post-structuralism, semiotics, social

construction, relativism, hegemony, and the idea of postmodernity in the uses of culture as an historical category. Prereq., graduate standing or instructor consent.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6556 (3) Readings in U.S. History, the Depression and World War II

May be repeated up to 6 total credit hours.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6616 (3) Readings in the History of American Women

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6628 (3) Reading in South Asian History

Introduces major topics and themes in South Asian history. Reviews central theories relating to topics such as religion, nationalism, law, gender, colonialism, and literature.

College of Arts & Sciences | History | World Areas: Specific Regions

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## HIST-6756 (3) Race and Nationalism

Focuses on analytical, ideological, cultural, and political tensions between understandings of race and nationalism. Readings are interdisciplinary, but students identify and analyze tensions between race and nationalism at particular historical moments. Prereq., graduate standing or instructor consent.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-6940 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-6950 (1-6) Master's Thesis

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Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-7011 (3) Seminar in Ancient History

Examines topics in ancient Greek and Roman history at an advanced seminar level. May be repeated up to 6 total credit hours. Same as CLAS 7011.

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-7052 (3) Seminar: Modern European History

College of Arts & Sciences | History | Europe: Modern

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## HIST-7119 (3) Graduate Research Seminar in Asian History

Prepares students for research in historical documents in Asian languages in order to write a substantial original research paper based on primary and secondary source materials. Prereq., graduate standing and background in Asian history.

College of Arts & Sciences | History | World Areas: Comp and General

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## HIST-7153 (3) Seminar: English History, 800--1688

Prereq., background in English or European history.

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-7155 (3) Seminar: Early American History

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-7156 (3) Seminar: American Diplomatic History

Prereq., graduate standing.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-7183 (3) Interdisciplinary Seminar in British Studies

Introduces students to the methodologies and texts/sources of current work in English literature, history, theatre, art history, and social sciences. Students write a paper based upon the University of Colorado's distinctive research collections in British studies. Prereq., graduate standing. Same as ENGL 7889.

[College of Arts & Sciences](#) [History](#) [Europe: Specific Countries](#)

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## HIST-7214 (3) Seminar: Economic Development

Prereq., graduate standing. Same as ECON 8764.

[College of Arts & Sciences](#) [History](#) [Europe: Topical](#)

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## HIST-7252 (3) Seminar: Early Modern Europe, 16th to 18th Centuries

[College of Arts & Sciences](#) [History](#) [Europe: Modern](#)

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## Courses

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HIST

### HIST-7257 (3) Seminar: History of the American Frontier

Prereq., graduate standing. Prerequisites: Restricted to History graduate students only.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 2](#)

### HIST-7326 (3) Seminar: U.S. Intellectual History

Prereq., graduate standing.

[College of Arts & Sciences](#) [History](#) [US: Topical Courses 1](#)

### HIST-7415 (3) Graduate Seminar in Modern United States History

Introduces students to various research approaches and methods in modern U.S. historiography and requires them to produce a substantial and original research paper using both primary and secondary sources. Prereq., graduate standing. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [History](#) [US: Chronological Periods](#)

### HIST-7424 (3) Research Methods in Medieval/Early Modern European History

Introduces students to research skills needed to work with historical manuscripts. Students learn to read late medieval/early modern handwriting, explore CU's microfilmed collections of manuscripts, and write a research paper based on the manuscript materials. Prereq., graduate standing or instructor consent.

College of Arts & Sciences History Europe: Topical

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## HIST-7464 (3) Seminar: European Intellectual History

College of Arts & Sciences History Europe: Topical

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## HIST-7485 (3) Seminar: United States History, 1948-Present

College of Arts & Sciences History US: Chronological Periods

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## HIST-7551 (3) Seminar: Medieval History

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-7556 (3) Seminar: American Society and Thought

Prereq., graduate standing.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-7566 (3) Research Seminar in Labor History

Explores various issues in U.S. labor history through readings and research projects. Most of the readings are taken from writings on U.S. labor history. Special attention is given to women, immigration, and regional patterns. Research skills emphasized. Prereq., HIST 6536 or instructor consent.

College of Arts & Sciences History US: Topical Courses 1

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## HIST-7581 (3) Latin Paleography

Discusses the development of formal scripts from the late Roman Empire to the 15th century. Provides practice in identification, transliteration, and translation of medieval manuscripts. Prereqs., graduate standing and reading knowledge of Latin.

College of Arts & Sciences History Europe: Ancient and Medieval

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## HIST-7656 (3) Seminar: Women's History

Prereq., one 6000-level readings course in women's history.

College of Arts & Sciences | History | US: Topical Courses 1

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## HIST-7840 (1-3) Independent Study

College of Arts & Sciences | History | Methodo, Comparative, Global

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## HIST-7841 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Ancient and Medieval

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## HIST-7842 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Modern

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## HIST-7843 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Specific Countries

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## HIST-7844 (1-3) Independent Study

College of Arts & Sciences | History | Europe: Topical

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## HIST-7845 (1-3) Independent Study.

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-7846 (1-3) Independent Study

College of Arts & Sciences | History | US: Chronological Periods

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## HIST-7847 (1-3) Independent Study

## HIST-7848 (1-3) Independent Study

## HIST-7849 (1-3) Independent Study

## HIST-8990 (1-10) Doctoral Dissertation

All doctoral students must register for no fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.



# Courses

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HONR

## HONR-1001 (1) Honors Coseminar

Honors coseminars are designed to combine an honors seminar experience with the shared experience of an organized lecture course. Designed typically for 10--15 students, coseminars are taken for an additional 1 credit hour. Coseminars provide honors students with an opportunity to extend their common experience in the course lecture into an enriched interactive, critical thinking opportunity. May be repeated up to 4 total credit hours. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

[College of Arts & Sciences](#) [Honors](#)

## HONR-1810 (3) Honors Diversity Seminar

Students will develop an appreciation for, and experience with, diverse perspectives. In particular this includes: racial/ethnic, gender, sexual orientation, and class perspectives, for constructing knowledge as they proceed through their undergraduate studies. Three themes provide the framework for the course: education for the next century, the 21st century citizen, and the modern individual in a diverse society. Topics explored include privilege, stigmatization, targeted and nontargeted grouping, and oppression. Engaging in independent research and experiential, empathetic experiences is required. Approved for arts and sciences core curriculum: human diversity. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

[College of Arts & Sciences](#) [Honors](#)

## HONR-2250 (3) Ethics of Ambition

Through selected readings in classical literature on ethics and through more contemporary readings and films, examines critical ethical issues relating to the competition of ambitions and the alternative styles of choosing between courses of action in a dangerous world. Uses biographies of those whose lives illustrate both the complexities of the struggles and the profundity of possibilities. Considers the unconscious metaphors of national visions and ambitions, the competing ethics of ends and means, the conflicting ambitions in a pluralistic society, and the transcendent ambitions of visionaries. Same as FARR 2660. Approved for arts and sciences CORE curriculum: ideals and values. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-2251 (3) Introduction to the Bible

Studies the major works, figures, and genres of the Bible and attempts to understand what they meant to their own time and why they became so important to Western civilization and contemporary America. Approved for arts and sciences CORE curriculum: historical content. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-2500 (3) Open Topics

Variety of new courses at the 2000 level. See honors program announcements for specific contents. May be repeated up to 6 total credit hours. Prereq., GPA 3.30 or higher. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-2610 (1) Leadership Practicum: Kittredge Honors Program Flock Leaders

Required for students who are selected as flock leaders for the Kittredge honors residence program. Teaches skills and techniques to enable them to lead a small group in the unique environment of a residential honors program. May be repeated up to 2 total credit hours. Prereq., consent of Kittredge honors program associate director.

## HONR-2860 (3) The Figure of Socrates

Investigates why Socrates intrigued great writers like Aristophanes, Plato, Xenophon, and Aristotle and why, through his life and execution by the Athenian democracy, he still influences Western ethics, politics, and education and is central to cultural literacy. Approved for arts and sciences CORE curriculum: literature and the arts.

## HONR-3001 (1) Honors Coseminar

Honors coseminars are designed to combine an honors seminar experience with the shared experience of a lecture course. Designed typically for 10--15 students, coseminars are taken either for an additional 1 credit hour or in place of a recitation. Coseminars are designed to provide honors students with an opportunity to extend their common experience in the course lecture into an enriched interactive, critical thinking opportunity.

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## HONR-3004 (3) Women in Education

Honors women in education and their legacy. Introduces women educators, beginning in the late 19th century, whose significant theories of education and work inteaching have had an impact on all of our lives, in history, and in society. Explores the educational theories and methods of several representative women educators and analyzes them through an investigation of their professional and personal lives. Same as WMST 3004. Approved for arts and sciences core curriculum: human diversity.

## HONR-3056 (3) Experience of Learning

Major historical, psychological, philosophical and personal perspectives on education in general and university education in particular will be developed. Participants will be encouraged to consider how the issues discussed and the ideas developed in the seminar bear on the choices they face in planning their own educations. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

## HONR-3220 (3) Advanced Honors Writing Workshop

Intensive practice of expository writing skills, particularly argumentation in longer forms. Course includes extensive practice in researching secondary sources, synthesizing large bodies of information, structuring cogent arguments for diverse sources,etc. Restricted for juniors/seniors or instructor consent required. Approved for arts and sciences CORE curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## HONR-3270 (3) Journey Motif in Women's Literature

Investigates the application of the theme of the journey to developmental narratives by analyzing modern British and American writings by women. Applies methods from psychology, feminist studies, gay studies, cultural studies to concepts of development, regression, progress, escape. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

## HONR-3550 (1-6) Open Topics

Investigates special topics in humanities, social sciences, and natural sciences. Topics vary from semester to semester and from course to course. See Honors program announcements for specific contents. Open to Honors-qualified students beyond the freshman year. May be repeated for up to six credit hours for different topics.

## HONR-3560 (3) Science and Mysticism

Has modern science proven or validated the mystical religious experience? Or does a basic conflict remain between these diverse human endeavors? The similarities and differences between science and mysticism will be investigated through readings, discussions and practical, experiential exercises. Discussions and exercises will be designed to encourage both an intellectual and a non-intellectual understanding of the course material. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-3810 (3) Privilege and Modern Social Construction

This course examines social constructions that lead to productive interactions between and among American social communities. Using case studies and humanistic accounts, students analyze the lived experiences of a unique group or successful citizens who routinely evidence productive practices of multicultural engagement. Through interactions with policy makers and community practitioners, students design and enact activities that allow them to reconstruct their personal patterns of privilege practices of their peer groups in various settings. Prereq., HONR 1810 or demonstrated academic study of race, class, and gender. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-4000 (3) Open Topics

Variety of new courses at the 4000 level, see Honors Program announcements for specific contents. May be repeated up to 6 total credit hours. Restricted to juniors/seniors or instructor consent required. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## HONR-4025 (3) Heroines and Heroic Tradition

Given recent controversies about the roles of women in power, this course re-evaluates heroic traditions as the stories that ground our sense of public endeavor. What do we mean by heroic? What is a heroine? Are heroines different from heroes? Approved for arts and sciences core curriculum: human diversity. Prerequisites: A minimum 3.3 cum GPA is required for this Honors class or you must be part of the first year student group.

## HONR-4055 (3) Discourse Analysis and Cultural Criticism

Discourse analysis critically investigates the founding assumptions by which systems of meaning operate. Its practice is aimed at a rigorous, systematic analysis of both specific cultural issues and the dynamics by which structures of meaning may be maintained or transformed. Coreq., HONR 4056. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Honors

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## HONR-4056 (1-3) Service Practicum: Discourse Analysis and Cultural Criticism

Help communities in need, with credit hours varying according to time commitment. The practicum provides experiential and intellectual understanding of the discourses and dynamics that maintain major cultural hierarchies of values and of resource distribution. Coreq., HONR 4055. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Honors

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## HONR-4959 (3-6) Honors Thesis

May be repeated up to 6 total credit hours. Requires approval of Honors Program.

College of Arts & Sciences Honors

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

HUEN

## HUEN-1010 (3) Introduction to the Humanities

Explores a wide variety of challenging, interesting, and relevant humanistic expressions (fiction, philosophy, plays, poetry, art, music, etc.). Classes are small and discussion-based in order to focus on the practical skills needed to excel in both remaining humanities and social science electives and as a professional engineer. Restricted to students with 0-26 (Freshmen) College of Engineering majors only. Prerequisites: Restricted to students with 0-26 (Freshmen) College of Engineering majors only.

[College of Engineering & Applied Science](#)
[Humanities for Engineers](#)

## HUEN-1843 (3) Special Topics

Students should check with the department for specific semester topics. May be repeated up to 6 total credit hours. Restricted to freshmen engineering majors. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Engineering majors only.

[College of Engineering & Applied Science](#)
[Humanities for Engineers](#)

## HUEN-1850 (3) Engineering in History: The Social Impact of Technology

Explores how engineering has shaped up - who we are, how we think, and what we think about - and examines preconceived notions of progress, property, time and work. Textbook readings along with original sources in philosophy, literature, psychology, and economics provide a rich and stimulating tour of engineering history. Restricted to students with 0-56 (Freshmen or Sophomore) College of Engineering majors only. Prerequisites: Restricted to students with 0-56 (Freshmen or Sophomore) College of Engineering majors only.

[College of Engineering & Applied Science](#)
[Humanities for Engineers](#)

## HUEN-2010 (3) Tradition and Identity

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Explores the place and possibility of personal identity both within and against the influence of tradition, including family, culture, language, and social, political and economic institutions. Via literature and film, wrestles with the nature of freedom, self-determination, and belonging.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2020 (3) The Meaning of Information Technology

Surveys the history of information technologies and modern techniques of information production, storage, transmission, and retrieval. Equips students with an understanding of technological transformations in interpersonal, organizational, and mass communication. Emphasis is on the technological, social and political changes that underlie the movement toward a digital society. HUEN 2020 is restricted to ENGR majors only. ATLS 2000 is restricted to TAM students. ATLS 2000 and HUEN 2020 are the same course. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2100 (3) History of Science and Technology to Newton

When was the odometer invented? How do you build a Pyramid? What did Galileo do, really? What is the difference between science and technology, and when did they each begin? This course spans invention and discovery from the Stone Age to the age of Newton, raising questions about culture, history, custom, and personal expectation. Prepare yourself for some surprises. Formerly HUEN 1100. Prerequisites: Restricted to students with 0-56 (Freshmen or Sophomore) College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2120 (3) History of Modern Science from Newton to Einstein

Surveys the great discoveries and theoretical disputes from Newtonian celestial mechanics to the theory of relativity. Includes physics, astronomy, chemistry, geology, and biology, with units on scientific method, evolution, light and quantum theory. Original sources (selections by Newton, Faraday, Lavoisier, Darwin, etc.) bring students into contact with the scientists themselves. Restricted to CEAS students. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2130 (3) History of Modern Technology from 1750 to the Atomic Bomb

Surveys the great innovations from the Steam Age to the Atomic Age. Includes transportation, modern construction, communications, and internal combustion. Supplements textbook accounts with technical drawings, patents, etc., and with selections by Edison, Carnegie, Tesla, Bell, etc. Studies the sociological impact of social change via contemporary sources in literature, philosophy, painting and film. Restricted to CEAS students.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2210 (3) Engineering, Science, and Society

Explores challenges that engineering and science pose for society as well as the ways societies shape or impede science and engineering. Case studies include contemporary issues like global warming, nuclear weapons, and genetic engineering as well as such classic cases as the execution of Socrates. Core texts in the Western Tradition supplement contemporary articles and films.

Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-2843 (1-3) Special Topics

Students should check with the department for specific semester topics. May be repeated up to 6 total credit hours. Restricted to freshmen and sophomores. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-3100 (3) Humanities for Engineers 1

First course in a two-semester sequence of Herbst Humanities Program for engineering students. Small group seminar that explores the values and ideals of culturally and historically significant novelists, artists, dramatists, and philosophers. May fulfill upper-level writing requirement. Minimum GPA of 3.0 preferred. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering students only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-3200 (3) Humanities for Engineers 2

Continuation of HUEN 3100. Discusses culturally and historically significant readings in small-group seminars. May be repeated up to 6 total credit hours. Prereq., HUEN 3100 or instructor consent. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-3700 (3) Culture Wars in Rome

Set in Rome, Italy, this Maymester course investigates the cultural contrasts among three different "Romes:" ancient pagan, aristocratic Rome; medieval Christian theocratic Rome; and modern secular democratic Rome. To do so, it draws on evidence from Roman literature, politics, art, and architecture. Requires some preparatory work in Boulder. Restricted to sophomores/juniors/seniors.

College of Engineering & Applied Science Humanities for Engineers

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## HUEN-3750 (3) Xi'an, China: Self-Awareness and Images of the Other

Explore Chinese culture in this Study Abroad course. Study ideas of self and other within special historical, social, political, and

economical circumstances. Chinese and American concepts of self and society, of individual, collective, and national identities will be analyzed. The course will be held on the campus of Xi'an Jiaotong University, China. Prereq., HUEN 1010 or equivalent.

College of Engineering & Applied Science Humanities for Engineers

## HUEN-3840 (1-3) Independent Study

Counts toward the humanities and social science degree requirements for a BS in the college of engineering. May be repeated up to 3 total credit hours. Instructor consent required. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) College of Engineering students only.

College of Engineering & Applied Science Humanities for Engineers

## HUEN-3843 (3) Special Topics

Check with department for specific semester topics. May be repeated up to 6 total credit hours. Restricted to sophomores, juniors, and seniors.

College of Engineering & Applied Science Humanities for Engineers

## HUEN-4200 (3) Humanities for Engineers 4

Continuation of HUEN 4100. Provides opportunity to pursue a variety of humanistic themes related to Herbst Humanities Program. Prereq., HUEN 4100.

College of Engineering & Applied Science Humanities for Engineers

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**    **Number**

HUMN

## HUMN-1010 (6) Introduction to Humanities 1

Six meetings a week (three discussion classes on literature and its critical-historical analysis and three lecture-demonstrations on art and music). Provides an analytical and comparative study of works in literature, music, and visual arts from Aegean to Baroque eras. Emphasizes structure, content, and style in specific examples. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Humanities](#)

## HUMN-1020 (6) Introduction to Humanities 2

Six meetings a week (three discussion classes on literature and its critical-historical analysis and three lecture-demonstrations on art and music). Examines from Baroque to contemporary styles in literature, music, and visual arts. Emphasizes the cultural context in which art was created. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Humanities](#)

## HUMN-1701 (3) Nature and Environment in German Literature and Thought

Critically examines titles in German literature and thought. Nature and environment are used to explore alienation, artistic inspiration, nihilism, exploitation, sexuality, rural versus urban, meaning of the earth, cultural renewal, identity and gender. This "Green" survey of German classics spans Romanticism's conception of nature as unconscious spirit to the politics and values of contemporary Germany's Green party. Same as GRMN 1701. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Humanities](#)

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## HUMN-2000 (3) Methods and Approaches to the Humanities

Provides a transition from the introductory courses to the upper-division courses. Introduces the various technical methods and topics encountered in the department's comparative, interdisciplinary upper-division courses, including cultural studies, rhetoric, translation, hermeneutics, word/image studies, etc. Restricted to Humanities majors only. Prereq., HUMN 1010 or 1020. Prerequisites: Restricted to Humanities (HUMN) majors only.

College of Arts & Sciences Humanities

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## HUMN-2100 (3) Arts, Culture and Media

Promotes a better understanding of fundamental aesthetic and cultural issues by exploring competing definitions of art and culture. Sharpens critical and analytical abilities by asking students to read and compare different theories about arts, culture, media, and identity, and then to apply and assess those theories in relation to a selection of visual and verbal texts from a range of cultural and linguistic traditions. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-2145 (3) African America in the Arts

Introduces interrelationships in the arts of African Americans and the African American contribution to American culture as a whole. Credit not granted for this course and HUMN 3145. Approved for arts and sciences core curriculum: human diversity or United States context.

College of Arts & Sciences Humanities

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## HUMN-2601 (3) Kafka and the Kafkaesque

Exposes the students to a wide selection of Kafka's literary output and aims to define the meaning of the Kafkaesque by looking not only for traces of Kafka's influence in the verbal and visual arts, but also for traces left in Kafka's own work by his precursors in the literary tradition. Same as GRMN 2601. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-3015 (3) Jung, Film, and Literature

The basic themes of C. G. Jung's archetypal psychology (shadow, anima/animus, character typology, and individuation) are studied and applied as tools of critical analysis to selected films and literary texts of the modern period. Instructor consent required. Same as FILM 3022.

College of Arts & Sciences Humanities

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## HUMN-3092 (3) Studies in Humanities

Students should check with the department for specific semester offerings. May be repeated up to 12 total credit hours, provided the specific offerings vary. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-3093 (3) Topics in Humanities

Students should check with the department for specific semester offerings. May be repeated up to 12 total credit hours, provided the specific offerings vary. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-3104 (3) Film Criticism and Theory

Surveys the range and function of film criticism, introduces major positions and concepts of film theory, and focuses on students' abilities to write about film. Prereq., FILM 1502. Same as FILM 3104.

College of Arts & Sciences Humanities

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## HUMN-3210 (3) Narrative

Explores the nature of sacred and secular narrative in literature, film, and the visual arts. Prereq., HUMN 2000 or junior/senior standing. Formerly HUMN 4013.

College of Arts & Sciences Humanities

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## HUMN-3211 (3) The Craft of Mystery

Explores examples of and theories about the formation and growth of the genre of detective fiction, especially in the late 19th and early 20th centuries. Explores the social conditions of the times in which the texts were written and the possible resulting influences on style. Compares the texts and theories to examples from other genres and time periods. Prereqs., HUMN 2000 or junior/senior standing.

College of Arts & Sciences Humanities

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## HUMN-3212 (3) Shipwrecks, Mutinies, and Other Catastrophes at Sea

Explores the theatrical analogy that frames our understanding of catastrophes at sea and their literary and visual representation, paying particular attention to issues of gender, race, and sexuality, which are intentionally banned from such representations, but turn out to be their secret focus. Prereq., HUMN 2000 or junior/senior standing.

College of Arts & Sciences Humanities

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## HUMN-3220 (3) Epic

Comparative and interdisciplinary study of the figure of the hero and the concept of fate in the epic tradition and the modern novel. Explores literary, religious, philosophical, and ethical issues. Prereq., HUMN 2000 or junior/senior standing. Formerly HUMN 4023.

College of Arts & Sciences Humanities

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## HUMN-3230 (3) Comedy

Offers an interdisciplinary approach to comedy, examining art, music, literature, and film from different periods. Comic theory is interlaced with the study of particular works. Prereq., HUMN 2000 or junior/senior standing. Formerly HUMN 3033.

College of Arts & Sciences Humanities

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## HUMN-3240 (3) Tragedy

Studies some of the great tragic works of art, music, and literature from the Greeks to the 20th century. Tragic theory is invoked as an aid to interpretation. Prereq., HUMN 2000 or junior/senior standing. Formerly HUMN 3043. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-3250 (3) Dramatic Arts

Interdisciplinary course that examines and compares various forms of the dramatization of narrative: written texts, audio, video, film, and live performances. Compares different versions of the same narrative or theme, especially if different media are used and different time periods are involved. Prereq., HUMN 2000 or junior/senior standing. Formerly HUMN 4133.

College of Arts & Sciences Humanities

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## HUMN-3321 (3) Culture and Literature of Ancient China

Focuses on the religious, cultural, philosophical, and literary aspects of ancient Chinese civilization (1500 B.C.--A.D. 200). Special attention is paid to foundational works that influenced later developments in Chinese culture. All readings are in English. Recommended prereq., EALC 1011 or CHIN 1051. Same as CHIN 3321.

College of Arts & Sciences Humanities

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## HUMN-3341 (3) Literature and Popular Culture in Modern China

Surveys 20th century Chinese literature and popular culture against the historical background of rebellion, revolution, and reform. Emphasizes close and critical reading skills and an understanding of how aesthetic texts reflect and critically engage with historical and cultural experiences. Assignments include novels, essays, short stories, poems, plays, songs, films, and scholarly articles. Taught in English. Recommended prereq., CHIN 1021 or 1051. Same as CLAS 3341. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-3505 (3) The Enlightenment: Tolerance and Emancipation

Examines Enlightenment notions of reason, humanity, and social progress. Topics include 18th century views on government, science, education, religion, slavery, and gender roles. Taught in English. Same as GRMN 3505. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Humanities

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## HUMN-3550 (3) Imag(in)ing Meaning

Explores the role of imagination in constructing narratives of meaning through close readings of various genres (fiction, poetry, manifesto, essay), various modes of artistic expression (art, film, photography, documentary), and essays of critical theory. Prereq., HUMN 2000 or junior/senior standing.

College of Arts & Sciences Humanities

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## HUMN-3660 (3) The Postmodern

Analyzes the cultural and critical practices as well as the thought that defines the postmodern period at the end of twentieth century. Prereq., HUMN 2000 or junior/senior standing. HUMN 3660 and FILM 3660 are the same course. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-3702 (3) Dada and Surrealist Literature

Surveys the major theoretical concepts and literary genres of the Dada and Surrealist movements. Topics include Dada performance and cabaret, the manifesto, montage, the readymade, the Surrealist novel, colonialism and the avant-garde, and literary and philosophical precursors to the avant-garde. Same as GRMN 3702. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-3802 (3) Politics and Culture in Berlin 1900-1933

Examines early 20th century German culture, with emphasis on the Weimar Republic (1918-1933) in light of contemporaneous political discussions. The course presents modern art and literature (Expressionism, Dada, Brecht's epic theater) and architecture and design (Bauhaus, Werkbund) as well as political movements of women, sexual minorities, and Berlin's Jewish communities. Taught in English. GRMN 3802 and HUMN 3802 are the same course. Offered through CU Study Abroad Program. Approved for arts and sciences core curriculum: literature and the arts.

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# Courses

Search by College, Department & Category

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**Subject**   **Number**

HUMN

## HUMN-3811 (3) Love, Death, and Desire: Classical Japanese Literature in Translation

Surveys the major works and authors of classical Japanese literature, both poetry and prose, from the earliest historical records and literary anthologies through the Heian period (784--1185). Taught in English. Recommended prereq., JPNS 1051. Same as JPNS 3811.

College of Arts & Sciences Humanities

## HUMN-3820 (3) Greek and Roman Antiquity in Music, 1600 to Present

Explores the influence of Greek and Roman mythology and history on various genres of music since 1600. Explains the context and meaning of ancient themes and their use by composers from the Renaissance to the present. Recommended prereq., CLAS 1100. Same as CLAS 3820.

College of Arts & Sciences Humanities

## HUMN-3841 (3) Tradition and Transgression: Modern Japanese Literature in Translation

Surveys the major works, authors, and genres of literature from the late Meiji period and 20th century in their historical and cultural contexts. Attention is given to various approaches of literary analysis and interpretation. Taught in English. Recommended prereq., JPNS 1051. Same as JPNS 3841.

College of Arts & Sciences Humanities

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## HUMN-3850 (3) The Mediterranean Religion Before Modernity

Offers an innovative approach to the multifaceted history of Christian-Muslim-Jewish interaction in the Mediterranean. It eschews established paradigms (e.g., Europe, Islamic world) that distort our understanding of these and pushes students to reconsider the accepted paradigms of Western history. Students will reappraise assumptions regarding the nature of ethnic, religious, national and cultural identity, and their role in human history.

College of Arts & Sciences Humanities

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## HUMN-3930 (1-6) Humanities Internship

Students gain academic credit and professional experience working in museums, galleries, arts administration, and publishing. They work 3-18 hours per week with their professional supervisor and meet regularly with a faculty advisor who determines the reading and writing requirements. Prereqs., junior standing and interview with faculty advisor.

College of Arts & Sciences Humanities

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## HUMN-3935 (1-3) Humanities Internship: Literature and Social Violence

See HUMN 4835. Credit not granted for this course and HUMN 2935. Coreq., HUMN 4835.

College of Arts & Sciences Humanities

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## HUMN-4000 (3) The Question of Romanticism

Interdisciplinary study of literature, art, and music from 1780 to 1830 in France, England, and Germany. Prereq., HUMN 2000 or restricted to juniors/seniors.

College of Arts & Sciences Humanities

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## HUMN-4004 (3) Topics in Film Theory

Provides topic-centered analyses of controversial areas in film theory. Students read extensive materials in the topic area, analyze and summarize arguments as presented in the literature, write "Position" papers, and make oral presentations in which they elaborate their own arguments about specific assigned topics, establishing critical dialogue with the primary materials. May be repeated up to 6 total credit hours. Prereq., FILM 3051 or instructor consent. Restricted to senior FILM, FMST, or HUMN majors. Same as FILM 4004 and ARTF 5004.

College of Arts & Sciences Humanities

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## HUMN-4010 (3) Hitchcock and Freud

Applies Freudian psychoanalysis to the films of Alfred Hitchcock. Students will familiarize themselves with the Freudian methodology by reading a number of books and essays and then apply both Freud's general ideas as well as specific texts to particular aspects, both formal and contentual, of his films. Particular attention will be given to the important field of "feminism and psychoanalysis" as it relates to the study of the role of women in Hitchcock's films. Restricted to juniors and seniors.

College of Arts & Sciences Humanities

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## HUMN-4020 (3) Reading, Chance, and Guessing

Considers the method of the humanities as opposed to those of the natural and social sciences, especially in view of their respective ability or claim to predict the future and to master chance. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4030 (3) The Art of Travel

Examines the art of travel: not where to go and what to do, but rather philosophical concepts about why people travel. Areas of discussion will include exploration, discovery, escape, pilgrimage, the grand tour, expatriotism, exile, nomadism, armchair travel, and the sense of home. Materials will include books by travel writers, novels, films, essays, short stories, art, music, and historical documents. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4050 (3) Representations of People with Disabilities

Examines the representation of people with disabilities in canonical and contemporary literature and drama, and introduces students to disability theory and the history of people with disabilities.

College of Arts & Sciences Humanities

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## HUMN-4060 (3) Modern Critical Theory

Explores, through guided discussions, the concept of theory itself and how a theory is constructed. Emphasizes the close reading of theory in order to learn to analyze critically, considering theory as something to be thought about rather than simply applied. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4082 (3) 19th Century Art and Literature

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Interdisciplinary study of English fiction and poetry together with related movements in visual arts. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4092 (3) Advanced Studies in the Humanities

Students should check with the department for specific semester offerings. May be repeated up to 9 total credit hours, provided the specific offerings vary. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4093 (3) Advanced Topics in the Humanities

Students should check with the department for specific semester offerings. May be repeated up to 9 total credit hours, provided the specific offerings vary. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4100 (3) Writing the World in Traditional China

Examines the history and implications of the central role played by writing in pre-modern China, especially with regard to traditional constructions of the world, including relations with aesthetics, the non-human, and the spiritual. Key works of Chinese literature and thought from different periods are studied, with the aim of determining a particular type of Chinese humanism. All readings in English. Restricted to students with 57-180 credits (Junior or Senior). Recommended prereqs., HUMN 1010 and/or 1020. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4110 (3) Greek and Roman Epic

Students read in English translation the major epics of Greco-Roman antiquity such as the Iliad, Odyssey, Argonautica, Aeneid, and Metamorphoses. Topics discussed may include the nature of classical epic, its relation to the novel, and its legacy. No Greek or Latin required. Same as CLAS 4110. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-4120 (3) Greek and Roman Tragedy

Intensive study of selected tragedies of Aeschylus, Sophocles, Euripides, and Seneca in English translation. No Greek or Latin required. Same as CLAS 4120. Approved for arts and sciences CORE curriculum: literature and the arts.

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## HUMN-4130 (3) Greek and Roman Comedy

Studies Aristophanes, Plautus, and Terence in English translation. No Greek or Latin required. Same as CLAS 4130. Approved for arts and sciences CORE curriculum: literature and the arts.

## HUMN-4131 (3) The Greek and Roman Novel

Studies five surviving complete Greek novels from classical antiquity, three Latin novels, and their predecessors and contemporary neighbors in the genres of Greek prose fiction. Readings in English translation. No required prerequisite, but a previous course in classical literature or myth is recommended. Same as CLAS 4140/5140.

## HUMN-4135 (3) Art and Psychoanalysis

Explores psychoanalytic theory as it relates to our understanding of literature, film, and other arts. After becoming familiar with some essential Freudian notions (repression, narcissism, ego/libido, dreamwork, etc.), students apply these ideas to works by several artists (e.g., Flaubert, James, Kafka, Hoffmann, and Hitchcock). Prereq., HUMN 2000 or junior/senior standing. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

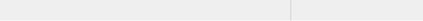
## HUMN-4140 (3) The Age of Dante: Readings from The Divine Comedy

Focuses on close reading of Dante's poetry with emphasis on the intellectual, religious, political, and scientific background of the medieval world. Taught in English. Prereq., junior standing or instructor consent. Same as ITAL 4140. Credit not granted for this course and ITAL 4145 or 4147. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## HUMN-4150 (3) The Decameron and the Age of Realism

Analyzes the rise of realism in 13th and 14th century Italian literature and parallel manifestations in the visual arts. Focuses on Boccaccio's Decameron and contemporary realistic prose and poetry with emphasis on gender issues and medieval cultural diversity. Taught in English. Prereq., junior standing or instructor consent. Same as ITAL 4150. Approved for arts and science core curriculum: literature and the arts or human diversity.

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## HUMN-4155 (3) Philosophy, Art, and the Sublime

Explores philosophies of art, theories of the sublime, and the relation between art and morality through philosophy, literature, and the visual arts. Includes works by Plato, Longinus, Burke, Rousseau, Kant, Mary Shelley, Melville, Friedrich, Turner, and Pollock. Prereq., HUMN 2000 or junior/senior standing. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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# Courses

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HUMN

## HUMN-4502 (3) Nietzsche: Literature and Values

Emphasis is placed on Nietzsche's major writings spanning the years 1872--1888, with particular attention to the critique of Western values. A systematic exploration of doctrines, concepts, and ideas leading to the values of creativity. Same as GRMN 4502. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Humanities](#)

## HUMN-4504 (3) Goethe's Faust

Systematic study of the Faust motif in Western literature, with major emphasis on Faust I and II by Goethe and Thomas Mann's Doctor Faustus. Same as GRMN 4504/5504 and COML 5504. Approved for arts and sciences CORE curriculum: literature and the arts.

[College of Arts & Sciences](#) [Humanities](#)

## HUMN-4555 (3) The Arts of Interpretation

Introduces various hermeneutical methodologies (literary/philosophical criticism, biblical exegesis, art history, etc.) with which to examine the question of interpretation. Methodologies are studied in close conjunction with particular works of art. Prereq., HUMN 2000 or junior/senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Humanities](#)

## HUMN-4650 (3) Religion, Power, Modernity

Examines the representation of religion in relationship to the claims made by modern narratives of power in fables, literature, graphic

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novels, visual materials and critical writings. Restricted to students with 57-180 credits (Junior or Senior). Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Humanities

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## HUMN-4730 (3) Italian Feminisms: Culture, Theory, and Narratives of Difference

Studies Italian women writers, artists, and film makers of this century. Literary and visual texts are analyzed in dialogue with readings of leading Italian gender theorists. Italian history and culture is reread by following the development of a discourse about women. Taught in English; readings in Italian for Italian majors. Same as ITAL 4730. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Humanities

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## HUMN-4811 (3) 19th Century Russian Literature

Surveys background of Russian literature from 1800 to 1900. Russian writers and literary problems in the 19th century emphasizing major authors: Pushkin, Lermontov, Gogol, Dostoevsky, Turgenev, Tolstoy, and Chekhov. Same as RUSS 4811. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-4821 (3) 20th Century Russian Literature and Art

Interdisciplinary course emphasizing the influence of art in 20th century Russian literature. Follows the changing cultural landscape from the time when Russia was in the vanguard of modern European literature to the gradual cultural relaxation that culminated in Perestroika and Glasnost. Same as RUSS 4821. Approved for arts and sciences CORE curriculum: literature and the arts.

College of Arts & Sciences Humanities

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## HUMN-4835 (3) Literature and Social Violence.

Provides a theoretical understanding of heightened awareness arising from literary and sociological investigations of contemporary sources of social violence (gang culture, racism, domestic violence), combined with the concrete knowledge offered by an internship in a social service agency. Optional internship credit is available. Restricted to sophomores/juniors/seniors. Approved for arts and sciences CORE curriculum: contemporary societies.

College of Arts & Sciences Humanities

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## HUMN-4840 (1-3) Independent Study

May be repeated for a maximum of 6 total credit hours.

College of Arts & Sciences Humanities

## HUMN-4950 (1-6) Honors Thesis

Supervised project on a topic of the student's own choosing. It should demonstrate ability in interdisciplinary (such as literature and art, art and music, film and literature, literature and theory), extensive research, critical thinking, and excellent writing skills. The thesis is submitted to the Honors Program of the College of Arts and Sciences and is orally defended. Restricted to junior or senior Humanities majors only. Prerequisites: Restricted to junior or senior Humanities majors only.

College of Arts & Sciences Humanities

## HUMN-4990 (3) Senior Humanities Seminar

In-depth interdisciplinary study of a selected topic in humanities. Prereqs., 6 hours of upper-division humanities, senior standing, and 3.00 GPA in humanities.

College of Arts & Sciences Humanities

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# Courses

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IAFS

## IAFS-1000 (4) Global Issues and International Affairs

Introduces the student to the international affairs program. The course examines political and economic development in several countries in many different world regions. Examines historical trends and development as well as current political and economic issues. Approved for arts and sciences CORE curriculum: contemporary societies. Prerequisites: Restricted to International Affairs (IAFS) , Political Science (PSCI), Anthropology (ANTH), Economics (ECON), History (HIST), Geography (GEOG) or College of Arts and Sciences Open Option (XXAS) majors only.

[College of Arts & Sciences](#) [International Affairs](#)

## IAFS-3000 (3) Special Topics in International Affairs

Junior or senior level umbrella seminar spanning a variety of topics relevant to the study of international affairs. Subjects addressed under this heading vary according to student interest and faculty availability. May be repeated up to 9 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) International Affairs (IAFS) or Political Science (PSCI) majors only.

[College of Arts & Sciences](#) [International Affairs](#)

## IAFS-3300 (6) Economy, Politics and Society in the Middle East

Presents social, political, and economic aspects of the Middle East through a faculty-led study abroad in Kuwait, featuring interactions with officials, bankers, university faculty and local students. Offers a unique opportunity to discuss issues with Kuwaitis at Diwanyas, as well as to participate in seminars and workshops with local faculty and representatives of Kuwaiti businesses and government agencies. Prereq., ECON 1000 or 2020.

[College of Arts & Sciences](#) [International Affairs](#)

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## IAFS-3500 (3) French Connections: Contemporary France and America in Historical Context

This faculty-led Global Seminar, based in Bordeaux, France provides an opportunity to compare French history and contemporary culture, economy, and culture to that of the United States. Lectures in Boulder and Bordeaux are supplemented by interactions with officials, scholars, business leaders, interest groups, and organizations in France. Offered through Study Abroad. IAFS 3500 and HIST 4190 are the same course. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences International Affairs

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## IAFS-3600 (3) Global Secular Jewish Societies

This course uses a transnational lens to explore contemporary debates about Jewish people, places, and practices of identity and community. Drawing on history, sociology, international studies, and anthropology, we'll think about the places that Jewish people have called 'home,' and what has made, or continues to make those places 'Jewish.' We'll also explore diverse practices that express the extraordinary varieties of Jewishness (such as building synagogues, food markets, and coffeehouses, creating film festivals, going on heritage travel, Israeli-Jewish backpacking, the creation of online websites and blogs, and creating new urban kibbutzim). Restricted to students with minimum 57 units completed. JWST 3600 and IAFS 3600 are the same course. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences International Affairs

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## IAFS-3610 (3) Topics in International Affairs and Jewish Studies

Explores topics in international affairs as it relates to Jewish culture and society. Subjects addressed under this heading vary according to student interest and faculty availability. May be repeated up to 9 total credit hours. IAFS 3610 and JWST 3610 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences International Affairs

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## IAFS-4500 (3) The Post-Cold War World

Capstone course for international affairs majors. Examines the ways in which the end of the Cold War, the collapse of failed states, and the rise of global terrorism changed the world. Studies how peoples, governments and nongovernmental organizations face new social, political, economic and security challenges in an era of globalization. Includes discussion, oral reports, critical book reviews, and research papers. Prerequisites: Restricted to students with 87-180 credits (Senior) International Affairs (IAFS) majors only.

College of Arts & Sciences International Affairs

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## IAFS-4800 (3) Honors Seminar in International Affairs

Directed research course tailored to the particular research interests of the students enrolled. Devoted to research methodology and the development of students' research. Prereq., 3.30 GPA and 3.40 IAFS GPA .

College of Arts & Sciences International Affairs

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## IAFS-4810 (3) Honors in International Affairs

Continuation of IAFS 4800. Students complete original research begun in the fall and write and defend their honors thesis. They meet regularly with the instructor. Prereq., IAFS 4800.

[College of Arts & Sciences](#) [International Affairs](#)

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## IAFS-4900 (1-6) Independent Study in International Affairs

Provides an opportunity to earn academic credit for learning outside the formal class structure. Students interested in doing in-depth research propose a research project to a faculty sponsor and then work closely with that person to produce a piece of original research. Prereq., upper-division standing, GPA of 3.00 or better, grade of C or better in all lower-division courses, and at least 6 upper-division courses. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [International Affairs](#)

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## IAFS-4930 (3-6) Internship in International Affairs

Working individually under the guidance of a public or private organization, students are assigned to projects selected for their academic suitability. Written assignments occur throughout the semester. Prereq., departmental approval.

[College of Arts & Sciences](#) [International Affairs](#)

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## Courses

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INBU

### INBU-3300 (3) International Business and Management

This survey course takes a broad and comprehensive perspective on managing and operating in a rapidly growing global economy. Explores regional and national approaches to international management, including trade practices, country penetration strategies, international finance and accounting, marketing across cultures, global service and manufacturing operations, cultural and legal differences, ethical and sustainability issues, and global competitive strategy. Prereq., 52 hours completed. Formerly INBU 4300. Prerequisites: Restricted to Business or International Affairs majors with 52-180 units completed.

[Leeds School of Business](#) | [International Business](#)

### INBU-3450 (3) International Marketing

Describes the economic, geographic, political, and social forces that have shaped and continue to define global markets. Examines topics critical to success in international markets, including assessment of a firm's international capabilities, techniques for gauging the potential of international markets, international segmentation approaches, and alternative arrangements for entering foreign markets. Compares and contrasts product, price, distribution, logistics, promotion, and research decisions made in global versus domestic markets. Introduces students to financial arrangements characteristic of international marketing, including exchange rates and controls, balance-of-payment principles, import licensing agreements and tariffs. Restricted to Business (BUSN), Advertising (ADVT) or International Affairs (IAFS) majors with 52-180 units completed. Prereq., BCOR 2400. Same as INBU 5100. Formerly MKTG 3450. Prerequisites: Restricted to Business (BUSN), Advertising (ADVT) or International Affairs (IAFS) majors with 52-180 units completed.

[Leeds School of Business](#) | [International Business](#)

### INBU-4200 (3) International Financial Management

Examines the financial policies and problems associated with firms doing business internationally. Topics include the foreign exchange environment, country risk, managing foreign exchange exposure, international working capital management, international capital budgeting, and international financial markets. Prereqs., BCOR 1020, 2000, and 2200. Restricted to students with 52 hours completed. Prerequisites: Requires pre-requisite courses of BCOR 1020, 2000, and 2200. Restricted to Business or IAFS Majors with 52-180 units completed.

[Leeds School of Business](#) | [International Business](#)

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## INBU-4825 (1-6) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in International Business Entrepreneurship. Prerequisites: Restricted to students with 57-86 credits (Junior).

[Leeds School of Business](#) | [International Business](#)

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## INBU-4900 (1-12) Independent Study

Prereq., instructor consent. Departmental form required.

[Leeds School of Business](#) | [International Business](#)

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## INBU-5100 (3) International Business and Marketing

Same as MKTG 3450.

[Leeds School of Business](#) | [International Business](#)

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# Courses

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INDO

## INDO-1010 (5) Beginning Indonesian 1

Provides a thorough introduction to the modern Indonesian language, emphasizing speaking, listening, reading and writing skills. This course is proficiency-based. Activities aim to place the student in the context of the native-speaking environment from the very beginning. Students will be provided opportunities to participate in local Southeast Asian cultural events. Students with previous experience with Indonesian or Malay should contact the instructor for placement.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Indonesian](#)

## INDO-1011 (3) Introduction to Indonesian Civilization

Provides an overview of the past and present of Indonesia, the people, and their cultures. Discussions with guest speakers, and on films, music, and images, will allow them to get acquainted with important issues and values in today's Indonesia. A closer look to the five major islands in the archipelago will introduce them to the diversity of this nation's 234,693,997 people. Taught in English.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Indonesian](#)

## INDO-1020 (5) Beginning Indonesian 2

Continuation of INDO1010. Provides a thorough introduction to the modern Indonesian language, emphasizing the context of the native-speaking environment from the very beginning. Students will be provided with opportunities to participate in local Southeast Asian events. Students with previous experience with Indonesian or Malay should contact the instructor for placement. Prereq., INDO 1010 (min. grade C).

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Indonesian](#)

## INDO-2010 (4) Intermediate Indonesian 1

Aims to increase the students' proficiency in listening, speaking, reading, and writing in modern Indonesian. Students will use only Indonesian in class. Evaluation based on classroom performance, homework, tests, and final project. Students will be provided with opportunities to participate in local Southeast Asian cultural events. Students with previous experience with Indonesian or Malay should contact the instructor for placement. Prereqs., INDO 1010 and 1020 (min. grade C). Meets MAPS requirement for foreign language.

College of Arts & Sciences | Arts & Sciences Special Courses | Indonesian

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## INDO-2020 (4) Intermediate Indonesian 2

Continuation of INDO 2010. Aims to increase the students' proficiency in listening, speaking, reading, and writing in modern Indonesian. Students will use only Indonesian in class. Evaluation based on classroom performance, homework, tests, and final project. Students will be provided with opportunities to participate in local Southeast Asian cultural events. Students with previous experience with Indonesian or Malay should contact the instructor for placement. Prereq., INDO 2010 (min. grade of C).

College of Arts & Sciences | Arts & Sciences Special Courses | Indonesian

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## INDO-3010 (3) Advanced Indonesian 1

Develops students' proficiency in language skills in modern Indonesian. Emphasis is on students' command in leading discussion and writing in formal Indonesian. Students read classic and contemporary authentic materials. Evaluation based on classroom performance, essays, and final project. Students will be provided with opportunities to participate in local Southeast Asian cultural events. Fluent Indonesian or Malay speakers who wish to learn more about Indonesian cultures should contact the instructor for placement. Prereq., INDO 2020 (min. grade C).

College of Arts & Sciences | Arts & Sciences Special Courses | Indonesian

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## INDO-3020 (3) Advanced Indonesian 2

Continuation of Indo 3010. Develops students' proficiency in language skills in modern Indonesian. Emphasis is on students' ability to lead discussion and write in formal Indonesian. Students read classic and contemporary authentic materials. Evaluation based on classroom performance, essays, and final project. Students will be provided with opportunities to participate in local Southeast Asian cultural events. Fluent Indonesian or Malay speakers who wish to learn more about Indonesian cultures should contact the instructor for placement. Prereq., INDO 3010 (min. grade C).

College of Arts & Sciences | Arts & Sciences Special Courses | Indonesian

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# Courses

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INVS

## INVS-1000 (4) Responding to Social and Environmental Problems Through Service Learning

By integrating theory with required community service, students explore how problems are shaped by cultural values and how alternative value paradigms affect the definition of problems in areas such as education and the environment. Students examine different approaches to solving problems and begin to envision new possibilities. Approved for arts and sciences CORE curriculum: ideals and values.

[College of Arts & Sciences](#)
[INVST Community Studies](#)

## INVS-1513 (3) Civic Engagement: Using the Electoral Process as a Tool for Social Change

Designed to educate and inspire civic engagement primarily in the area of electoral politics. Examines various explanations of why people participate in the electoral process and whom they choose to support. Develops the practical skills necessary to participate successfully in the electoral arena. Through a service component, the course provides experience working on a campaign and mobilizing others to participate in the electoral process.

[College of Arts & Sciences](#)
[INVST Community Studies](#)

## INVS-1523 (3) Civic Engagement: Democracy as a Tool for Social Change

Educates and inspires students for civic engagement by exploring democratic values and the rights and responsibilities of citizenship. Develops theoretical knowledge and practical skills for participating in a diverse democratic society, especially at the state level, through analyzing legislative issues, making policy recommendations, and advocating for change. Approved for arts and sciences core curriculum: United States context.

## INVS-2919 (3) Renewing Democracy in Communities and Schools

Examines concepts of activism, citizenship, democracy, power, and diversity through classroom discussions and participation in a local high school's Public Achievement project. Through community-based partnerships, students will develop leadership skills; dialogue with diverse groups of people; identify multiple perspectives around controversial issues; and learn to use research and writing to articulate public problems and advocate for their solutions. May be repeated up to 6 total credit hours. Same as EDUC 2919.

## INVS-3000 (3-4) Innovative Approaches to Contemporary Issues through Service Learning

Explores creative approaches for solving complex social and environmental issues, with a focus on peace and population. Students analyze the root causes of issues in theoretical and historical contexts, and develop their understanding of effective and innovative approaches to change. This course has a requirement of community service. Recommended prereq., upper-division status. Approved for arts and sciences core curriculum: contemporary societies.

## INVS-3041 (3) Self and Consciousness

Explores human development from a psychosocial perspective, focusing on the interplay between psychological patterns and social forms. Issues such as self-image and social consciousness are studied within the larger context of individual and collective forces leading to transformation. Prereqs., SOCY 1001, and SOCY 3001 or 3011, or instructor consent. Same as SOCY 3041.

## INVS-3100 (3-4) Multicultural Leadership: Theories, Principles and Practices

Focuses on leadership theories and skills necessary for effectiveness in multicultural settings. Students gain understanding of traditional and culturally diverse approaches to leadership and change through comparative analyses of Western and non-Western theories and practices. Community service required. Same as ETHN 3201 and LDSP 3100. Approved for arts and sciences core curriculum: human diversity.

## INVS-3302 (3) Facilitating Peaceful Community Change

Students gain knowledge and skills that enable them to become effective facilitators of community goals. Focuses on understanding the processes of community building with a multicultural emphasis. Students are encouraged to apply concepts of life experiences and to examine themselves as potential change agents. Theory and summer experience are integrated. Prereq., admission to INVST. Coreq., INVS 3912. Same as WMST 3302.

College of Arts & Sciences INVST Community Studies

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## INVS-3304 (3) Human Rights: Promotion and Protection, an NGO Perspective.

Explores the world of international human rights with a focus on the role of non-governmental organizations (NGOs) in the evolution of human rights ideologies, social structures, technologies and strategies. Students examine the inter-relatedness and inter-dependence of human rights, and the work of non-governmental organizations as related to other institutions of civil society, national governments, and international bodies. Recommended prereq., INVS 1000. Approved for arts and sciences CORE curriculum: contemporary societies.

College of Arts & Sciences INVST Community Studies

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## INVS-3402 (3) Implementing Social and Environmental Change

Examines grassroots democracy as a means for creating comprehensive, solution-based strategies to address social and environmental problems. Students develop an understanding of the use of democracy for positive social change, identify how changes are initiated within movements, and learn the theory and practice of effective and responsible change efforts.

College of Arts & Sciences INVST Community Studies

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## INVS-3931 (1-6) The Community Leadership Internship, Part 1

Develops students' competencies as community leaders working for a just and sustainable world. Under the supervision of an instructor and a community supervisor, students learn organizational leadership skills by serving as volunteer staff members at community-based organizations. Prereq., admission into INVST CLP. May be repeated up to 6 total credit hours.

College of Arts & Sciences INVST Community Studies

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## INVS-3932 (1-6) Community Leadership Internship, Part 2

Develops students' competencies as community leaders working for a just and sustainable world. Under the supervision of an instructor and a community supervisor, students learn organizational leadership skills by serving as volunteer staff members at community-based organizations. May be repeated up to 6 total credit hours.

College of Arts & Sciences INVST Community Studies

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## INVS-4302 (3) Critical Thinking in Development

Exposes students to current issues in the political economy of development. Subjects range from globalization, democratization, and economic development. Specifically, the course explores the international and domestic determinants of economic development with special reference to currency markets, foreign direct investment, trade, and democratization. Prereqs., PSCI 2012 or IAFS 1000, ECON 2010 and 2020, and one upper-division PSCI course. Same as PSCI 4732. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences | INVST Community Studies

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## INVS-4402 (3) Nonviolent Social Movements

Explores theories of democracy and development in relation to movements for nonviolent social change. Focuses on means and ends, spirituality, leadership, decision-making, civil society, cooperative economics, ecology and decentralized powers. Restricted to senior SOCY/PSCI majors. Same as SOCY 4111.

College of Arts & Sciences | INVST Community Studies

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## INVS-4931 (1-6) Community Leadership in Action, Part 1

Develops students' expertise as community leaders. Under the supervision of an instructor and a community advisor, students design a community-based project. Prereqs., admission to INVST CLP, INVS 3931 and 3932. May be repeated up to 6 total credit hours.

College of Arts & Sciences | INVST Community Studies

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## INVS-4932 (1-6) Community Leadership in Action, Part 2

Develops students' expertise as community leaders working for a just and sustainable world. Under the supervision of an instructor and a community advisor, students learn organizational and leadership skills by designing, implementing and evaluating a community-based project. First-hand experience provides students with a deepened understanding of the complex issues facing humanity, and competence with solution-based strategies. May be repeated up to 6 total credit hours. INVS 4932 and LDSP 4932 are the same course.

College of Arts & Sciences | INVST Community Studies

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## INVS-4999 (1-6) Teaching Social Justice

INVS students participate in a service-learning practicum under the supervision of an INVS instructor. They explore teaching strategies for implementing concrete educational goals. Focusing on the issues of social justice and social change, they learn how to encourage higher levels of creativity and analysis among students. May be repeated up to 6 total credit hours. Prereqs., INVS 3302, 3931/3932, 4931/4932 (min grade B-).



# Courses

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IPHY

## IPHY-1950 (3) Introduction to Scientific Writing in Integrative Physiology

Provides an overview of writing skills and strategies, emphasizing those most important to the sciences, especially physiology. Focuses on fundamental skills, objective analysis, and scientific persuasion, with attention to clear organization and style, academic and scientific mechanics, and distinctions between audiences. Restricted to freshmen/sophomore/junior IPHY majors. Meets MAPS requirement for English. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to Kinesiology (KINE), Integrative Physiology (IPHY), or Integrative Physiology Concurrent Degree (C-IPHY) majors only.

[College of Arts & Sciences](#) [Integrative Physiology](#)

## IPHY-2010 (1-3) Seminar in Integrative Physiology

Introduces a small group of lower-division students to current research topics in integrative physiology. Emphasizes relevant applications to real-world situations. May be repeated up to 6 total credit hours when topics vary.

[College of Arts & Sciences](#) [Integrative Physiology](#)

## IPHY-2420 (3) Nutrition for Health and Performance

Focuses on the basic anatomy, physiology, and chemistry of nutrition. Topics include weight management, the role of diet and lifestyle in disease prevention, specific nutrient deficiencies and toxicities, nutrition standards and guidelines, sports nutrition recommendations, agricultural practices, and food policy issues. IPHY juniors or seniors are excluded from taking this course. Credit not granted for both IPHY 2420 and 3420. Approved for arts and sciences core curriculum: natural science. Prerequisites: Restricted to non-IPHY majors or IPHY freshmen/sophomores only.

[College of Arts & Sciences](#) [Integrative Physiology](#)

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## IPHY-2500 (1) Perspectives in Health and Medicine

Designed to increase awareness of issues that surround international and U.S. health care. Provides broad overview of topics relevant to 21st century medical practice. Includes guest lectures by faculty and practitioners from Denver Metro region, followed by opportunities to integrate new concepts using small group discussion and writing. Topics change each semester and may include: global development and health; socio-cultural issues in health care; health disparities; applied bioethics; health care system reform; narrative medicine. Restricted to sophomores/juniors/seniors. Pass/Fail grading only.

College of Arts & Sciences Integrative Physiology

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## IPHY-2800 (4) Introduction to Statistics

Examines the application of statistics to research relevant to integrative physiology. Includes instruction and hands-on experience with related computer programs and interpretation of the results of their use. Restricted to Integrative Physiology majors only. Prerequisites: Restricted to Integrative Physiology majors only.

College of Arts & Sciences Integrative Physiology

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## IPHY-2910 (1-3) Practicum in Integrative Physiology

Offers practical experience in organized situations with direct supervision. Restricted to IPHY majors. May be repeated up to 3 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Kinesiology (KINE), Integrative Physiology (IPHY), or Integrative Physiology Concurrent Degree (C-IPHY) majors only.

College of Arts & Sciences Integrative Physiology

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## IPHY-3010 (1-2) Teaching in Integrative Physiology

Provides an opportunity to assist in teaching specific laboratory sections in IPHY under direct faculty supervision. Students must make arrangements with the faculty member responsible for the course in which they plan to assist. May be repeated up to 6 total credit hours. Prereq., junior standing and instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Integrative Physiology

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## IPHY-3060 (4) Cell Physiology

Lect. and lab. Introduces the biology of eukaryotic systems at molecular, cellular, and systems levels of integration, emphasizing the complementarities of structure and function and physiological mechanisms of regulation at the cellular and molecular level. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240, IPHY 3430 (non-majors only), or IPHY 3470 (IPHY majors only). Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Integrative Physiology

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## IPHY-3410 (3) Introduction to Human Anatomy

Introduces the basic of human anatomy. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240.

College of Arts & Sciences Integrative Physiology

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## IPHY-3415 (2) Human Anatomy Laboratory

Introduces structures of the human anatomical systems using human cadavers and animal tissue. This laboratory is meant to complement IPHY 3410, Introduction to Human Anatomy lecture. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240; IPHY 3410 (or as coreq.).

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## IPHY-3430 (3) Introduction to Human Physiology

Introduces the physiology of the nervous, muscular, cardiovascular, respiratory, urinary, immune, endocrine, digestive and reproductive systems. Restricted to non-Integrative Physiology majors only. Prereqs., EBIO 1210 and 1220; CHEM 1133 and 1134. Recommended prereqs., IPHY 3410 and 3415 or IPHY 3460. Prerequisites: Restricted to non-Integrative Physiology majors only.

College of Arts & Sciences Integrative Physiology

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## IPHY-3435 (2) Physiology Lab

Introduces laboratory experience in selected aspects of human and comparative physiology for students in pharmacy and allied health programs. Involves animals and animal tissues. Prereqs., IPHY 2800 (or equivalent), IPHY 3410 and IPHY 3415 or IPHY 3460 and IPHY 3470 (majors) or IPHY 3430 (non-majors). IPHY majors should take either IPHY 3450 or 3480 as a co-requisite.

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## IPHY-3440 (3) Nutrition for Health and Wellness

Exploration of nutrition factors related to sports performance in strength, power, and endurance events. Prereq., IPHY 3470. Recommended prereq., IPHY 4650. Restricted to junior/senior IPHY majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-3450 (3) Comparative Animal Physiology

Introduces principles of animal physiology and responses to environmental change. Involves animals and/or animal tissues. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240.

## IPHY-3460 (5) Comparative Vertebrate Anatomy

Introduces major components of the vertebrate body and how they are organized into a whole organism, emphasizing function, evolution, and diversity of these basic features. Laboratories involve dissection of representative groups and demonstrations. Involves animals and/or animal tissues. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240.

## IPHY-3470 (3) Human Physiology 1

Focuses on scientific thinking, cell physiology, neurophysiology, endocrinology, immunology, and musculoskeletal physiology. The first semester of a two-semester sequence for IPHY majors. Restricted to Integrative Physiology majors only. Prereqs., requires pre-requisite courses of IPHY 3410 or IPHY 3460 and CHEM 1133 and 1134 (or CHEM 1131 or CHEM 1371). Prerequisites: Requires pre-requisite courses of IPHY 3410 and CHEM 1133 and 1134 (or CHEM 1131 or CHEM 1371). Restricted to Integrative Physiology majors only.

## IPHY-3480 (3) Human Physiology 2

Focuses on the physiology of the respiratory, cardiovascular, urinary, digestive, and reproductive systems. The second semester of a two-semester sequence for IPHY majors. Restricted to Integrative Physiology majors only. Prereqs., MCDB 1150 and 2150, or EBIO 1210 and 1220; CHEM 1133 and 1134; IPHY 3410 and 3415 or IPHY 3460; IPHY 3470. Coreq., IPHY 3435. Prerequisites: Restricted to Integrative Physiology majors only.

## IPHY-3500 (2) Applied Clinical Research

Introduces fundamental concepts of clinical research to those interested in pursuing a career in medicine or medical research. In addition to lectures introducing students to research design, errors in research, and basic biostatistics, there will be significant emphasis on participation in on-going medical research at Denver Health Medical Center and The Children's Hospital. This unique experience will provide students with first-hand exposure to all aspects of clinical research. Prereqs., MCDB 1150 and 2150, or EBIO 1210 and 1220, and CHEM 3311. Recommended prereq., premedical focus and/or previous research experience.

## IPHY-3660 (3) Dynamics of Motor Learning

Focuses on information processing approaches and dynamical systems theory as explanations for human motor learning and the coordination of movement. Various topics are discussed from both perspectives including practice organization, attainment of elite

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performance, and the production of novel movements. Approved for arts and sciences core curriculum: natural sciences.

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## IPHY-3700 (3) Scientific Writing in Integrative Physiology

Takes a process-based approach to writing. Assignments and classroom experiences emphasize critical thinking, using scientific evidence and reasoning to construct original arguments, and applying conventions and problem-solving skills to craft successful documents. Prereq., IPHY 2800. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

College of Arts & Sciences Integrative Physiology

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## IPHY-3800 (3) Forensic Biology

Introduces basic concepts of modern forensic science with emphasis on biological aspects such as forensic entomology, forensic botany, hair analysis, forensic anthropology, and forensic DNA analysis. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240; CHEM 1133 and 1134.

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## IPHY-3810 (1) Forensic Biology Laboratory

Introduces basic laboratory techniques and procedures of modern forensic science with emphasis on biological aspects such as forensic entomology, forensic botany, hair analysis, forensic anthropology, and forensic DNA analysis. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240; CHEM 1133 and 1134. Coreq., IPHY 3800.

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## IPHY-4010 (1-3) Seminar in Integrative Physiology

Introduces a small group of students to current research topics in integrative physiology, evaluation of current research, and discussion of critical issues. May be repeated up to 6 total credit hours when topics vary. Prereq., IPHY 2800. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## IPHY-4200 (3) Physiological Genetics and Genomics

Covers fundamental concepts in molecular genetics and genomics and their applications towards understanding genetic aspects of physiology and pathophysiology. Topics include structure and function of nucleic acids, pedigree analysis, genetic and genomic research tools, regulation of gene expression, gene mapping, pharmacogenetics, gene therapy, comparative and evolutionary genomics, animal

models and ethical issues in modern genomics. Same as IPHY 5200. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## IPHY-4440 (4) Endocrinology

Introduces mammalian endocrine system. Course provides a thorough analysis of chemical communication by hormones and related bioregulators with emphasis on the major endocrine systems such as the thyroid, gonad, pituitary and the brain. Restricted to Integrative Physiology majors only. Prereq., IPHY 3470. Same as IPHY 5440. Prerequisites: Restricted to Integrative Physiology majors only.

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IPHY

## IPHY-4470 (3) Biology of Human Reproduction

Anatomy and physiology of human reproduction, including gender determination, embryology, puberty, menstrual cycle, pregnancy, lactation, menopause, sexual behavior, sexual abnormalities and contraception. Open to nonmajors. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240.

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## IPHY-4480 (3) Comparative Reproduction

Focuses on comparative anatomy and physiology of reproductive system and the evolution of reproductive behavior in vertebrates and invertebrates. Topics include courtship, mating, fertilization, estrous and menstrual cycles, and environmental control of seasonal reproduction. Prereqs., MCDB 1150, 1151, 2150 and 2151, or EBIO 1210, 1220, 1230 and 1240. Recommended prereq., IPHY 3430 (non-majors only), 3450 or 3480 (IPHY majors only).

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## IPHY-4540 (5) Biomechanics

Applies the principles of physics and physiology to the analysis of human movement. Quantitative analysis of the forces, torques, mechanical energy, power impulses and momentum associated with human movement. Mechanical properties of muscles, tendons, ligaments, and bones. Restricted to Integrative Physiology majors only. Prereqs., MATH 1300 or 1310 or APPM 1350; PHYS 2010; IPHY 2800, 3410 or 3460; IPHY 3470. Prerequisites: Restricted to Integrative Physiology majors only.

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## IPHY-4580 (3) Sleep Physiology

Describes the physiology and neurobiology of sleep and impact of sleep, sleep deprivation, and sleep disorders on immune, endocrine, cardiovascular, respiratory, and neural systems, as well as examines changes in sleep across the life span. The integrative nature of sleep and circadian rhythms in normal physiological and cognitive function and their importance in health and disease processes will be emphasized. Prereqs. for IPHY 4850: MCDB 1150, 1151, 2150 and 2151 or EBIO 1210, 1220, 1230 and 1240; IPHY 2800 (or equivalent); IPHY 3470. IPHY 4580 and 5580 are identical courses. IPHY 5580 is restricted to graduate students only.

College of Arts & Sciences Integrative Physiology

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## IPHY-4600 (3) Immunology

Studies the immune system, a multi-cellular system that functions to protect us from disease. Introduces concepts associated with the development and function of individual cells of the immune system (T-cells, B-cells, neutrophils, dendritic cells, macrophages), as well as their integrative roles in physiology and host defense. Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors), Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only. Prereq., IPHY 3430 or 3470. Recommended prereq., IPHY 3060. Same as IPHY 5600. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-4650 (5) Exercise Physiology

Examines physiological and biochemical adjustments that occur in the body with acute and chronic exercise. Topics center on physiological mechanisms pertaining to metabolic, cardiovascular, and hormonal alterations, the role of exercise in health and disease, soreness and fatigue, immune function, as well as exercise during varied environmental conditions. Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only. Prereqs., IPHY 2800; IPHY 3470; IPHY 3450 or 3480. Prereq. or coreq., IPHY 3410 or 3460. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-4660 (3) Critical Thinking in Integrative Physiology

Covers specific integrative physiology topics in areas such as animal physiology, endothelial function, neurobiology, exercise immunology, and exercise physiology. May be repeated up to 6 total credit hours. Prereq., 13-hours of IPHY coursework. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-4680 (3) Critical Thinking in Exercise Physiology

Covers specific exercise physiology topics such as cellular cause of fatigue and muscle soreness, heart disease, regulation of blood flow, diabetes, aging, training adaptations, exercise at high altitude, ergogenic aids, and excitation-contraction of muscle. Prereq., IPHY 4650. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-4720 (4) Neurophysiology

Explores the function of the nervous system, including how the properties of neurons influence nervous system activity, how the nervous system controls the activity of muscles and how the sensory effects of muscle activity influence the function of the nervous system. Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only. Prereqs., IPHY 2800; IPHY 3410 or 3460; IPHY 3470. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree majors only.

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## IPHY-4740 (3) Theory of Motor Skill Learning

Offers a critical analysis of motor learning theories, including Adam's closed loop theory, Schmidt's schema theory, and the influence of contextual interference on learning and performance. Also covers feedback and practice organization. Projects and presentations required. Prereq., junior standing. Same as IPHY 5740. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## IPHY-4860 (1-6) Independent Study: Undergraduate

Students may register for more than one section per term. May be repeated up to 8 total credit hours.

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## IPHY-4870 (1-3) Honors Thesis

Prereq., IPHY 2800 and 3700.

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## IPHY-4930 (1-6) Internship

Provides an opportunity for field/laboratory work in a variety of different settings. Prereq., junior or senior status and completion of at least two of the major core classes. Consult with faculty for approval. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## IPHY-5010 (1-3) Seminar in Integrative Physiology

Special topics spanning the broad scope of integrative physiology are covered in a seminar-style format. Presentations by current IPHY faculty are augmented by graduate student presentations of thesis and dissertation work. May be repeated up to 3 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Integrative Physiology

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## IPHY-5100 (2) Colloquium in Integrative Physiology

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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## IPHY-5102 (2) Molecular Genetic Analysis of Physiology and Behavior

Utilizes molecular, classical, and quantitative genetics as a method for understanding the molecular basis of human and animal physiology and behavior. Required of first year students in Behavioral Genetics certificate program. Prereqs., EBIO 2070 or 2670, or MCDB 2150.

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## IPHY-5200 (3) Physiological Genetics and Genomics

Includes a recitation section. Same as IPHY 4200 and PSYC 5200. Prerequisites: Restricted to Graduate Students only.

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## IPHY-5232 (2) Molecular Genetics and Physiology

Covers fundamental mechanisms of gene action, including genome structure and regulation of gene expression. Discusses molecular techniques used to examine human genetic diseases. Emphasizes genetic diseases with behavioral, neurologic, and physiologic abnormalities. Prereq., IPHY/PSYC 5200 or instructor consent. Same as PSYC 5232.

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## IPHY-5262 (3) Application of Bioinformatics and Genomics

Covers fundamentals of genome sequence and structure of genomes. Emphasis on the human genome, mechanisms of gene action, including genome structure and regulation of gene expression and bioinformatics. Utilizes genomic and molecular techniques used to examine human genetic diseases with behavioral, neurologic, and physiologic abnormalities. Recommended prereq., IPHY 5200.

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## IPHY-5300 (3) Statistical Genetics for Complex Traits

Focuses on the methods of mapping complex disease genes in both population and family-based samples. Topics include both linkage and association analyses of qualitative and quantitative phenotypes. Prerequisites: Restricted to Graduate Students only.

## IPHY-5440 (4) Endocrinology

Same as IPHY 4440.

## IPHY-5550 (3) Exercise Biochemistry

Examines the underlying biochemical mechanisms that are responsible for the physiological adaptations to short- and long-term dynamic exercise including carbohydrate, fat, and protein metabolism. The interaction of key biochemical alterations as it relates to disease (diabetes, obesity, and aging) and exercise will be addressed. Prereq., one year of chemistry. Prereq. or coreq., IPHY 4650 or instructor consent. Prerequisites: Restricted to Graduate Students only.

## IPHY-5580 (3) Sleep Physiology

Describes the physiology and neurobiology of sleep and impact of sleep, sleep deprivation, and sleep disorders on immune, endocrine, cardiovascular, respiratory, and neural systems, as well as examines changes in sleep across the life span. The integrative nature of sleep and circadian rhythms in normal physiological and cognitive function and their importance in health and disease processes will be emphasized. Prereqs. for IPHY 4850: MCDB 1150, 1151, 2150 and 2151 or EBIO 1210, 1220, 1230 and 1240; IPHY 2800 (or equivalent); IPHY 3470. IPHY 4580 and 5580 are identical courses. IPHY 5580 is restricted to graduate students only. Prerequisites: Restricted to Graduate Students only.

## IPHY-5600 (3) Immunology

Restricted to graduate students only. Same as IPHY 4600. Prerequisites: Restricted to Graduate Students only.

# IPHY-5740 (3) Theory of Motor Skill Learning

Same as IPHY 4740. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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IPHY

## IPHY-5800 (4) Advanced Statistics and Research Methods in Integrative Physiology

Introduces advanced statistical techniques important for analyzing data rising in biomedical research, including physiology. Statistical reasoning will be emphasized through problem solving and applications using statistical software packages. Restricted to Integrative Physiology graduate students only. Prereq., IPHY 2800. Prerequisites: Restricted to Integrative Physiology (IPHY) graduate students only.

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## IPHY-5830 (3) Writing for the Research Scientist

Promotes understanding of the rhetorical goals, structure, design, and language for effective scientific texts, emphasizing research reports and grant proposals. Supports students in executing advanced cognitive processes in planning, drafting, and revising. Involves instructor-guided procedural facilitation and peer-review workshops based on students' current writing projects in courses and laboratory research. Prereq., basic proficiency in English. Restricted to graduate students.

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## IPHY-5840 (1-6) Graduate Independent Study

Restricted to Integrative Physiology graduate students only. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Integrative Physiology (IPHY) graduate students only.

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## IPHY-6010 (1-3) Seminar

Presents special topics in integrative physiology. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

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## IPHY-6650 (3) Cellular Cardiovascular Physiology

Focuses on the cellular control of cardiac and smooth muscle contraction, at rest and in response to acute and chronic exercise. Addresses certain pathophysiological and physiological adaptive mechanisms. Prereq., IPHY 4650.

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## IPHY-6660 (3) Locomotion Energetics and Biomechanics

Critiques and discusses both classic and cutting edge scientific research in the area of terrestrial locomotion. Recommended prereqs., IPHY 4540, 4650 and graduate standing in IPHY or EBIO. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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## IPHY-6670 (2) Hypothesis Testing in Locomotion Biomechanics

Focuses on the scientific process including formulating and testing hypotheses in studies of locomotion. Students analyze primary articles to determine whether the studies tested hypotheses and to generate new hypotheses that logically follow from previous studies.

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## IPHY-6680 (3) Matlab for Physiological and Biomechanical Research

This introduction to Matlab programming will teach the skills needed to write and modify programs for data acquisition and analysis, statistics, plotting, and simulation. Prerequisites: Restricted to Graduate Students only.

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## IPHY-6830 (3) Professional Skills for the Research Scientist

Discusses grant and manuscript writing, scientific presentations, peer-review, setting up/directing a research laboratory, research ethics, mentoring and other professional skills. Restricted to Integrative Physiology graduate students only. Prerequisites: Restricted to Integrative Physiology (IPHY) graduate students only.

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## IPHY-6840 (1-3) Research Project

Involves a scholarly investigation of a selected topic using literature and/or experimental techniques. Advisor required. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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## IPHY-6940 (1) Master's Degree Candidate

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## IPHY-6950 (1-6) Master's Thesis

Restricted to IPHY graduate students. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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## IPHY-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Restricted to IPHY graduate students. Prerequisites: Restricted to Integrative Physiology (IPHY) or Integrative Physiology Concurrent Degree (C-IPHY) graduate students only.

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ITAL

## ITAL-1010 (5) Beginning Italian 1.

The four skills of listening, speaking, reading, and writing are progressively developed in a predominantly oral presentation. Grammatical concepts are explained and practiced through dialogues, written exercises, and conversations. The cultural focus is on the personal world and life of students.

College of Arts & Sciences    French & Italian    Italian

## ITAL-1020 (5) Beginning Italian 2

Continuation of ITAL 1010, with more difficult grammatical concepts explored. The cultural focus shifts to social and civic areas. Prereq., ITAL 1010 (min grade C-).

College of Arts & Sciences    French & Italian    Italian

## ITAL-1400 (3) Medieval/Renaissance Women Writers in Italy and France

Introduces major literature through close readings of women's writings in their historical context. Offers a general introduction to women's status and roles in Italy and France. Taught in English. Same as FREN 1400. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences    French & Italian    Italian

## ITAL-1500 (3) That's Amore: Introduction to Italian Culture

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Introduces students to representations of Italian society that have persisted through the ages. The course readings allow students to better understand how certain stereotypes about Italian society (e.g., Latin lover, Mafia) were born and persist in the present. Taught in English. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences French & Italian Italian

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## ITAL-1600 (3) Strategies of Fear: Introduction to Italian Fantastic Literature

Traces the development of the fantastic theme in Italian Literature from its origins (late nineteenth century) to contemporary times. Analyzes the modes of reception and appropriation of non-Italian gothic and fantastic narrative traditions through which Italian writers have subverted the national literary model proposed by realist narrative. Approved for arts and sciences core curriculum: literature and the arts. Taught in English.

College of Arts & Sciences French & Italian Italian

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## ITAL-2110 (3) Intermediate Italian Reading, Grammar, and Composition 1

Enhances the skills learned in the first-year course and develops greater fluency in understanding and speaking. More emphasis is placed on reading and writing through the use of activities featuring cultural themes that present a realistic portrait of contemporary Italy. Taught in Italian. Prereq., ITAL 1020 (min grade C-). Meets MAPS requirement for foreign language.

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## ITAL-2120 (3) Intermediate Italian Reading, Grammar, and Composition 2

Continuation of ITAL 2110. Some reading in Italian literature and culture with considerable practice in writing and speaking Italian. Fulfills the Graduate School language requirement for the Phd. Prereq., ITAL 2110 (min grade C-) or equivalent.

College of Arts & Sciences French & Italian Italian

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## ITAL-2130 (3) Introduction to Literary Analysis.

Increases student's ability to read and analyze literary texts by improving vocabulary and terminology. Students read short stories, essays, short plays, and poems to acquire critical skills and improve expression of opinions and arguments in Italian. Taught in Italian. Prereq or coreq., ITAL 2120 (min grade C-) or instructor consent required.

College of Arts & Sciences French & Italian Italian

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## ITAL-3015 (3) Advanced Composition 1

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Teaches students to write in Italian in a variety of genres, focusing on the creative aspects of writing. Exercises and themes are drawn primarily from current events and culture (i.e., blogging, journaling, essays and films), but also allows students to develop their critical skills in other areas. Similar to ITAL 3010. Students may not receive credit for this course and ITAL 3010. Prereq., ITAL 2120 (min. grade C-) or instructor consent required.

College of Arts & Sciences French & Italian Italian

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## ITAL-3025 (3) Advanced Composition 2: Introduction to Literary Writing

Introduces students to complex forms of writing within Italian studies. Focuses on the analysis of literary genres (e.g., autobiography, essays, short stories) through a step-by-step process that allows students to craft advanced arguments in Italian. Studies will read Italian literary texts and write and revise in workshop format (e.g., peer review, collaborative assignments). Similar to ITAL 3020. Students may not receive credit for this course and ITAL 3020. Prereq., ITAL 3015 (min grade C-) or instructor consent required. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences French & Italian Italian

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## ITAL-3030 (3) Storia dell'arte: Advanced Composition/Conversation 3

Improves vocabulary and fluency in spoken Italian, and competence and confidence in correct and more sophisticated written Italian through the study of the history of Italian art. Exercises and themes focus on Italian Classical, Medieval, Renaissance, and Modern Art. Prereq., ITAL 2130 or 3010 (min grade C-). Instructor consent is required.

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## ITAL-3040 (3) Italian Conversation Through Cinema

Taught in Italian, the course covers various topics of Italian Cinema from WWII to the present. Focus is on periods, genres, themes, and auteur/directors. Emphasis on review of language structures previously learned and acquisition of new vocabulary to enable students to discuss different aspects of Italian culture, in Italian. Prereq., ITAL 2120 (min grade C-) or equivalent. Instructor consent is required.

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## ITAL-3140 (3) Readings in Italian Literature-20th Century

Covers a selected reading of major texts, prose, and poetry of 20th century literature. Emphasizes critical reading and analysis of modern and contemporary Italian literature in its literary and historical context. Taught in Italian. Prereq., ITAL 2130 (min grade of C-), or instructor consent.

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## ITAL-3150 (3) Readings in Italian Literature-19th Century

Introduces students to 19th century literary history through a selected reading of major texts, prose, and poetry. Emphasizes critical reading and analysis of Italian literature in its literary and historical context. Taught in Italian. Prereq., ITAL 2130 (min grade C-), or instructor consent.

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## ITAL-3160 (3) Readings in Italian Literature---Medieval and Renaissance

Covers a selected reading of major texts, prose, and poetry of Medieval and Renaissance literature. Emphasizes critical reading and analysis of texts in their literary and historical context. Taught in Italian. Prereq., ITAL 2130 (min grade C-) or instructor consent required.

College of Arts & Sciences French & Italian Italian

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## ITAL-4010 (3) Problems in Translation, Advanced Grammar, and Stylistics 1

Emphasizes practice in translating varying types of prose from Italian into English and English into Italian. Prereq., ITAL 2130 or 3010 (min grade C-).

College of Arts & Sciences French & Italian Italian

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## ITAL-4030 (3) Contemporary Italian Culture, Politics, and the Media.

Serves as an introduction to the study of the effect that politics and the media have in shaping Italian culture. Makes use of the World Wide Web for instruction. Taught in Italian. Familiarity with Internet helpful. Prereq., ITAL 2130 or 3010 (min grade C-) or instructor consent.

College of Arts & Sciences French & Italian Italian

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## ITAL-4040 (3) Business Italian Style

Provides an introduction to the Italian way of conducting business, with a close view on the company and its world through learning marketing and producing a real company project for the market. Analyzes topics of international marketing and trade using Italian and American economics websites. Focuses on building cross-cultural bridges between the U.S. and Italy to have smoother business relationships and enable students to participate more easily in joint international working teams. Prereq., ITAL 3010 (min grade C-) or instructor consent required.

College of Arts & Sciences French & Italian Italian

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## ITAL-4140 (3) The Age of Dante: Readings from The Divine Comedy

Focuses on close reading of Dante's poetry with emphasis on the intellectual, religious, political, and scientific background of the medieval world. Taught in English. Prereq., junior standing or instructor consent. Same as HUMN 4140. Credit not granted for this course and ITAL 4145 or 4147. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences French & Italian Italian

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## ITAL-4145 (3) The Age of Dante in Italian

Focuses on close readings of Dante's poetry with emphasis on the intellectual, religious, political, and scientific background of the medieval world. Taught in Italian. Prereq., ITAL 2130. Credit not granted for this course and ITAL 4140, HUMN 4140, or ITAL 4147. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences French & Italian Italian

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## ITAL-4147 (3) Visualizing Dante's Inferno: A Global Seminar in Florence Italy

Focuses on close reading of Dante's Inferno. Examines the specific sites and art in Florence and nearby cities that Dante references in the Inferno, as well as visual representations of Hell created both before and after Dante's poem. Taught in English. Offered through the CU Study Abroad Program. Credit not granted for this course and HUMN/ITAL 4140 or ITAL 4145. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences French & Italian Italian

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## ITAL-4150 (3) The Decameron and the Age of Realism

Analyzes the rise of realism in the 13th and 14th century Italian literature and parallel manifestations in the visual arts. Focuses on Boccaccio's Decameron and contemporary realistic prose and poetry with emphasis on gender issues and medieval cultural diversity. Taught in English. Prereq., junior standing or instructor consent. Same as HUMN 4150. Approved for arts and sciences core curriculum: literature and the arts or human diversity.

College of Arts & Sciences French & Italian Italian

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## ITAL-4160 (3-5) Italian Literature Special Topics

Topics vary each semester. Consult the online Schedule Planner for specific topics. May be repeated up to 8 total credit hours for different topics.

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## ITAL-4170 (3) Italian Literature Special Topics

Topics vary each semester. Consult the online Schedule Planner for specific topics. May be repeated up to 6 total credit hours on different topics.

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## ITAL-4200 (3) Topics in Italian Culture and Civilization from the Origins through the Renaissance

Taught in English. Topics vary. May be repeated up to 6 total credit hours on different topics.



# Courses

Search by College, Department & Category

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ITAL

## ITAL-4250 (3) History of Italy

Survey of political, social, and intellectual history of Italy and its people. Taught in English. Same as HIST 4313.

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[French & Italian](#)
[Italian](#)

## ITAL-4280 (3) Topics in Italian Cinema

Examines different aspects of Italian cinema from the origins of neorealism to the present. May focus on a particular director, the culture of a specific period, or certain themes (e.g., the representation of women, the relationship between cinema and literature, or socio-aesthetic movements like Futurism or Fascism). Taught in English. May be repeated up to 6 total credit hours on different topics.

[College of Arts & Sciences](#)
[French & Italian](#)
[Italian](#)

## ITAL-4290 (3) Italian Culture Through Cinema

Examines the representations of Italian culture through its Cinema. Focusing especially on post-World War II cinema, we will examine how Italian filmmakers have portrayed Italian history and specific aspects of its culture (i.e., Fascism, post-war reconstruction, the Mafia, patriarchy) in the past fifty years. Approved for arts and sciences core curriculum:contemporary societies. Taught in English.

[College of Arts & Sciences](#)
[French & Italian](#)
[Italian](#)

## ITAL-4300 (3) Multiculturalism in Italy

Focuses on multiculturalism and difference in contemporary Italian society. The readings assigned for this course explore the experience

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and co-existence of ethnic and religious minorities in Italy. Students will study how specific minorities live in a major Western-European country and will investigate the connotations that the concept of 'multiculturalism' takes in the Italian context. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences French & Italian Italian

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## ITAL-4350 (3) From Wops to Dons to Movers and Shakers: The Italian-American Experience

Exposes students to the history of Italian immigration to the United States. By studying how Italians and Americans negotiated different ideas concerning identity, traditions and community, it helps students understand how Italians transformed themselves from a despised and marginalized minority into active participants in the success of the United States in the 20th and 21st centuries. Taught in English. Approved for arts and sciences core curriculum: U.S. Context.

College of Arts & Sciences French & Italian Italian

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## ITAL-4600 (3) Once Upon a Time in Italy

Examines the evolution of the Italian fairy tale from the 1500s to the 2000s in literature, theater, and film. Considers the tales and their authors in their social-historical context. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences French & Italian Italian

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## ITAL-4730 (3) Italian Feminisms: Culture, Theory, and Narratives of Difference

Studies Italian women writers, artists, and filmmakers. Literary and visual texts are analyzed in dialogue with readings of leading Italian gender theorists. Italian history and culture is reread by following the development of a discourse about women. Taught in English; readings in Italian for Italian majors. Same as HUMN 4730. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences French & Italian Italian

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## ITAL-4840 (1-3) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences French & Italian Italian

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## ITAL-4930 (1-3) Languages Internship for Professions

Offers opportunities to use Italian skills in service to various sectors of the community, including private industry, government, and education. Prereq., ITAL 2120 (min grade C-) or instructor consent.

College of Arts & Sciences French & Italian Italian

## ITAL-4980 (3) Italian Senior Honors Thesis

The senior honors thesis is a 40 to 45 page original research paper, written in Italian, and constitutes a requirement for graduating with departmental honors. Prereqs., all third-year course requirements including FREN 3200. Recommended prereq., at least one course numbered ITAL 4100 or above.

College of Arts & Sciences French & Italian Italian

## ITAL-4990 (3) Senior Seminar

Preparation of a 15-page research paper in Italian presented to two members of the faculty and defended orally in class. Prereq., advisor consent. Recommended prereq., at least one course numbered ITAL 4100 or above.

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JOUR

## JOUR-1001 (3) Contemporary Media Analysis

An introduction to the role of media in contemporary society, focusing on the cultural, political, economic, and historical context within which print and media technologies developed and how audiences interact with and influence the use of media. Restricted to Journalism & Mass Communication (JOUR) or Arts and Sciences Open Option majors (XXAS) majors only. Prerequisites: Restricted to Journalism and Mass Communication (JOUR) or Arts and Sciences Open Option majors (XXAS) majors only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

## JOUR-1871 (1-3) Special Topics for First-Year Students

Special studies in media that are specific for first-year students. May be repeated for a maximum of three credit hours.

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## JOUR-2011 (3) Media and Public Culture

Introduces the rise and development of mediated communication and its impact on and role within the formation of modern culture and public life. Restricted to JOUR majors.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

## JOUR-2403 (3) Principles of Advertising and Consumer Culture

Explores creative and strategic thinking plus the nature and functions of promotions, event-marketing, public relations, and advertising and their growing interdependence in a changing media landscape. Considers technology's impact and the effect of commercial culture

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on an increasingly diverse society. Restricted to School of Journalism and Mass Communication (JOUR) or Marketing (MKTG) majors only. Prerequisites: Restricted to School of Journalism and Mass Communication (JOUR) or Marketing (MKTG) majors only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-2601 (3) Principles of Journalism and Networked Communication

Surveys the history, practices and responsibilities of journalism in a democracy. Examines ethics, best practices in institutional and network settings, reporting and writing, international news systems, personal branding, and strategies for creating and distributing content across media platforms. Promotes the highest professional values and encourages students to be leaders who recognize the possibilities of journalism in a democratic society. Restricted to Journalism and Mass Communication (JOUR) majors only. Prerequisites: Restricted to Journalism and Mass Communication (JOUR) majors only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-3001 (3) Public Affairs Reporting

Grounds students in the basic newsgathering skills needed to work for news enterprises. Students learn techniques central to researching, reporting and writing stories for various media formats, including print, online, and broadcast journalism. Prereq., JOUR 2601 or 1002. Prerequisites: Requires prerequisite course of JOUR 2601 or 1002. Restricted to News Editorial (NSED-BSJR or JNED-BSJR) majors and with a minimum of 57 hours taken.

[Journalism and Mass Communication Program](#) [Journalism](#) [Print & Online Journalism](#)

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## JOUR-3002 (3) Multimedia Reporting and Production

Equips students with the tools and techniques needed to produce multimedia content. Classroom instruction offers students historical, social and cultural contexts for the emergence of new media forms. Skills and practices covered include website design and construction, nonlinear video editing, digital graphics design, interactive information presentation, and multimedia reporting. Restricted to juniors/seniors. May be limited to JOUR majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

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## JOUR-3102 (3) Photojournalism I

Introduces the basic elements of visual communication. Covers the use of camera systems, digital imaging techniques and other aspects of photojournalism including law, ethics, history and critical decision-making. Prereq., JOUR 2601. Prerequisites: Restricted to School of Journalism and Mass Communication with a minimum of 57 hours taken.

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## JOUR-3403 (3) Branding and Positioning

Examines the theory and practice of branding, target segmentation and how the digital space and the rapid rise of consumer generated content have impacted brand management. Students analyze audience research, and the competitive set to develop brand positions and

benefits. Prereq., JOUR 2403. Prerequisites: Requires pre-requisite course of JOUR 2403. Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 45 hours taken.

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## JOUR-3453 (3) Introduction to Creative Concepts

Provides an opportunity to explore approaches to creative problem solving and visual thinking. Students draw on this theoretical foundation to develop advertising ideas in a variety of media for both commercial clients and non-profit organizations. Prereq., JOUR 2403. Prerequisites: Requires pre-requisite course of JOUR 2403. Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 45 hours taken.

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## JOUR-3463 (3) Advertising Media

Studies media, markets, and audiences, and their relationships to advertising messages. Prereqs., JOUR 3403 and 3453. Prerequisites: Requires pre-requisite courses of JOUR 3403 and 3453. Restricted to students with 57-180 credits (Junior or Senior) Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only.

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## JOUR-3473 (3) Advertising Research

Introduces students to applied research methods and provides practice in using research in marketing and advertising decision making. Prereqs., JOUR 3403 and 3453. Restricted to junior/senior JOUR, MKTG and ADVT majors.

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## JOUR-3503 (3) Intermediate Creative Concepts

Explores both strategic and creative thinking and examines approaches to narrative storytelling as a tool for telling overarching brand stories. Students use the foundation to develop creative briefs and advertising campaigns. Prereqs., JOUR 3403, 3453 and instructor consent. Coreq., JOUR 4513. Prerequisites: Prereq., JOUR 3453 and instructor consent. Coreq., JOUR 4513.

[Journalism and Mass Communication Program](#) [Journalism](#) [Advertising & Media Design](#)

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## JOUR-3552 (3) Editing and Presentation

Explores copy editing, graphic principles and processes, new media technology. Prereq., JOUR 3001. Prerequisites: Requires pre-requisite course of JOUR 3001. Restricted to students with 57-180 credits (Junior or Senior) News Editorial (NSED-BSJR or JNED-BSJR) majors only.

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## JOUR-3604 (3) Radio and Television News

Covers principles and techniques involved in the preparation of news for broadcasting. Prereq., JOUR 2601. Restricted to Broadcast News or Broadcast Production majors only with a minimum of 57 hours taken. Prerequisites: Requires pre-requisite course of JOUR 2601. Restricted to Broadcast News (BCNS-BSJR or JBCN-BSJR) or Broadcast Production (BCPM-BSJR or JBCP-BSJR) majors only with a minimum of 57 hours taken.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-3614 (3) Principles of Audio Production

Introduces audio production techniques using digital technologies. Students learn to apply fundamental principles to create professional radio and online programs including podcasting. Restricted to Journalism majors with a minimum of 45 hours taken. Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 45 hours taken.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-3644 (3) Principles of Television Production

Emphasizes the use of video technologies in both field and studio production, camera and editing work, producing and directing for professional program production. Prereq., JOUR 2601. Restricted to Broadcast News or Broadcast Production majors only with a minimum of 57 hours taken. Prerequisites: Requires pre-requisite course of JOUR 2601. Restricted to Broadcast News (BCNS-BSJR or JBCN-BSJR) or Broadcast Production (BCPM-BSJR or JBCP-BSJR) majors only with a minimum of 57 hours taken.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-3674 (3) Television Production 2

Covers studio productions for "Newsteam Boulder." Students also do field projects to sharpen their writing, video production, and editing skills. Prereq., JOUR 3644. Prerequisites: Requires pre-requisite course of JOUR 3644. Restricted to students with 57-180 credits (Junior or Senior) Broadcast News (BCNS-BSJR or JBCN-BSJR) or Broadcast Production (BCPM-BSJR or JBCP-BSJR) majors only.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-3771 (3) Media and Communication History

Examines the historical development of various communication technologies (printing press, photography, film, radio, television, computers, Internet); their impact on culture (forms of expression and social relationships); and their relation to various conceptions of the public (citizens, audiences, consumers, markets). Draws on history to explore current issues in media, popular culture and their relation to public life. Prereq., junior or senior standing. May be limited to majors.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-3902 (1-3) Newspaper Practicum

Gives students the opportunity to participate in newswork on Campus Press. May be repeated up to 6 total credit hours. Instructor consent required.

Journalism and Mass Communication Program Journalism

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## JOUR-3913 (1-3) Advertising Practicum

Provides the opportunity to do advertising work outside existing classes. May be repeated up to 6 total credit hours. Instructor consent required.

Journalism and Mass Communication Program Journalism Advertising & Media Design

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## JOUR-4002 (3) Reporting 2

Assumes mastery of basic reporting and writing skills. Students produce more sophisticated stories on a variety of topics. Prereq., JOUR 3001. Prerequisites: Requires pre-requisite course of JOUR 3001. Restricted to students with 57-180 credits (Junior or Senior) News Editorial (NSED-BSJR or JNED-BSJR) or Journalism and Mass Communication (JOUR) majors only.

Journalism and Mass Communication Program Journalism

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## JOUR-4102 (3) Photojournalism Portfolio

Advanced course intended to give students a forum in which technical skills will be brought to professional standards. Build a polished portfolio of work to present to editors and buyers. Prereq., JOUR 3102. Prerequisites: Requires a prerequisite course of JOUR 3102.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-4201 (3) Media, Culture and Globalization

Surveys the political and economic structures of media system in developed and developing countries and discusses the impact of privatization, ownership consolidation, and globalization on the flow of information across national borders. Also looks at how global media flows and counter-flows affect conceptions of nationhood and cultural identity. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Journalism & Mass Communication (JOUR) or International Affairs (IAFS) majors only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4211 (3) East Asian Media and Culture

Offers an understanding of the various people, cultures and nations of East Asia through their media systems. Provides a critical overview of the historical, cultural, social, political and economic dimensions of East Asian communication systems in today's digitally

connected/disconnected world. Restricted to junior/senior SJMC majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) School of Journalism & Mass Communication majors only.

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# Courses

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JOUR

## JOUR-4272 (3) Principles of Public Relations

Introduces the economics, ethics, history, impact, practice, and social context of the public relations industry in America. Includes an analysis of public relations in agencies, corporations, political campaigns, social service organizations, universities, and other venues. Emphasizes writing for public relations, including fact sheets, press releases, reports, and speeches. Same as JOUR 5272. Restricted to Journalism majors with a minimum of 57 hours taken. Prerequisites: Restricted to School of Journalism and Mass Communication with a minimum of 57 hours taken.

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## JOUR-4282 (3) Public Relations Strategy and Campaigns

Develops and applies public relations programs, from identification of the problem through execution of public relations techniques. Prereq., JOUR 4272. Same as JOUR 5282. Prerequisites: Requires a prerequisite course of JOUR 4272.

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## JOUR-4301 (3) Media Ethics

Provides students with an overview of the theories, ethics codes, and analytical models that are used in journalism, public relations, and advertising. Introduces students to a variety of ethical issues that can arise across media professions, as well as the industry practices that can lead to ethical lapses, and teaches students how to challenge those practices. Same as JOUR 5301. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) School of Journalism & Mass Communication majors only.

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## JOUR-4311 (3) Media Criticism

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Introduces the critical perspectives most often employed in qualitative media analysis: semiology, structuralism, Marxism, psychoanalytical criticism, sociological criticism, etc. Texts from contemporary print and broadcast media. JOUR 4311 and 5311 are the same course.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4321 (3) Media Institutions and Economics

Focuses on the institutions and practices of the media industries. Surveys the histories, structures, and activities of these organizations and the contemporary issues surrounding them. Same as JOUR 5321. Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4331 (3) Gender, Race, Class, and Sexuality in Popular Culture

Studies the construction, interconnections, and replications of gender, race, class, and sexuality in popular culture and how these constructs become cultural norms and mores. Uses critical methods with a focus on producing responsible viewers and readers. Same as JOUR 5331, WMST 4331. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) School of Journalism & Mass Communication majors only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4341 (3) International Media and Global Crises

Examines strengths and limits on medias role in globalized crises (e.g. financial, climate change, health) in light of changing distribution of global power. Introduction to current crises; context-analytical approach to media technologies, financing and uses; application to national cases. Restricted to JOUR and IAFS juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Journalism & Mass Communication (JOUR) or International Affairs (IAFS) majors only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4344 (3) Video Documentary Production

Designed to give students the experience of researching, writing, shooting and editing their own documentaries. Prereq., JOUR 3644. Same as JOUR 5344. Prerequisites: Requires a prerequisite course of JOUR 3644.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4351 (3) Reporting Wars, Disasters, and Peace

Explores how journalists report international breaking news with a focus on war, disaster and peace and how these news events affect peoples' lives, governmental decisions and news media operations.

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## JOUR-4354 (3) TV Reporting

Students learn basic broadcast reporting skills---where to find news and how to cover it, how to analyze and organize news stories. Skills are linked with advanced concepts of shooting and editing videotape in order to produce news stories on deadline. Prereqs., JOUR 3604 and 3644. Prerequisites: Requires pre-requisite courses of JOUR 3604 and 3644. Restricted to students with 57-180 credits (Junior or Senior) Broadcast News (BCNS-BSJR or JBCN-BSJR) majors only.

## JOUR-4361 (3) TV and the Family in American Culture and Society

Examines the history and character of two central institutions in American society--the family and television--to gain deeper understanding of their formative and enduring roles. Topics include: intersecting histories of the family and television; economic logic of the TV industry and programming; representations of the family in television programming; how families use and interact with television.

## JOUR-4403 (4) Advertising Campaigns

Gives students the opportunity to work in small groups to develop material for an actual client. Students examine basic principles of group dynamics and effective teamwork while conducting research, developing strategies and creating a multimedia campaign. All work is presented to the client. Prereq., JOUR 3463 or 3503. Prerequisites: Requires pre-requisite course of JOUR 3463 or 3503. Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors with a minimum of 85 hours.

## JOUR-4453 (3) Advertising and Society

Examines criticisms and contributions of advertising in society and the economy. Same as JOUR 5453.

## JOUR-4502 (3) Reporting 3

Involves writing news and features about actual events for publication under deadline pressure. Lab to be arranged. Prereqs., JOUR 3552 and 4002. Restricted to News Editorial majors and with a minimum of 85 hours taken. Same as JOUR 5502. Prerequisites: Requires pre-requisite courses of JOUR 3552 and 4002. Restricted to News Editorial (NSED-BSJR or JNED-BSJR) majors and with a minimum of 85 hours taken.

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## JOUR-4503 (3) Advanced Creative Concepts

Builds on skills acquired in JOUR 3503 and 4513 to help students enhance their conceptual abilities and generate both print and integrated multimedia campaigns. Students work in teams to develop an extensive body of work that's exhibited in an awards show judged by advertising professionals. Prereqs., JOUR 3503 and 4513 and instructor consent.

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## JOUR-4513 (3) Art Direction

Explores theories of visual communication, the visual imagination, and key principles of design. Develops students ability to express ideas through images and to create both effective visual concepts and layouts for a variety of media. Prereq., JOUR 3453 and instructor consent. Coreq. JOUR 3503.

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## JOUR-4523 (3) Portfolio

Gives students an opportunity to develop an extensive body of work. Students create integrated campaigns, which include print, digital and guerilla ideas. Final portfolios are critiqued by both faculty and outside reviewers. JOUR 4503 and instructor consent.

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## JOUR-4533 (3) Applied Consumer Insights

Provides an opportunity to use and master quantitative and qualitative research methods. Students conduct research and analyze data to determine the targets relationship with specific product categories and identify the emotional and practical needs that motivate purchase. Prereqs., JOUR 3403, 3453. Restricted to Advertising or Marketing majors only with a minimum of 57 hours taken. Prerequisites: Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 57 hours taken.

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## JOUR-4543 (3) Strategic Brand Management

Examines the theory of branding: what brands are, how brands are created and measured, as well as strategies for managing brands and brand communication. Prereq., JOUR 3463. Restricted to Advertising or Marketing majors only with a minimum of 57 hours taken. Prerequisites: Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 57 hours taken.

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## JOUR-4562 (3) Digital Journalism

Builds upon digital production skills through the creation of multimedia project. Applies media theory to evaluate digital media content and explore how digital forms influence the news industry, politics, culture, and society. Prereq., JOUR 3002. Same as JOUR 5562.

Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-4602 (3) Editorial, Commentary and Opinion Writing

Concentrates on several of the subjective areas of journalism. Emphasizes editorial and column writing, editorial pages and blogging.

Prereq., JOUR 3001. Same as JOUR 5602. Prerequisites: Requires a prerequisite course of JOUR 3001.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-4614 (1-3) Advanced Audio Practices

Applies advanced skills in producing in-depth audio programming for radio stations in Colorado and for weekly discussion-critique sessions. Prereq., JOUR 3614.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4624 (4) News Team

Students participate in Newsteam Boulder a program broadcast live over the Boulder cable television system. Prereq., JOUR 4354. Same as JOUR 5624. Prerequisites: Requires pre-requisite course of JOUR 4354. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Broadcast News (BCNS) majors only.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4634 (1-3) Broadcast Projects

Covers interpretation, preparation, and/or reporting in programs for broadcast media. Prepares radio or television documentaries and informational/entertainment programs. Prereqs., JOUR 3604 and 3644, or instructor consent.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4651 (3) Media Law

Studies state and federal laws and court decisions that affect the media in order to develop knowledge of media rights and responsibilities and an understanding of the legal system. Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

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JOUR

## JOUR-4674 (1-3) Television Production 3

Provides in-depth experience in directing and producing television programs. Prereq., JOUR 3674. Restricted to Broadcast News or Broadcast Production majors only with a minimum of 85 hours taken. Prerequisites: Restricted to Broadcast News (BCNS-BSJR or JBCN-BSJR) or Broadcast Production (BCPM-BSJR or JBCP-BSJR) majors only with a minimum of 85 hours taken.

[Journalism and Mass Communication Program](#) [Journalism](#) [Broadcast Journalism](#)

## JOUR-4684 (3) Advanced Camera and Editing

Emphasizes the advanced techniques in digital video camera usage and digital editing for professional broadcast video production. Prereq., JOUR 3644. Restricted to Broadcast News or Broadcast Production majors only with a minimum of 75 hours taken. JOUR 4684 and 5684 are the same course. Prerequisites: Requires a prerequisite course of JOUR 3644. Restricted to Broadcast News (BCNS-BSJR or JBCN-BSJR) or Broadcast Production (BCPM-BSJR or JBCP-BSJR) majors only with a minimum of 75 hours taken.

[Journalism and Mass Communication Program](#) [Journalism](#) [Broadcast Journalism](#)

## JOUR-4702 (3) Arts/Cultural Reporting and Criticism

Emphasizes composition of criticism for the performing arts and other areas of entertainment. Prereq., JOUR 3001. Same as JOUR 5702.

[Journalism and Mass Communication Program](#) [Journalism](#) [Print & Online Journalism](#)

## JOUR-4711 (3) Media and Culture

Examines culture in the form of discourse, symbols, and texts transmitted through the media. Explores the relationship between such mediated culture and social myth and ideology. Same as JOUR 5711.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4791 (3) Media and the Public

Provides an overview of how publishing in print and electronic forms has been tied closely to democratic ideals for centuries. Explores how the idea of the public is central to the theory and practice of media politics, and how the contested concepts of "the public sphere" and "public opinion" have long been linked to debates about the proper relationship between media and democratic citizenship. Restricted to Journalism majors with a minimum of 75 hours taken. Same as JOUR 5791. Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4802 (3) Magazine and Feature Writing

Provides practice in writing freelance articles. Considers types, sources, methods, titles, illustrations, and freelance markets. Students submit work for publication. Prereq., JOUR 3001. Restricted to Journalism majors with a minimum of 75 hours taken. Same as JOUR 5802. Prerequisites: Requires prerequisite course of JOUR 3001. Restricted to Journalism and Mass Communication (JOUR) majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-4822 (3) Reporting on the Environment

Involves reporting and writing about the environment by taking into account the scientific, technological, political, economic, and cultural dimensions of environmental subjects. Same as JOUR 5822.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-4841 (1-4) Undergraduate Independent Study

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4871 (1-3) Special Topics

Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-4872 (1-3) Special Topics: Print

Same as JOUR 5872. Prerequisites: Restricted to News-Editorial (NSED-BSJR or JNED-BSJR) students with 87-180 credits (Senior, Fifth Year Senior).

Journalism and Mass Communication Program Journalism

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## JOUR-4873 (1-3) Special Topics

Restricted to Journalism majors with a minimum of 75 hours taken. Prereqs., JOUR 3453, 3463, and 3473. Prerequisites: Restricted to Advertising (ADVT) majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Advertising & Media Design

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## JOUR-4874 (1-3) Special Topics

Prerequisites: Restricted to School of Journalism and Mass Communication majors with a minimum of 75 hours taken.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4875 (6) Special Topics: Boulder Digital Works

May be repeated up to 24 credit hours. Pass/fail only.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-4931 (1-6) Internship

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5001 (1-4) Research in Journalism

Offers students the opportunity to participate in research projects with faculty members or pursue their own primary research interests.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5102 (3) Photojournalism Portfolio

Same as JOUR 4102.

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Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-5201 (3) Media, Culture and Globalization

Same as JOUR 4201.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5272 (3) Principles of Public Relations

Same as JOUR 4272.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-5282 (3) Public Relations Strategy and Campaigns

Prereq., JOUR 5272 or instructor consent. Same as JOUR 4282. Prerequisites: Restricted to Journalism and Mass Communication (JOUR) majors only.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-5301 (3) Media Ethics

Same as JOUR 4301.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5311 (3) Media Criticism

Introduces the critical perspectives most often employed in qualitative media analysis: semiology, structuralism, Marxism, psychoanalytical criticism, sociological criticism, etc. Texts from contemporary print and broadcast media. JOUR 4311 and 5311 are the same course. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5321 (3) Media Institutions and Economics

Same as JOUR 4321.

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## JOUR-5331 (3) Gender, Race, Class, and Sexuality in Popular Culture

Same as JOUR 4331.

## JOUR-5344 (3) Video Documentary Production

Same as JOUR 4344.

## JOUR-5453 (3) Advertising and Society

Same as JOUR 4453.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

JOUR

## JOUR-5502 (3) Newsgathering 2

Prereqs., JOUR 5511 and 5552. Restricted to majors. Same as JOUR 4502. Prerequisites: Requires prerequisite courses of JOUR 5511 and 5552 and is restricted to JOUR graduate students only.

[Journalism and Mass Communication Program](#)
[Journalism](#)

## JOUR-5511 (3) Newsgathering 1

Covers problems and practice in reporting news of government, politics, the courts, and industry, business, science, and other areas involving public issues. For graduate students only. Prerequisites: Restricted to Journalism & Mass Communication graduate students only.

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

## JOUR-5512 (3) In-Depth Reporting

Shows how to dig beneath the surface of issues and events. Focuses on research, interviewing, and writing. Prereq., JOUR 5511.

[Journalism and Mass Communication Program](#)
[Journalism](#)

## JOUR-5514 (3) Newsgathering for Television

Covers principles and techniques involved in the preparation of news for broadcasting. Introduces the use of television equipment. Covers principles and techniques involved in the preparation of news for broadcasting. Introduces the use of television equipment. Prerequisites: Restricted to Journalism & Mass Communication (JOUR) or Communication (COMC) graduate students only.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-5521 (3) Precision Journalism

Instructs students in computer-assisted reporting, including a knowledge of commercial databases, global information networks, and the use of spreadsheets to analyze census data and other complex information. Prerequisites: Restricted to Journalism & Mass Communication (JOUR) or Communication (COMC) graduate students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5524 (3) Television Investigative Reporting

Covers how to produce quality, substantive, in-depth stories for television. Covers the basics of investigative reporting, research, and working with sources.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-5552 (3) News Editing

Discusses principles and practice in copy editing and writing headlines for local and wire stories. Practice in page makeup, picture editing, and electronic editing. Prereq., JOUR 3001. Restricted to majors.

Journalism and Mass Communication Program Journalism

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## JOUR-5562 (3) Digital Journalism

Same as JOUR 4562. Prerequisites: Restricted to Journalism & Mass Communication graduate students only.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-5602 (3) Editorial, Commentary and Opinion Writing

Prereq., JOUR 5511. Same as JOUR 4602. Prerequisites: Requires a prerequisite course of JOUR 5511.

Journalism and Mass Communication Program Journalism Print & Online Journalism

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## JOUR-5624 (4) News Team

Prereqs., JOUR 5511 and 5514. Same as JOUR 4624. Prerequisites: Requires prerequisite courses of JOUR 5511 and 5514.

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-5634 (1-3) Broadcast Projects

Prereq., instructor consent. Same as JOUR 4634. Prerequisites: Restricted to Journalism & Mass Communication graduate students only.

Journalism and Mass Communication Program | Journalism | Broadcast Journalism

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## JOUR-5651 (3) Mass Communication Law

Studies state and federal laws and court decisions that affect mass communication in order to develop knowledge of mass media rights and responsibilities and an understanding of the legal system.

Journalism and Mass Communication Program | Journalism | Core Curr & General Electives

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## JOUR-5684 (3) Advanced Camera and Editing

Emphasizes the advanced techniques in digital video camera usage and digital editing for professional broadcast video production.

Prereq., JOUR 3644. Restricted to Broadcast News or Broadcast Production majors only with a minimum of 75 hours taken. JOUR 4684 and 5684 are the same course. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program | Journalism | Broadcast Journalism

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## JOUR-5702 (3) Arts/Cultural Reporting and Criticism

Prereq., JOUR 5511. Same as JOUR 4702. Prerequisites: Requires a prerequisite course of JOUR 5511.

Journalism and Mass Communication Program | Journalism | Print & Online Journalism

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## JOUR-5711 (3) Media and Culture

Same as Jour 4711.

Journalism and Mass Communication Program | Journalism | Core Curr & General Electives

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## JOUR-5791 (3) Media and the Public

Same as JOUR 4791.

Journalism and Mass Communication Program | Journalism | Core Curr & General Electives

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## JOUR-5802 (3) Magazine and Feature Writing

Prereq., JOUR 5511. Same as JOUR 4802. Prerequisites: Requires a prerequisite course of JOUR 5511.

Journalism and Mass Communication Program Journalism

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## JOUR-5812 (3) Science Writing

Helps students acquire the basic skills and knowledge required of science journalists. Also examines issues of scientific importance such as climate change, the nature of scientific knowledge, and how science is covered in various media. Prerequisites: Restricted to students with 87-180 credits (Seniors) or graduate students only.

Journalism and Mass Communication Program Journalism

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## JOUR-5822 (3) Reporting on the Environment

Same as JOUR 4822.

Journalism and Mass Communication Program Journalism

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## JOUR-5841 (1-3) Graduate Independent Study

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5851 (1-6) Graduate Professional Project

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5861 (3) Visual Communication

Visual communication involves understanding both perception of messages and construction of them. Students analyze their visual thinking abilities and develop habits of visual analysis and criticism, as well as visual communication skills. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-5871 (1-3) Special Topics

Prerequisites: Restricted to Journalism & Mass Communication (JOUR) or Communication (COMC) graduate students only.

## JOUR-5872 (1-3) Special Topics: Print

Same as JOUR 4872. Prerequisites: Restricted to Journalism & Mass Communication (JOUR) or Communication (COMC) graduate students only.

## JOUR-5873 (1-3) Special Topics: Advertising



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

JOUR

## JOUR-5874 (1-3) Special Topics: Electronic Media

Prerequisites: Restricted to Journalism & Mass Communication (JOUR) or Communication (COMC) graduate students only.

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Broadcast Journalism](#)

## JOUR-5931 (1-3) Internship

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

## JOUR-6051 (3) Media Theory

Studies theories and perspectives of mass communication and explores the role of mass media in society. Prerequisites: Restricted to Journalism & Mass Communication (JOUR), Communication (COMM or COMC) or Telecommunications (TELE) graduate students only.

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

## JOUR-6061 (3) Mass Communication Research

Continuation of JOUR 6051, emphasizing experimental and survey research methods.

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

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## JOUR-6071 (3) Critical Theories of Media and Culture

Introduction to critical theories and analysis of media and popular culture. Examines major theoretical traditions and/or theorists that significantly inform media studies (e.g., culturalism, structuralism, Marxism, critical theory, feminism, psychoanalysis, post-structuralism) and applies these to media analysis and criticism. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6201 (3) Global Media and Culture

Covers mass communication within the international system, including similarities and differences in functions, facilities, and content; social theories of the press; and the international flow of mass communication. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6211 (3) Communication and International Development

Studies and analyzes communications technologies and techniques used in addressing social problems in developing countries.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6301 (3) Communication, Media, and Concepts of the Public

Introduces students to historical and contemporary uses of fundamental concepts in research and theory about media institutions, particularly public, community, mass, publicity, public space, public opinion, public interest, and the public sphere.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6311 (3) Seminar: Freedom of Expression

Studies free-speech issues in the context of current and historical philosophical foundations for freedom of expression.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6321 (3) Literary Journalism

Analyzes the work of journalists who became some of the greatest fiction writers of the 19th and 20th centuries, and examines the increasingly indistinct lines between journalism and narrative fiction. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6331 (3) Political Communication

Explores the dynamic relationships involving media and politics, focusing primarily on the American political system. Readings and seminar discussion incorporate normative and empirical perspectives on the media-politics complex. Areas covered include media effects on public opinion and policy, uses of media in governance, journalism sociology, coverage of elections, and implications of interactive media for governance and civic participation. Prerequisites: Restricted to Graduate Students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-6341 (3) Children and the Media

Examining the concepts of children and childhood from the historical, social, cultural, economic and political perspectives, this course explores the interaction between mass media and the socialization and cultivation process of children and youth. Many theoretical traditions are used as a framework to study a variety of issues, such as multicultural literature for children and Disney's role in storytelling, and tween movies and the tweens. Prerequisites: Restricted to Graduate Students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-6551 (3) Telecommunication Policy

Surveys historical and contemporary developments in telecommunications policy, emphasizing social and cultural dimensions, and focusing primarily on the context of the United States.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-6651 (3) Media Law

Graduate seminar in communications law. Studies changing law and applied legal research techniques. Prerequisites: Restricted to Graduate Students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-6661 (3) Media Ethics and Responsibility

Develops a theoretical framework with which to recognize and analyze ethical issues as they arise in the media. Prerequisites: Restricted to Graduate Students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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## JOUR-6671 (3) Media, Myth, and Ritual

Anthropological and interpretative exploration of cultural practices of media audiences. Addresses theoretical and methodological implications of studying audiences from a culturalist perspective, with particular focus on media audience practices. Students engage in field research projects related to course content. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6711 (3) Mass Media and Pop Culture

Inquiry into relationship of the arts and the mass media, including study of critics, their function, and their works. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6721 (3) Message Effectiveness

Investigates how mass media messages work in terms of such effects as perception, learning and comprehension, and persuasion. Effectiveness is analyzed in terms of how well mass communication messages meet their objectives.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6771 (3) History of Mass Communication

Examines specialized areas in the history of mass communication. Prerequisites: Restricted to Graduate Students only.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6781 (3) Economic and Political Aspects of Mass Communication

Discusses economic problems and political issues relevant to newspapers, magazines, broadcasting, and CATV. Examines problems of telecommunications and the impact of future technology on mass communication.

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-6940 (1) Master's Degree Candidate

Journalism and Mass Communication Program Journalism Broadcast Journalism

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## JOUR-6951 (1-6) Master's Thesis

Journalism and Mass Communication Program Journalism Core Curr & General Electives

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## JOUR-7011 (3) Proseminar in Communication Theory 1

Introduces the principal concepts, literature, and theoretical and paradigmatic perspectives of media studies and mass communication and their ties and contributions to parallel domains in the social sciences and humanities. Prerequisites: Restricted to Communication (COMM or COMC) graduate students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

## JOUR-7021 (3) Proseminar in Communication Theory 2

Continuation of JOUR 7011. Prereq., JOUR 7011.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

## JOUR-7051 (3) Qualitative Research Methods in Mass Communication

Examines various methods of qualitative data gathering and analysis in the mass media context. Prerequisites: Restricted to Graduate Students only.

[Journalism and Mass Communication Program](#) [Journalism](#) [Core Curr & General Electives](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

JOUR

## JOUR-7061 (3) Quantitative Research Methods in Mass Communication

Examines various methods of quantitative data gathering methods and analysis in the mass media context.

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

## JOUR-7871 (3) Special Topics

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)

## JOUR-8991 (1-10) Doctoral Thesis

[Journalism and Mass Communication Program](#)
[Journalism](#)
[Core Curr & General Electives](#)



## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

JPNS

### JPNS-1010 (5) Beginning Japanese 1

Provides a thorough introduction to modern Japanese, emphasizing speaking, listening, reading, and writing in a cultural context.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Japanese](#)

### JPNS-1012 (3-4) Introduction to Japanese Civilization

An interdisciplinary introduction from ancient to modern times. Arts, literature, politics, social relations, religion, and material culture are studied in terms of significant themes and ideas pertaining to the civilization of Japan. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Japanese Courses in English](#)

### JPNS-1020 (5) Beginning Japanese 2

Continuation of JPNS 1010. Prereq., JPNS 1010 (min grade C).

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Japanese](#)

### JPNS-1051 (3) Masterpieces of Japanese Literature in Translation

Surveys Japanese thought and culture through careful reading and discussion of selected masterworks of Japanese literature in translation. Texts include significant works of poetry, fiction, drama, diaries, and essays, from ancient times to the present. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-2110 (5) Intermediate Japanese 1

Continued study of oral and written modern Japanese in a cultural context. Prereq., JPNS 1020 or equivalent(min grade C). Meets MAPS requirement for foreign language.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-2120 (5) Intermediate Japanese 2

Continuation of JPNS 2110. Prereq., JPNS 2110 (min grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-2441 (3) Japanese Culture through Film and Anime

Examines 20th century Japanese culture through cinematic and animated films. Studies films by Ozu, Kurosawa, Mizoguchi, and contemporary animators Tezuka, Miyazaki, and Kon Satoshi. Considers cultural issues raised in film and anime in light of modern Japanese history and literature. Requires no knowledge of Japanese.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-3110 (5) Advanced Japanese 1

Enhances student competence and performance in Japanese language in a holistic and integrative manner. Prereq., JPNS 2120 (min grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-3120 (5) Advanced Japanese 2

Continuation of JPNS 3110. Enhances student competence and performance in Japanese language in a holistic and integrative manner. Prereq., JPNS 3110 (min grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-3200 (3) Adv Wrtg Topics on Chinese & Japanese Literature and Civilization

Provides an introduction to the academic study of Chinese and Japanese literature and culture with a focus on writing skills in English through a survey of standard academic writing conventions. Review and assessment of selected textual materials, class presentation, critique, and revision. Recommended for Chinese and Japanese majors and minors. Approved for arts and sciences core curriculum: written communication. CHIN 3200 and JPNS 3200 are the same course.

College of Arts & Sciences East Asian Languages & Civilizations Chinese

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## JPNS-3331 (3) Business Japanese

Designed to teach Japanese with emphasis on using Japanese for professional purposes. The course aims to foster the skills and the knowledge of effective cross-cultural and interpersonal communication in Japanese and to develop intercultural competence in business contexts. Prereq., JPNS 2120 (min. grade C). Recommended prereq., JPNS 3110 (min. grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-3441 (3) Language and Japanese Society

Deals with major linguistic characteristics of Japanese as a medium of communication. Discusses complex linguistic processing of social status and empathy relationships, for example, with reference to the structure of Japanese society from ancient to contemporary times. Requires no knowledge of Japanese. Recommended prereq., JPNS 2120.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-3811 (3) Love, Death, and Desire: Classical Japanese Literature in Translation

Surveys the major works and authors of classical Japanese literature, both poetry and prose, from the earliest historical records and literary anthologies through the Heian period (784--1185). Taught in English. Recommended prereq., JPNS 1051. Same as HUMN 3811.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-3821 (3) Monsters, Monks, and Mayhem: Medieval Japanese Literature in Translation

Surveys the major works and authors of medieval Japanese (poetry, prose, and drama) from the Kamakura and Muromachi periods (1185--1600). Taught in English. Recommended prereq., JPNS 1051.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-3831 (3) The Floating World of Play and Passion: Early Modern Japanese Literature in Translation

Surveys the major works, authors, and genres of literature from the Tokugawa through Meiji periods in their historical and cultural contexts. Attention is given to various approaches of literary analysis and interpretation. Taught in English. Recommended prereq., JPNS 1051.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-3841 (3) Tradition and Transgression: Modern Japanese Literature in Translation

Surveys the major works, authors, and genres of literature from the late Meiji period and 20th century in their historical and cultural contexts. Attention is given to various approaches of literary analysis and interpretation. Taught in English. Recommended prereq., JPNS 1051. Same as HUMN 3841.

College of Arts & Sciences East Asian Languages & Civilizations Japanese Courses in English

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## JPNS-4030 (3) Japanese Syntax

Deals with syntactic phenomena from five areas of Japanese grammar that cause the most difficulty for learners. Their characteristics are explored in forms and discursal functions that go beyond the explanations in basic, prescriptive grammars of Japanese. Prereq., JPNS 3120 or 4120, or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4070 (3) Second Language Acquisition of Japanese

Studies language acquisition theories and research on Japanese as a second language (JSL). Covers the issues in JSL from linguistic, cognitive, and sociolinguistic perspectives: orthography, grammar, phonology, and vocabulary in the contexts of teaching and learning JSL. Prereq., instructor consent. Same as JPNS 5070.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4080 (3) Kanji in Japanese Orthography

Covers the issues in kanji research from historical, sociolinguistic, linguistic, cognitive perspective and vocabulary acquisition theories in the context of teaching and learning the Japanese language. Same as JPNS 5080.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4110 (3) Advanced Readings in Modern Japanese 1

Surveys a variety of material written in modern Japanese, including texts from literature, the social sciences, religion, and cultural history. Emphasizes content and style. Texts and selections vary from year to year. Prereq. JPNS 3120 (min grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4120 (3) Advanced Readings in Modern Japanese 2

Continuation of JPNS 4110. Texts and selections vary from year to year. Prereq., JPNS 4110 (min grade C).

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4210 (3) Contemporary Japanese 1: Current Issues

Offers intensive review of Japanese language skills beyond the first eight semesters, and cultivates further proficiency. Readings will be selected from a wide range of contemporary writings that reflect and represent issues in Japanese as well as global communities. The course emphasizes all skills: reading, listening, writing, speaking, and translation. Instructional technology is extensively integrated into the curriculum. Prereq., JPNS 4120 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4220 (3) Contemporary Japanese 2: Current Issues

Continues developing Japanese language skills beyond the first eight semesters. Cultivates further proficiency at an advanced and superior level. Readings are selected from a wide range of contemporary writings that reflect and represent issues in Japanese as well as global communities. Emphasizes all skills: reading, listening, writing, speaking, and translation. Instructional technology is extensively integrated into the curriculum. Prereq., JPNS 4210 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4300 (3) Open Topics: Readings in Japanese

Examines selected texts on a particular topic taught by regular or visiting faculty. Topics change each term. May be repeated up to 6 total credit hours. Prereq., instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-4310 (3) Classical Japanese 1

Introduces reference tools for reading classical Japanese, and grammar, vocabulary, and use of scripts in premodern Japanese, focusing on the 10th century Taketori Monogatari and the 13th century Hojoki. Prereq., JPNS 3110. Recommended prereqs., JPNS 3120, 3811, 3821.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Japanese](#)

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# Courses

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JPNS

## JPNS-4320 (3) Classical Japanese 2

Continuation of JPNS 4310. Surveys changes in Japanese literary language from the Nara (eighth century) to Meiji (late 19th century) periods. Attention given to changes in grammar, vocabulary, and use of scripts in premodern Japanese. Introduces representative works of classical Japanese literature of all periods. Prereq., JPNS 4310.

College of Arts & Sciences | East Asian Languages & Civilizations | Japanese

## JPNS-4900 (1-3) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences | East Asian Languages & Civilizations | Japanese

## JPNS-4950 (3) Honors Thesis

College of Arts & Sciences | East Asian Languages & Civilizations | Japanese

## JPNS-4980 (1) Practical Issues in Japanese Language Pedagogy

Focuses on practical issues in Japanese language pedagogy for students who will serve as teaching assistants in Japanese language class. Examines the connection between theory and practice as well as practical methods for teaching Japanese. Discusses how to teach Japanese as a second language in a communicative approach and how to assess student language learning. Prereq., JPNS 4120 or equivalent. JPNS 4980 and 5980 are the same course.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5010 (3) Bibliography and Research Methods

Introduces research materials on Japan in Japanese and Western languages, including bibliographic tools, style sheets, and library resources. Overview of secondary sources and publication outlets/methods of disseminating research. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5020 (3) Methods of Teaching Japanese

Surveys pedagogical theory and methods for the teaching of Japanese as a second language, including issues of presentation, interaction, and evaluation. Prereq., graduate standing or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5050 (3) Japanese Sociolinguistics

Surveys past achievements and current research concerns of Japanese sociolinguists in areas such as speech varieties, language behavior and attitude, and linguistic contact and change, as well as their guiding theories and central fieldwork methods. Prereq., graduate standing or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5060 (3) Advanced Japanese Syntax

Examines controversial syntactic topics that have inspired a variety of explanations. Alternative linguistic explanations are sought within the framework of an analytical investigation from the viewpoint of language dynamics. May be repeated up to 6 total credit hours. Prereqs., JPNS 4030 or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5070 (3) Second Language Acquisition of Japanese

Prereq., graduate standing or instructor consent. Same as JPNS 4070. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5080 (3) Kanji in Japanese Orthography

Prereq., graduate standing or instructor consent. Same as JPNS 4080.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5150 (3) Japanese Literary Translation

Explores theories and practice of translation of literary texts as applied to Japanese-English translation; strategies for handling a variety of texts; and professional standards and ethics. May be repeated up to 6 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5170 (3) Japanese for Sinologists

An accelerated course in modern scholarly Japanese for students with a basic foundation in Japanese and an advanced knowledge of Chinese. Focus is on materials in Japanese that relate to Chinese civilization and includes an introduction to kanbun. Prereq., one year of modern Japanese, graduate-level command of Chinese, or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5210 (3) Classical Prose Literature

Examines selected prose works and authors from the Classical, or Heian, period (784-1185). Texts may include selections from diaries, tale literature, and zuihitsu such as Izumi Shikibu Nikki, Genji Monogatari, and Makura no Soshi. Texts and selections vary from year to year. May be repeated up to 6 total credit hours. Prereq., two semesters of classical Japanese language.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5220 (3) Waka, Renga, and Haiku

Studies the three most important poetic forms in Japanese literary history. Emphasizes the reading and analysis of selected texts and authors that best represent these genres. Readings include selections from the first eight imperial poetry anthologies (hachidaishu), famous renga sequences (Minase Sangin Hyakuin, for example), and the haiku of Basho. Texts and selections vary from year to year. May be repeated up to 6 total credit hours. Prereq., two semesters of classical Japanese language.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5280 (1-3) Topics in Classical Japanese Literature

Studies a specific problem or issue in classical (eighth through twelfth century) Japanese literature, e.g., the development of specifically

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Japanese theories of literature or the concept of genre in the Japanese tradition. Topics vary from year to year. May be repeated up to 6 total credit hours.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5310 (3) Advanced Classical Japanese I

Focuses on stylistic, grammatical, and orthographic variations in texts of the classical, medieval, and early modern eras. Prereq., JPNS 4310 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5320 (3) Advanced Classical Japanese II

Advanced analysis of stylistic, grammatical, and orthographic variations in texts of the classical, medieval, and early modern eras, including kanbun and hentaigana; translation and explication of texts. Prereq., JPNS 5310 (formerly 5160) or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5410 (3) Medieval Prose Literature

Focuses on selected prose works and authors from the medieval, or Kamakura and Muromachi periods (1185-1600). Texts may include selections from a variety of war tales, histories, courtly fiction, diaries, memoirs, short prose narratives (otogi-zoshi), Noh plays, and Buddhist literature such as Heike Monogatari, Towazugatari, Izayoi Nikki, Tsurezuregusa, and Shasekishu. Texts and selections vary from year to year. May be repeated up to 6 total credit hours. Prereq., two semesters of classical Japanese language. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5420 (3) Japanese Buddhism and Literature

Studies selected works from the Japanese literary tradition in which Buddhism plays a significant thematic role. Focuses on texts such as the Nihon Ryoiki, Buddhist poetry (Shakkyo-Ka) from the imperial poetry anthologies, Heike Monogatari, Hojoki, the poetry of Saigyō and Bashō, and selected Noh plays. Texts and selections vary from year to year. May be repeated up to 6 total credit hours. Prereq., two semesters of classical Japanese language.

College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5480 (1-3) Topics in Medieval Literature

Focuses on a specific problem or issue in medieval literature, e.g., the spread of literary composition beyond the court. Topics vary from year to year. May be repeated up to 6 total credit hours.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5610 (3) Japanese Dramatic Literature

Examines major writers and texts of the no, kyogen, kabuki, and bunraku theaters, including the plays and critical writings of such authors as Kannami Kiyotsugu, Zeami Motokiyo, Konparu Zenchiku, and Chikamatsu Monzaemon. Texts and secondary readings vary from year to year. May be repeated up to 6 total credit hours. Prereq., two semesters of classical Japanese language.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5810 (3) Modern Japanese Literature

Studies selected texts in Japanese literature from the Meiji Restoration (1868) to the end of the Pacific War. Surveys various literary genres, emphasizing the development of the modern novel as an aspect of Japan's response to Western cultural forms. The unique cultural politics of each of the periods (Meiji, Taisho, and Showa) are illuminated through the filter of both canonical and more marginalized texts. Specific selections vary from year to year. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5820 (3) Contemporary Japanese Literature

Covers developments in Japanese prose fiction, from the end of the Pacific War in 1945 to the present. Late modern texts of writers such as Mishima Yukio, Kawabata Yasunari, Enchi Fumiko, and Tanizaki Jun'ichiro (generally taken to represent modern Japanese literature) are reread in the light of works by more recent writers (and critics) such as Oe Kenzaburo, Yoshimoto Takaaki, Murakami Haruki, and Yamada Eimi. May be repeated up to 6 total credit hours.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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## JPNS-5830 (3) Readings in Modern and Contemporary Japanese Thought and Culture

Examines central issues in Japanese culture and society since the Meiji Restoration (1868) through selected readings of the works of major writers in the fields of literature, anthropology, feminism, political science, and religion, among others. Provides a broad context for cultural studies in modern and contemporary Japan by positioning the most important commentators within their historical and social situations. May be taken for credit twice.

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College of Arts & Sciences East Asian Languages & Civilizations Japanese

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# JPNS-5880 (1-3) Topics in Modern Literature and Culture

Close study of a specific problem or issue in modern or contemporary literature or culture: e.g., transwar literary nationalism. May be repeated up to 6 total credit hours, provided the topics vary.

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JPNS

## JPNS-5900 (1-3) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#)
[East Asian Languages & Civilizations](#)
[Japanese](#)

## JPNS-5980 (1) Practical Issues in Japanese Language Pedagogy

Focuses on practical issues in Japanese language pedagogy for students who will serve as teaching assistants in Japanese language class. Examines the connection between theory and practice as well as practical methods for teaching Japanese. Discusses how to teach Japanese as a second language in a communicative approach and how to assess student language learning. Prereq., JPNS 4120 or equivalent. JPNS 4980 and 5980 are the same course. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
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## JPNS-6900 (1-6) Japanese Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#)
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## JPNS-6940 (1) Japanese Master's Degree Candidate

[College of Arts & Sciences](#)
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# JPNS-6950 (1-6) Japanese Master's Thesis

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# Courses

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JWST

## JWST-1030 (3) Biblical Hebrew 1

This course is designed to enable students to read the Hebrew Bible in the original language. The focus will be the ability to read the various genres of the text, utilizing both the tools of modern language acquisition and the study of classical grammar methods. Same as HEBR 1030.

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-1040 (3) Biblical Hebrew 2

Building on HEBR/JWST 1030, this course continues to build expertise in reading the Hebrew Bible. Modern language acquisition and classical grammar study methods equip students with the tools to translate and read the various genres of the Biblical material. Prereq., HEBR/JWST 1030 or instructor consent. HEBR 1040 and JWST 1040 are the same course.

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-1828 (3) Introduction to Modern Jewish History

Surveys the major historical developments encountered by Jewish communities beginning with the Spanish Expulsion in 1492 up until the present day. We will study the various ways in which Jews across the modern world engaged with the emerging notions of nationality, equality, and citizenship, as well as with new ideologies such as liberalism, socialism, nationalism, imperialism and antisemitism. Same as HIST 1828. Formerly JWST 1108. Approved for arts and sciences core curriculum: historical context.

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-2350 (3) Introduction to Jewish Culture

Explores the development and expressions of Jewish culture as it moves across the chronological and geographical map of the historic Jewish people, with an emphasis on the variety of Jewish ethnicities and their cultural productions, cultural syncretism, and changes. Sets the discussion in a historical context, and looks at cultural representations that include literary, religious, and visual texts. Taught in English. Same as HEBR 2350. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Jewish Studies

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## JWST-2502 (3) Representing the Holocaust

Examines how the memory of the Holocaust in Nazi Germany is increasingly determined by the means of its representation, e.g., film, autobiography, poetry, architecture. Same as GRMN 2502. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Jewish Studies

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## JWST-2551 (3) Secular Jewish Literature, Modern to Contemporary Jews Coming of Age

Studies the literary expression of Jewish writers throughout the world in English translation. Gives special attention to questions of secularity versus tradition, identity, cultural change, diaspora and exile. Taught in English. HEBR 2551 and JWST 2551 are identical courses. Approved for arts and sciences core curriculum: literature and the arts. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Jewish Studies

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## JWST-2600 (3) Judaism, Christianity, and Islam

Introduces literature, beliefs, practices, and institutions of Judaism, Christianity, and Islam, in historical perspective. Same as RLST 2600. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Jewish Studies

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## JWST-3100 (3) Judaism

Explores Jewish religious experience and its expression in thought, ritual, ethics, and social institutions. Same as RLST 3100. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Jewish Studies

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## JWST-3200 (3) Religion and Feminist Thought

Examines the origin of patriarchal culture in the theology and practices of Judaism and Christianity. Explores attitudes and beliefs concerning women as Judeo-Christian culture impacts gender roles and gender stratification through reading and discussion. Women's religious experience is studied from the perspective of feminist interpretations of religiosity. Prereq., WMST 2000 or WMST/RLST 2800. WMST 3200 and JWST 3200 are the same course.

College of Arts & Sciences Jewish Studies

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## JWST-3202 (3) Women, Gender & Sexuality in Jewish Texts & Traditions

Reads some of the ways Jewish texts and traditions look at women, gender and sexuality from biblical times to the present. Starts with an analysis of the positioning of the body, matter and gender in creation stories, moves on to the gendered aspects of tales of rescue and sacrifice, biblical tales of sexual subversion and power, taboo-breaking and ethnos building, to rabbinic attitudes towards women, sexuality and gender and contemporary renderings and rereadings of the earlier texts and traditions. Same as HEBR 3202. Approved for arts and sciences core curriculum: Human Diversity.

College of Arts & Sciences Jewish Studies

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## JWST-3312 (3) The Bible as Literature

Surveys literary achievements of the Judeo-Christian tradition as represented by the Bible. Same as ENGL 3312. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Jewish Studies

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## JWST-3401 (3) The Heart of Europe: Filmmakers and Writers in 20th Century Central Europe

Surveys the major works of 20th century central and central east European film and literature. Examines cultural production in the non-imperial countries and non-national languages of the region including Yiddish, Belarusian, Czech, Hungarian, Polish and Romanian, among others. Traces the rise of nationalism over the course of the century from the age of empires through the "Cold War." Same as GSSL 3401.

College of Arts & Sciences Jewish Studies

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## JWST-3501 (3) German-Jewish Writers: From the Enlightenment to the Present.

Provides insight into the German-Jewish identity through essays, autobiographies, fiction, and journalism from the Enlightenment to the post-Holocaust period. Examines the religious and social conflicts that typify the history of Jewish existence in German-speaking lands during the modern epoch. Same as GRMN 3501. Approved for arts and sciences core curriculum: human diversity.

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## JWST-3600 (3) Global Secular Jewish Societies

This course uses a transnational lens to explore contemporary debates about Jewish people, places, and practices of identity and community. Drawing on history, sociology, international studies, and anthropology, we'll think about the places that Jewish people have called 'home,' and what has made, or continues to make those places 'Jewish.' We'll also explore diverse practices that express the extraordinary varieties of Jewishness (such as building synagogues, food markets, and coffeehouses, creating film festivals, going on heritage travel, Israeli-Jewish backpacking, the creation of online websites and blogs, and creating new urban kibbutzim). Restricted to students with minimum 57 units completed. JWST 3600 and IAFS 3600 are the same course. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## JWST-3610 (3) Topics in International Affairs and Jewish Studies

Explores topics in international affairs as it relates to Jewish culture and society. Subjects addressed under this heading vary according to student interest and faculty availability. May be repeated up to 9 total credit hours. IAFS 3610 and JWST 3610 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## JWST-3677 (3) Jewish-American Literature

Explores the Jewish-American experience from the 19th century to the present through writers such as Sholom Aleichem, Peretz, babel, Singer, Malamud, Miller, Ginsberg, and Ozick. The Jewish experience ranges from the travails of immigration to the loss of identity through assimilation. Restricted to sophomores/juniors/seniors. Same as WMST 3677. Approved for arts and sciences core curriculum: human diversity.

## JWST-3930 (3) Internship in Jewish Studies

Learn beyond the classroom by interning in a local non-profit organization that connects with the Program in Jewish Studies through its mission and/or program. Interns will be supervised by the faculty member of record as well as the employer housing the intern. Prereqs., HEBR/JWST 1108 or HIST/JWST 2350. May be repeated up to 6 total credit hours.

## JWST-4000 (1-3) Capstone in Jewish Studies

Serves as the final product for students completing the major in Jewish Studies. The capstone asks students to design a project under the supervision of a mentor that serves as the summation of their past work in Jewish Studies. Capstone projects can take the form of a

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thesis, film, or other medium and must engage the student's second language. Restricted to senior Jewish Studies (JWST) majors only.  
Prerequisites: Restricted to senior Jewish Studies (JWST) majors only.

College of Arts & Sciences Jewish Studies

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## JWST-4050 (3) Anthropology of Jews and Judaism

Explores topics in Jewish anthropology. Course will use the lens of anthropological inquiry to explore, discover and analyze different concepts within Jewish culture. Topics explored will include customs, religious practices, languages, ethnic and regional subdivisions, occupations, social composition, and folklore. Courses will explore fundamental questions about the definition of Jewish identity, practices and communities. May be repeated up to 9 total credit hours. Restricted to students with 57-180 credits (Junior or Senior). ANTH 4050 and JWST 4050 are the same course.

College of Arts & Sciences Jewish Studies

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## JWST-4101 (3) Topics in Hebrew Studies

Explores topics in Hebrew and Jewish literature and cultures. These may include topics such as diasporic literatures, Jewish artists and thinkers, courses on specific authors, figures or communities. Topics change each semester. May be repeated up to 9 total credit hours. Taught in English. HEBR 4101 and JWST 4101 are the same course.

College of Arts & Sciences Jewish Studies

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## JWST-4260 (3) Topics in Judaism

Examines in depth central themes, schools of thought, and movements in Judaism across a range of historical periods. May be repeated up to 9 total credit hours as topics change. Recommended prereqs., 6 hours of RLST courses at any level including RLST/JWST 3100, RLST/JWST 2600, HIST/JWST 1108 or HEBR/JWST 2350 or instructor consent. RLST 4260, JWST 4260, and 5260 are the same course.

College of Arts & Sciences Jewish Studies

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## JWST-4301 (3) Venice: the Cradle of European Jewish Culture.

Explores the development of European Jewish culture from the late Middle Ages to the present by focusing on Jewish life in the city of Venice, Italy. Emphasis is on the development of Venetian print culture and emergence of Italy as a center of Jewish publishing in both the religious and secular world. The course examines a variety of cultural and historical material including early printings of the Talmud, the creation of Yiddish popular literature, Hebrew rabbinic literature, responses to political turmoil, and the aftermath of the Nazi genocide. Taught in English. Prereq., HEBR/JWST 2350. HEBR 4301 and JWST 4301 are the same course. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Jewish Studies

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## JWST-4338 (3) History of Modern Israel

Learn the history of this crossroads of Europe and Asia from the late Ottoman Empire to the present. Main topics include nationalism and colonialism, development of Zionist ideology, development of Palestinian nationalism, establishment of the Jewish settlement (Yishuv) under British rule, the founding of the Jewish nation-state, relations with neighbors, and the aftermath of the 1956, 1967, 1973, and 1982 wars. Prereqs., HIST 1108 or 1308 or JWST 2350. HIST 4338 and JWST 4338 are the same course.

College of Arts & Sciences Jewish Studies

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## JWST-4348 (3) Topics in Jewish History

Covers topics in Jewish history from biblical beginnings to present day. Topics vary each semester. Consult the online Schedule Planner for specific topics. May be repeated up to 6 total credit hours within the degree. Prereqs., HIST 1108 or 1308 or JWST 2350. Same as HIST 4348. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Jewish Studies

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## JWST-4378 (3) Jews Under Islam

Examines Jewish communities of the Mediterranean basin and Middle East in modern times. Topics covered include culture and identity of these communities, as well as their encounter with empire, westernization, and nationalism, among other political and social currents. Exploration of images and representations of Sephardi and Eastern Jewries. Sources include memoirs, diaries, films, 19th century press and correspondence, and travelogues. Same as HIST 4378.

College of Arts & Sciences Jewish Studies

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JWST

## JWST-4454 (3) Jewish Intellectual History

Takes students on a journey from Medieval Spain to contemporary United States to explore how Jews, living in different societies, have attempted to reshape and interpret central Jewish values and beliefs in accordance with the prevailing ideas of their host societies.

Focuses on the historical context of each Jewish society that produced the thinkers and ideas considered in this course. Prereq., HIST 1010 or 1020, or HIST/JWST 1108, or HEBR/JWST 2350. JWST 4454 and HIST 4454 are the same course.

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-4544 (3) History of Yiddish Culture

Jews have produced culture in Yiddish, the vernacular language of eastern European Jewry, for 1000 years and the language continues to shape Jewish culture today. In this course, we will look at the literature, film, theater, music, art, sound, and laughter that defined the culture of eastern European Jewry and, in the 20th century, Jews around the world. Recommended prereqs., HIST 1108 or HEBR 2350. Same as HIST 4544.

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-4580 (3) The Holocaust: An Anthropological Perspective

Focuses on the Holocaust during the Third Reich, which involved the murder of millions of people, including six million Jews. Reviews the Holocaust's history, dynamics, and consequences as well as other genocides of the 20th century, using an anthropological approach.

Restricted to juniors/seniors. Same as ANTH 4580. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Jewish Studies](#)

## JWST-4827 (3) Modern U.S. Jewish History

Explores the experience of Jews in the United States from the 1880's when the great migration of Jews from Eastern Europe began, through the twentieth century. Students will explore the changing ways in which Jews adapted to life in the U.S., constructed American Jewish identities, and helped to participate in the construction of the United States as a nation. Recommended prereqs., HIST 1025 or HIST/JWST 1108 or HEBR/JWST 2350. JWST 4827 and HIST 4827 are the same course.

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KREN

### [KREN-1010 \(5\) First-Year \(Beginning\) Korean 1](#)

Trains students in elementary conversational and writing skills and provides grounding in the basic idiomatic and syntactical features of Korean, through lectures, drills, and language laboratory sessions based on set dialogues and readings.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Korean](#)

### [KREN-1011 \(3\) Introduction to Korean Civilization](#)

Introduces the history of Korean culture within the context of political, social, and economic history. Covers the old Choson dynasty to present day Korea. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Korean](#)

### [KREN-1020 \(5\) First-Year \(Beginning\) Korean 2](#)

Continuation of KREN 1010. Prereq., KREN 1010 (min. grade C) or instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Korean](#)

### [KREN-2110 \(5\) Second-Year \(Intermediate\) Korean 1](#)

Extends the conversational and written skills acquired at the elementary level. Although emphasis remains on spoken Korean, readings are increased, elementary writing skills are introduced gradually, and some Sino Korean characters are taught. Prereq., KREN 1020 (min. grade C) or instructor consent. Meets MAPS requirement for foreign language.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-2120 (5) Second-Year (Intermediate) Korean 2

Continuation of KREN 2110. Prereq., KREN 2110 (min. grade C) or instructor consent.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-2441 (3) Film and Korean Culture

Introduces Korean/South Korean cinema from colonial period to the contemporary including old Korean black and white films, the earliest talkie films and contemporary art films. Considers cinema as a window to see the tumultuous and diverse culture of modern Korea. Taught in English. No prior knowledge or Korea, Korean film or film art is required.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-3110 (5) Advanced Korean 1

Promotes an advanced level of speaking, reading, and writing. Focuses on contemporary business Korean language as reflected in various Korean media such as newspapers, magazines, and television. The goal is to acquire Korean language skills at a level that allows students to conduct business activities. Prereq., KREN 2120 (min. grade C) or instructor consent.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-3120 (5) Advanced Korean 2

This second semester of Korean offers advanced level (2) speaking and writing. Focuses on understanding contemporary Korean languages as reflected in various communication media, such as print, Tv, and films to help students understand Korean in a variety of contexts. Students should be quite fluent in commanding Korean after this course.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-3441 (3) Religion and Culture in Korea

Examines major religious traditions of Korea, such as mythology, indigenous practices, doctrinal and meditation Buddhism, and Early and Neo-Confucianism and Christianity, and new religions in modern times.

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College of Arts & Sciences East Asian Languages & Civilizations Korean

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## KREN-3841 (3) Modern Korean Literature in English Translation

Surveys masterpieces of modern Korean literature written by significant Korean/Korean American authors in English. Provides various literary and theoretical frameworks to understand Korean literature within the context of Asian global culture. Covers from colonial period to the present. No prior knowledge of Korea or Korean literature is required.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Korean](#)

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## KREN-4900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Korean](#)

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# Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

LAWS

## LAWS-5121 (4) Contracts.

Covers basic principles of contract liability, offer, acceptance and consideration, statute of frauds, contract remedies, the parole evidence rule, performance of contracts, conditions, effect of changed circumstances, third-party beneficiaries, assignment, and specific performance.

[School of Law](#) [Law](#) [Business](#)

## LAWS-5201 (1) Entrepreneurship, Innovation and Public Policy

Explores cutting edge questions around entrepreneurship, including being an entrepreneur, leadership and what makes a great founding team, building and scaling a business, entrepreneurial communities, financing entrepreneurial companies, leadership in government, entrepreneurship and innovation policy. Restricted to Law students only. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Business](#)

## LAWS-5205 (3) Legislation and Regulation

Introduces lawmaking in the modern administrative state. Examines the way Congress and administrative agencies adopt binding rules of law (statutes and regulations, respectively) and the way that implementing institutions--courts and administrative agencies--interpret and apply these laws. Considers the structure of the modern administrative state, the incentives that influence the behavior of the various actors, and the legal rules that help to structure the relationships among Congress, the agencies, and the courts. Restricted to LAWS students. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Government and Public](#)

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## LAWS-5223 (2) Appellate Court Advocacy

Students prepare appellate briefs and related documents and deliver oral arguments before a three-judge court composed of faculty, upper-division students, and practicing attorneys. Practice arguments are videotaped and critiqued.

School of Law Law Litigation and Procedure

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## LAWS-5226 (2) Legal Writing

Provides an intensive introduction to the resources available for legal research. Students also prepare written material of various kinds designed to develop research skills, legal writing style, and analysis of legal problems. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-5303 (4) Civil Procedure

Studies modern practice in civil suits, including rules governing pleading, joinder of parties, discovery, jurisdiction of courts over the subject matter and parties, right to jury trial, appeals, and res judicata and collateral estoppel, with emphasis on the Federal Rules of Civil Procedure and their Colorado counterpart. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-5313 (3) Civil Procedure 2

Studies modern practice in civil suits, including rules governing pleading, joinder of parties, discovery, jurisdiction of courts over the subject matter and parties, right to jury trial, appeals, and res judicata and collateral estoppel, with emphasis on the Federal Rules of Civil Procedure and their Colorado counterpart.

School of Law Law Litigation and Procedure

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## LAWS-5323 (1) Courtroom Observation Civil

An elective that requires fifteen hours observing actual civil proceedings in a courtroom(s), attending a two-hour class meeting every other week, preparing and submitting a journal of recorded observations. Figuring out how to gain access to appropriate proceedings is part of the student's work, although the professor is available for advice and guidance. Course is offered for Pass/Fail only. Prerequisites: Restricted to Law students only.

School of Law Law Jurisprudence and Perspective

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## LAWS-5425 (3) Torts

Studies nonconsensual allocation of losses for civil wrongs, focusing primarily on concepts of negligence and strict liability. Prerequisites: Restricted to Law students only.

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## LAWS-5503 (4) Criminal Law

Studies statutory and common law of crimes and defenses, the procedures by which the law makes judgments as to criminality of conduct, the purposes of criminal law, and the constitutional limits upon it.

## LAWS-5513 (1) Courtroom Observation Criminal

An elective that requires fifteen hours observing actual criminal proceedings in a courtroom(s), attending a two-hour class meeting every other week, preparing and submitting a journal of recorded observations. Figuring out how to gain access to appropriate proceedings is part of the student's work, although the professor is available for advice and guidance. Course is offered for Pass/Fail only. Prerequisites: Restricted to Law students only.

## LAWS-5624 (4) Property

Topics include personal property, estates and interests in land, landlord-tenant, basic land conveyancing, and private land use controls. Prerequisites: Restricted to Law students only.

## LAWS-5634 (2-3) Property 2

Topics include personal property, estates and interests in land, landlord-tenant, basic land conveyancing, and private land use controls.

## LAWS-5803 (1) Courtroom Observation International

An elective that requires fifteen hours observing proceedings before an international tribunal(s), attending a two-hour class meeting every other week, preparing and submitting a journal of recorded observations. The proceedings observed will be available streaming online and the professor will provide information about how to gain access to them. Prerequisites: Restricted to Law students only.

## LAWS-6002 (3) Public Land Law

Deals with the legal status and management of resources on federal lands, including national forests, parks, and BLM lands. Explores federal law, policy, and agency practice affecting the use of mineral, timber, range, water, wildlife, and wilderness resources on public lands. Prereq., LAWS 6112.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6004 (3) Real Estate Transactions

Focuses on legal issues that arise in all phases of real estate transactions, with an emphasis on the role of the lawyer in the business of real estate as well as on the regulation of real estate markets.

School of Law Law Property

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## LAWS-6005 (4) Constitutional Law

Studies constitutional structure: judicial review, federalism, separation of powers; and constitutional rights of due process and equal protection.

School of Law Law Government and Public

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## LAWS-6007 (4) Income Taxation

Emphasizes the fundamentals of the federal income tax system and examines its impact on the individual. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Taxation

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## LAWS-6008 (3) The International Legal Order: History & Foundations (1500-1950)

Examines the structural and historical aspects of the international legal system. Examines contemporary attitudes, doctrines, and theories of international law by exploring the fundamental questions since the discipline's inception in the Sixteenth Century. Provides a working familiarity with the origins of Public International Law, International Human Rights Law, International Criminal Law, International Organizations, International Trade Law, Law and Development, and Conflict of Laws. Prerequisites: Restricted to Law students only.

School of Law Law International

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## LAWS-6009 (4) Legal Aid Civil Practice 1

Emphasizes procedural and practical remedies and defenses available in civil litigation. Assigns civil cases related to the course material. Develops working knowledge of courtroom skills. Prereq. or coreq., LAWS 6353. Prerequisites: Restricted to Law students only.

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## LAWS-6011 (3) Payment Systems

Examines the methodology and policies of Articles 3 and 4 of the Uniform Commercial Code, dealing with such topics as negotiable instruments, bank deposits, collections, letters of credit, and electronic fund transfers.

## LAWS-6019 (4) Civil Practice Clinic 2

Emphasizes procedural and practical remedies and defenses available in civil litigation. Assigns civil cases related to the course material. Develops working knowledge of courtroom skills. Prereq. or coreq., LAWS 6353.

## LAWS-6021 (3) Secured Transactions

Explores the methodology and policies of Article 9 of the Uniform Commercial Code, dealing with financing transactions in personal property.

## LAWS-6024 (3) Real Property Security

Examines basic mortgage law, including use of mortgage substitutes (e.g., deeds of trusts and installment land contracts). Covers foreclosure and redemption and related problems; special priority problems in land acquisitions and construction financing; special financing devices, including variable-interest and wraparound mortgages; and problems relating to the transfer of the mortgagor's and mortgagee's respective interests.

## LAWS-6029 (4) Legal Aid Criminal Practice 1

Provides thorough grounding in problems of criminal defense. Students defend indigent misdemeanants in Boulder courts. Develops working knowledge of courtroom skills. Prereq. or coreq., LAWS 6353. Prerequisites: Restricted to Law students only.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

LAWS

## LAWS-6031 (2) Consumer Protection Laws and Policies

Focuses on deceptive trade practices and consumer rights. Reviews the law of deception/misrepresentation at common law, and federal and state laws regarding unfair acts and practices. Covers credit practices, environmental and health claims, and telecommunications and privacy. Discusses remedies, including governmental enforcement actions, and individual and class actions.

School of Law    Law

## LAWS-6035 (3) White Collar Crime

Examines distinctions between white collar crime and other types of criminal activity and the needs for and arguments against white collar laws and law enforcement. Studies securities fraud, mail and wire fraud, insider trading, money laundering, false statements, conspiracy and criminal forfeiture statutes. Includes use of the grand jury, privileges applicable in the corporate setting, immunity, discovery and the impact of parallel civil proceedings. Examines effect of government policy on corporations and their counsel, pre-trial and trial strategy, jury selection, and victim notification and restitution options. Prerequisites: Restricted to Law students only.

School of Law    Law    Litigation and Procedure

## LAWS-6039 (4) Criminal Defense Clinic 2

Provides thorough grounding in problems of criminal defense. Students defend indigent misdemeanants in Boulder courts. Develops working knowledge of courtroom skills. Prereq. or coreq., LAWS 6353.

School of Law    Law    Practice: Clinical & Simulation

## LAWS-6045 (3) Criminal Procedure

Focuses primarily on the constitutional limitations applicable to such police investigative techniques as arrest, search, seizure, electronic surveillance, interrogation, and lineup identification. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-6049 (4) Legal Assistance 1: Federal Courts

Studies evidence and procedural issues, discovery (including document management), pretrial preparation, motions, pretrial conferences, and jury selection. Focuses on opening and closing statement strategies, elements of direct and cross-examination, and impeachment; how to present evidence using technology, including presentation software. Students participate in preparing and arguing motions in federal court and may participate in trial proceedings.

School of Law Law

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## LAWS-6055 (3) Post-Conviction Criminal Procedure

Addresses sentencing process and schemes, direct appeals, probation modification and revocation, parole revocation, pardon and commutation processes, post-conviction litigation and appeal in both state and federal court, federal review of state convictions through habeas and/or the AEDPA, and ethical issues that arise in post-conviction proceedings. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-6059 (2-3) Legal Aid and Defender

School of Law Law

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## LAWS-6065 (3) Media, Popular Culture, and the Law

Examines how the institutions, practices, and the very identity of the law are in part affected by the media through which law is apprehended and communicated. Hence the general question posed in this course: To what extent and how are the forms and methods of the new media having an effect on the perception, role, and identity of law? Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-6069 (4) Immigration Clinic

Emphasizes practice skills in immigration cases. Includes litigation before Federal Immigration judges, Board of Immigration Appeals, and Federal Circuit Court of Appeals. Prereq. or coreq., LAWS 6353.

School of Law Law

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## LAWS-6079 (4) Criminal Defense Clinic

Provides thorough grounding in problems of criminal defense. Students defend indigent misdemeanants. Develops working knowledge of courtroom skills, advocacy, and evidence presentation. Concludes with full mock trial. Prereq. or coreq., LAWS 6353. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-6089 (4) Legal Assistance 2: Federal Courts

Studies evidence and procedural issues, discovery (including document management), pretrial preparation, motions, pretrial conferences, and jury selection. Focuses on opening and closing statement strategies, elements of direct and cross-examination, and impeachment; how to present evidence using technology, including presentation software. Students participate in preparing and arguing motions in federal court and may participate in trial proceedings.

School of Law Law

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## LAWS-6099 (4) Family Law Clinic

Represents low-income clients in family law cases in local state district court. Students will gain court-based experience in dissolution's and allocations of parental responsibilities. Seminar component includes instruction on substantive family law, related ethical issues, and theoretical backgrounds of poverty lawyering.

School of Law Law

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## LAWS-6103 (2-3) Legal Ethics Professionalism

Examines the legal profession as an institution, its history and traditions, and the ethics of the bar with particular emphasis on the professional responsibilities of the lawyer. Discusses the Model Rules of Professional Conduct. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Jurisprudence and Perspective

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## LAWS-6104 (3) Wills and Trusts

Covers intestate succession; family protection; execution of wills; revocation and revival; will contracts and will substitutes; creation of trusts; modification and termination; charitable trusts; fiduciary administration, including probate and contest of wills; and construction problems in estate distribution. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Property

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## LAWS-6105 (2) Criminal/Immigration Advocacy for the Spanish-Speaking Client

Addresses legal procedures, pleadings and client advocacy matters involved in the representation of Spanish-speaking clients who have been arrested for criminal offenses and who have been issued a detainer by Immigration and Customs Enforcement for possible immigration removal proceedings. Provides overview of criminal defense concepts, and how criminal defense attorneys must be prepared to competently counsel their clients who are facing removal proceedings in the federal immigration system.

School of Law Law Family, Gender, and Health

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## LAWS-6108 (3) Conflict of Laws

Addresses the conflicts that arise when the significant facts of a case are connected with more than one jurisdiction, whether that jurisdiction belongs to a state, the federal government, or a foreign government. The subject is studied in its theoretical and historical context, with special emphasis on the international aspects of extraterritorial jurisdiction.

School of Law Law Jurisprudence and Perspective

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## LAWS-6109 (2) Trial Advocacy

Focuses on voir dire, opening statement, direct examination of witnesses, and cross examination. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Practice:Clinical & Simulation

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## LAWS-6112 (3) Foundations of American Natural Resources Law

Introduces students to the law of natural resources. Examines the legal, historical, political, and intellectual influences that shape resources development and conservation. Same as ENVS 6112. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6114 (2) Construction Law

Focuses on the basic principles and practices of construction law. Provides an overview of construction industry participants and players (engineers, contractors, insurers, etc.) and discusses and analyzes the various obligations and liabilities of these parties. Covers construction and design contracting, construction claims, professional negligence, construction insurance and suretyship, and ADR in construction. Provides transactional-practice oriented exercises.

School of Law Law Property

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## LAWS-6117 (3) Survey of Business Enterprise Tax

Makes a comparative survey of federal income taxation of C corporations, S corporations, and partnership/limited liability companies, the principal entity choices for conducting business in the United States. Includes formation, operations, distributions, sales of interests, and liquidation. Suitable for students seeking introductory background for business or real estate practice, without the detail required for a tax specialist. Prereq., LAWS 6007.

School of Law Law

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## LAWS-6122 (2) International Natural Resources Law and Policy

Examines the suite of policy issues and legal ramifications associated with sustainable natural resource development. Examines most recent research on the "resource curse" theory. Examines recent policy developments and discussions that have occurred among industry, NGOs, multilateral development agencies and governments. Examines issues related to bribery and corruption in developing country environments, and dispute resolution mechanisms at national and local levels. Prerequisites: Restricted to Law students only.

School of Law Law

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## LAWS-6128 (1-3) Legal Interpretation and the Legislative Process

Examines theories of legislation and the relation between legislatures and courts, emphasizing problems of statutory interpretation and other issues in the judicial use or misuse of statutes. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-6138 (2-3) Federal Tax Politics

Studies the tax system as the nexus of politics and economics. Examines how various interests and entities use the many tools of political power to shape the tax system. Intended for those interested in politics and legislation, rather than for the tax specialist.

School of Law Law Taxation

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## LAWS-6157 (3) Corporate Taxation

Studies federal income taxation related to taxable corporations, the entities through which a large part of the economic activity in the U.S. is conducted. Includes creation, operation, distributions, sale of interests, and liquidation. Prerequisites: Restricted to Law students only.

School of Law Law Taxation

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## LAWS-6167 (3) Partnership Taxation

Studies federal income taxation of pass-through entities such as are used by most small businesses in the U.S. Includes creation, operation, distributions, sale of interests, and liquidation. Prereq., LAWS 6007.

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## Courses

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Subject Number

LAWS

### LAWS-6179 (2) Trial Practice

Students apply the rules and doctrine of evidence in simulated trial settings. Must be taken with the corresponding section of Evidence. Enrollment is to 24. Satisfies the trial practice requirement and counts 2 hours toward the 14 credit hour maximum of clinical hours counted toward graduation. Graded course; not pass/fail.

School of Law Law

### LAWS-6201 (3-4) Agency, Partnership, and the LLC

Surveys agency law whose principles are important in many other areas of law. Studies the legal organizations commonly used by small businesses: partnerships and limited liability companies (LLCs). Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Business

### LAWS-6205 (3) Lawyers for Social Change

Helps students expand their perspective to understand the ways in which lawyers more broadly participate in social change work in this service learning class. Analyzes case histories of cause lawyering. The service learning component is based on the precept that one of the most effective ways to learn a role is to perform that role. Students will participate as social change lawyers by working with a local community to help it develop projects that the community believes will help it better itself. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

### LAWS-6206 (3) Litigation Drafting

Examines the intersection of civil procedure and legal writing. Emphasizes the drafting of persuasive adversarial litigation documents, including complaints, answers, motions in limine, motions to dismiss, motions of summary judgment, and jury instructions. Intensive writing and workshop format.

School of Law Law Research and Writing

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## LAWS-6210 (2-3) Comparative Law

Considers foreign solutions to certain key legal problems. Focuses on general problems of legal process, rather than on substantive rules. Topics include the role of lawyers, civil dispute resolution, criminal procedure, and employment discrimination. Covers different legal systems in different years.

School of Law Law International

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## LAWS-6211 (3) Corporations

Covers formation of corporations and their management; relations among shareholders, officers, and directors; the impact of federal legislation on directors' duties; and the special problems of closed corporations. Prerequisites: Restricted to Professional Year 1, 2, or 3 Law students only.

School of Law Law Business

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## LAWS-6213 (2) Advanced Appellate Advocacy

Advanced study and practice of written and oral appellate advocacy. Builds on the foundation established in the required first-year course in appellate advocacy, but provides more extensive coverage, practice, and evaluation. Personalized instruction in brief writing, including detailed, one-on-one critique of their work. Include advanced techniques for organizing and writing a brief, and advanced instruction on the strategy and process of oral argument. Required to research, write, and rewrite an appellate brief, and conduct several oral arguments. Attend oral arguments of the United States Court of Appeals for the Tenth Circuit and the Colorado Court of Appeals. Prereq., LAWS 7106. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-6220 (3) Introduction to Jewish/Israeli Law

Outlines the history and basic principles of Jewish Law, Halakhic system that encompasses Biblical law and the Rabbinic law. Covers Legal Sources of the Jewish laws, interpretation, legislation, custom, precedence and legal reasoning. Explores the study of modern legal system of the state of Israel and examines the problematic nature of the incorporation of the Law of personal status in the Rabbinical and in general courts. Prerequisites: Restricted to Law students only.

School of Law Law International

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## LAWS-6221 (3) Principles of Auditing, Compliance, and Risk Management

Introduces the fundamental legal and business rules and processes involved in performing audit, compliance, and risk management. Investigates understanding and measuring risk, establishing standards for aggregating disparate information, gathering market data, calculating risk measures, and creating timely reporting tools for managing risk. Covers important regulations including Sarbanes-Oxleyk, HIPAA, and FISMA. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-6226 (2-3) Advanced Legal Research and Writing

Focuses on improvement of legal writing skills including organizing, drafting, and revising legal writing. Improves research and analysis skills. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-6236 (2) Judicial Opinion Writing

Places contemporary American judicial opinion in historical and comparative context. Analyzes individual and institutional writing choices that authors of judicial opinions must make and ethical dilemmas they must confront. Builds upon the first-year legal-writing curriculum. Challenges students to develop and defend their own opinion-writing approaches and styles as well as to write from approaches and in styles that are not their own.

School of Law Law Research and Writing

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## LAWS-6246 (2) Introduction to United States Legal System/Legal Reasoning, Research and Writing

Introduces students without a law degree to the basic structure and content of the United States legal system, examining how the three branches of government at the state and federal levels make law and policy in the United States. The course will provide a basic introductory overview of the following: the various sources of law, including an understanding of how statutes are enacted by legislative institutions; the role of the United States court system in interpreting laws; application of judicial precedent in common-law systems; trial and appellate court procedures; and judicial review standards. The course will also introduce students to the methodology of American law, including legal reasoning, research, and writing, through a variety of in-class and outside research and writing assignments.

School of Law Law

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## LAWS-6251 (4) Corporations

Covers formation of corporations and their management; relations between shareholders, officers, and directors; the impact of federal legislation on directors' duties; and the special problems of closed corporations.

School of Law Law

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## LAWS-6281 (3) Accounting Issues for Lawyers

Studies accounting and auditing problems in the form they are placed before the lawyer, including a succinct study of basic bookkeeping, in-depth legal analysis of the major current problems of financial accounting, and consideration of the conduct of the financial affairs of business.

School of Law Law Business

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## LAWS-6301 (3) Introduction to Intellectual Property

Provides an overview of our nation's intellectual property laws, including patents, copyrights, trademarks, and trade secrets. Discusses other matters related to intellectual property, including licensing, competition policy issues, and remedies. Same as TLEN 5245.

Prerequisites: Restricted to Law students only.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-6302 (3) Water Resources

Analyzes regional and national water problems, including the legal methods by which surface and ground water supplies are allocated, managed, and protected. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6308 (2) Law and Neuroscience

Covers neuroscience basics, and explores the relationship between the law and recent neuroscientific discoveries in domains including pain, memory, lie detection, psychopathy and criminal responsibility.

School of Law Law Jurisprudence and Perspective

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## LAWS-6311 (1) National Security and Privacy Law

Introduces national security and privacy law and relevant law, regulations, rules, policies, and guidelines.

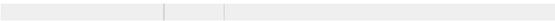
School of Law Law

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## LAWS-6318 (3) Economic Analysis of Law

Introduces the basic elements of economic theory and emphasizes demand and utility, cost, and optimality. Prerequisites: Restricted to Law students only.

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## LAWS-6321 (3) Computer Crime

Explores legal issues that judges, legislators, prosecutors, and defense attorneys confront as they respond to recent explosions in computer-related crime. Includes the Fourth Amendment in cyberspace, the law of electronic surveillance, computer hacking and other computer crimes, encryption, online economic espionage, cyberterrorism, First Amendment in cyberspace, federal/state relations in enforcement of computer crime laws, and civil liberties online. Same as TLEN 5255. Prerequisites: Restricted to Law students only.

## LAWS-6353 (3) Evidence

Studies the methods and forms of proof in litigation, including detailed consideration of hearsay, impeachment of witnesses, relevancy and certain restrictions on authentication and best evidence doctrines, and privileges. Prerequisites: Restricted to Law students only.

## LAWS-6363 (5) Evidence and Trial Practice

Studies methods and forms of proof in litigation, including detailed consideration of hearsay, impeachment of witnesses, relevancy and certain restrictions on authentication and best evidence doctrines, and privileges. Applies rules and doctrine of evidence in simulated trial settings. Combined Evidence and Trial Practice course. Satisfies the trial practice requirement and counts two hours toward the 14 credit hour maximum in clinical hours.

## LAWS-6400 (3) International Law

Examines the nature, structure, and sources of international law, the relationship between international law and domestic U.S. law, the role of international organizations such as the United Nations, the methods of resolving international disputes, the bases of international jurisdiction, and select substantive areas of international law that may change from semester to semester. Prerequisites: Restricted to Law students only.

## LAWS-6410 (3) International Trade Law

Examines the law of the World Trade Organization and the General Agreement on Tariffs and Trade. Examines rules restraining national restrictions on trade that addresses tariff and non-tariff barriers, discrimination, regionalism, anti-dumping, countervailing duties, and safeguards. Considers the relationship between trade and other regulatory areas or social values, such as environmental protection, health and safety standards, human rights, intellectual property protection. Prerequisites: Restricted to Law students only.

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## LAWS-6415 (2-3) Drug Product Liability Litigation: Principles and Practice

Explores product liability lawsuits and litigation. Explores law of product liability and the tools necessary to successfully litigate these cases. Considers the theory and practice of lawsuits now and after the Supreme Courts landmark decision in Wyeth v. Levine (2009). Focuses on similarities and differences between the special context of FDA regulation. Considers the legal principles governing such lawsuits such as inadequate warning, the Learned intermediary Doctrine and medical causation.

[School of Law](#) [Law](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**    **Number**

LAWS

## LAWS-6420 (1) Law and the Holocaust

Explores comparative law, jurisprudence, conflicts of laws and international law. Examines the Nazi philosophy of law emanating from its egregious racial ideology, and how it was used to pervert Germany's legal system to discriminate against, ostracize, dehumanize, and eliminate certain classes of people. Studies the role of international law in rectifying the damage by bringing perpetrators to justice and constructing a legal system designed to prevent a repetition.

School of Law    Law    International

## LAWS-6458 (2) Creative Writing for Lawyers

Requires substantial writing and reading. Begins with participants bringing to class a piece of creative writing consisting of three to five thousand words. Each session consists of one hour of discussion and critique of an assigned writing exercise that everyone has prepared for the class, and one hour of workshop critique of each participant's longer work, in turn.

School of Law    Law    Research and Writing

## LAWS-6501 (2-3) The Practice of Labor and Employment Law

Focuses on aspects of the practice of employment law, rather than the examination of legal doctrines. Discusses typical issues presented in advising and litigating on behalf of employers and employees. Topics include special attention to ethical issues.

School of Law    Law

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## LAWS-6502 (2) Wildlife and the Law

Examines the law that protects wildlife, its habitat, and biodiversity. Explores human-caused threats including habitat destruction, illegal trade, and climate change. Focuses on statutes, case law, environmental ethics, and current controversies to highlight legal, scientific, and political strategies for protecting biodiversity. Particular emphasis is placed on the U.S. Endangered Species Act.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6503 (3) Law and Social Sciences

Explores disparities in criminal sentencing and death penalty cases; quality and effectiveness of legal representation for indigent criminal defendants; relationship between modifications in traditional steps in legal process; connection between alternative tort doctrines and volume of litigation, trial rates, plaintiff success rates and award size; impact of congressional statutes and US Supreme Court decisions on handling and outcomes of habeas corpus petitions.

School of Law Law Jurisprudence and Perspective

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## LAWS-6510 (2-3) International Environmental Law

Examines international environmental law, including transboundary impacts and global issues. Addresses such issues as intergenerational equities, principles of compensation, and if international environmental norms should receive special environmental norm consideration. A course in public international law is not a prerequisite, but students who have not taken such a course will probably find it useful to do some additional background reading. Offered in alternate years.

School of Law Law International

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## LAWS-6511 (3) Labor Law

Includes the subjects of evolution of labor relations laws; how a collective bargaining relationship is established; negotiation of the collective bargaining agreement; labor and the antitrust laws; and rights of the individual worker. Course materials frame the issue of how a developed or postindustrial democracy deals with the problems that arise out of the employment relationship: of the choices between laissez-faire, substantive regulation, and the private ordering of the employment relationship through the collective bargaining process.

School of Law Law Business

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## LAWS-6518 (3) Introduction to Islamic Law

Examines the Formative Era of Islamic Law, through its sources and methodologies. Examines the Established Era of the Schools of Law including differences between Sunni and Shiite Islamic Law. Examines human rights, terrorism, political Islam, women's rights and rights of religious minorities, criminal law, and finance law, and the growing role of fundamentalism in these areas. Examines the relevance of Islam and Islamic law in today's world.

School of Law Law International

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## LAWS-6521 (3) Employment Law

Entails a survey of employment-at-will, workplace safety, workplace torts; ERISA and retirement, workers' compensation; controls on hours and wages; health insurance; disability and unemployment compensation.

School of Law Law Business

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## LAWS-6528 (3) Capital Punishment in America

Surveys the history and current status of capital punishment in the United States, with a critical examination of arguments both for and against the death penalty.

School of Law Law Jurisprudence and Perspective

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## LAWS-6531 (3) Comparative Employment Law

In today's globalized world, lawyers are increasingly likely to encounter issues involving foreign employment. The course will provide substantive knowledge about foreign employment law and its relation to American law, as well as a comparative framework to assess the relative merits of the American approach to employment law.

School of Law Law International

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## LAWS-6541 (2) Colorado Worker's Compensation Theory and Practice

Introduces the legal theories that underlie the no-fault compensation system, its historical evolution, policy conundrums, and ethical quandaries. Teaches the application of the procedural rules most frequently utilized in administrative setting. Studies the Workers' Compensation Act, the Workers' Compensation Rules of Procedure, and the Office of Administrative Courts Rules of Procedure. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-6601 (3) Corporate Transactions in Latin America

Introduces students to an overview of Latin American commercial and civil law systems, looking closely at Napoleonic and Chilean law. Explores the choice legal structures available for Latin American corporations; contract law that regulates business transactions in Latin America; and exploration of the way in which Latin American countries have joined international business trade agreements that pertain to Latin American nations such as the Vienna Convention and Gatt.

School of Law Law

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## LAWS-6602 (3) Cultural Property Law

Concerns domestic and International regulation of property that expresses group identity and experience. Organized around traditional categories of property (real, personal, and intellectual), the course covers historic preservation, archeological resources, art and museum law, with attention to indigenous people's advocacy on burial sites, traditional lands, ceremonies, music, symbols, ethnobotany, genetic information, and language. May satisfy upper-level writing requirement. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6708 (1-3) Special Topics

Explores special topics in law. Prerequisites: Restricted to Law students only.

School of Law Law Jurisprudence and Perspective

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## LAWS-6712 (3) Climate Change Law and Policy

Examines the science of climate change and the broader role of science in public policymaking. Reviews the changing legal landscape to abate greenhouse gas emissions, and key issues in policy design. Reviews the Supreme Court's April 2, 2007, decision in Massachusetts v. EPA, overturning EPA's refusal to regulate greenhouse gas pollution from motor vehicle tailpipes, and the aftermath in the courts, Executive Branch and Congress.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6722 (3) Energy Law and Regulation

Provides an introduction to energy law and regulation in the United States. Covers basic principles of rate regulation and public utilities, the division of jurisdiction between federal and state governments, and the key federal statutes and regulatory regimes governing natural gas, electricity, and nuclear power. Focuses on the basic federal frameworks for natural gas and electricity regulation, with an emphasis on understanding the messy and uneven transition to wholesale competition in these sectors and, in the electricity context, the experience with state restructuring and retail competition. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6732 (3) Renewable Energy Project Finance and Development

Examines renewable energy and how legal topics impact financing projects. Reviews structure, regulation, and functioning of electric energy industry and laws applicable to development, ownership and operation of renewable energy projects across technologies. Addresses legal policy, economic and financing issues associated with expansion and improvement of the transmission grid to support renewable energy development. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-6803 (3) Quantitative Methods

Equips students to deal effectively with experts, whether as consultants or as adverse witnesses, and to enable the identification of a quantitative issue. Helps students to become multi-dimensional in quantitative literacy. Enables students to be comfortable reading statistical arguments, performing basic analyses, writing about statistics, expressing quantitative ideas in graphs, questioning an expert, and understanding the power of computer programming.

School of Law Law Litigation and Procedure

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## LAWS-6856 (2) Advanced Legal Research

Offers an in-depth look at research resources and methods. Includes sources from the judicial, legislative, and executive branches of federal and state government; research in topical areas such as environmental law, taxation, and international law; and extensive coverage of secondary and nonlaw resources. Covers both print and electronic sources. Students will have several assignments and a final project.

School of Law Law Research and Writing

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## LAWS-6866 (1) Colorado Legal Research

Surveys resources and methods to effectively research Colorado law. Covers primary and secondary resources including Colorado statutes, cases and digests, regulations, and constitution and practice materials. Covers how to research Colorado municipal law and other Colorado topics. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-6876 (2) Legal Research Skills for Practice

Approaches legal research from a practice-focused perspective using hands-on sessions in the library. Instructs: how to find and use resources specific to a particular practice area; how to evaluate and weigh strengths and weaknesses of the various legal resources available; and, how to use legal resources efficiently. Includes research strategies and methods, primary and secondary resources, and research using library catalogs and Westlaw, Lexis, and other vendors. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-6886 (3) Advanced Legal Research and Analysis

Develops students' ability to think critically about and solve current legal problems. Evaluates the benefits and detriments of both print and on-line legal resources, and how to create an efficient research plan. Formulates and applies research strategies to real-world legal problems, and uses legal analysis to refine and improve research results. Note: students who have taken LAWS 6856 Advanced Legal Research course may not enroll in this course. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7003 (3) Federal Courts

Looks at structure and jurisdiction of the federal courts, emphasizing problems of federalism and separation of powers and their relationship to resolution of substantive disputes.

[School of Law](#) [Law](#) [Litigation and Procedure](#)

## LAWS-7005 (3) Media Law

Surveys common, statutory, and regulatory law as applied to the mass media. Focuses on the law as it affects the gathering and publishing of news. Also examines the regulation of the electronic media.

[School of Law](#) [Law](#)

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## Courses

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All

Search by Course Number

**Subject**    **Number**

LAWS

### LAWS-7011 (3) Creditors' Remedies and Debtors' Protection

Examines typical state rights and procedures for the enforcement of claims and federal and state law limitations providing protection to debtors in the process. Includes prejudgment remedies, statutory and equitable remedies, fraudulent conveyance principles, and exemptions and other judicial protections afforded debtors. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Business](#)

### LAWS-7013 (2) Supreme Court Decision Making

Students deliberate over several important cases as "Justices" of the Supreme Court. Class is divided into three "Courts" with the first hour spent in deliberation and the second hour in discussion of the deliberative process as well as the substantive issues.

[School of Law](#) [Law](#) [Litigation and Procedure](#)

### LAWS-7015 (3) First Amendment

Examines speech and religion clauses of the First Amendment. Includes the philosophical foundation of free expression, analytical problems in First Amendment jurisprudence, and the relationships between free exercise of religion and the separation of church and state. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Government and Public](#)

### LAWS-7019 (1-2) Advanced Clinical Practicum

Enables a clinical; student an optional 1-2 credit course to complete an ongoing clinic project that does not reach its natural conclusion during the regular term of the clinic. The practicum may be used in connection with any existing clinical course, but only with permission,

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and under the supervision of the clinical faculty member. A clinical student must complete a minimum of 50 hours of work per credit taken. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7021 (3-4) Bankruptcy

Briefly examines nonbankruptcy business rehabilitation devices, followed by basic principles of federal bankruptcy law and the bankruptcy court system. Concludes with attention to business reorganizations under Chapter 11 of the Bankruptcy Code. Recommended prereq., LAWS 6001 and 7011.

School of Law Law Business

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## LAWS-7023 (2) Jury Selection and History

Studies the history of the jury from ancient times through the implications of Apprendi, the grand jury from the time of Henry II through modern federal practice, and current jury selection procedures, both federal and Colorado, both civil and criminal. Experienced trial attorneys will work with students to demonstrate jury selection.

School of Law Law Litigation and Procedure

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## LAWS-7024 (2-3) Real Estate Planning

Considers various contemporary legal problems involved in the ownership, use, development, and operation of real estate. Emphasizes the income tax and financing aspects of commercial and residential use and development such as shopping plazas and apartment buildings. Same as ACCT 6730.

School of Law Law Property

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## LAWS-7025 (3) Civil Rights Legislation

Presents a comprehensive study of federal civil rights statutes briefly reviewed in other courses (e.g., Constitutional Law or Federal Courts). Studies federal civil rights statutes, their judicial application, and their interrelationships as a discretely significant body of law of increasing theoretical interest and practical importance.

School of Law Law Government and Public

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## LAWS-7029 (3) Appellate Advocacy Clinic

Provides a clinical course that enables students to work on briefs of criminal cases being handled by the Appellate Division of the Public Defender or Attorney General's Office. Instruction in oral advocacy is given. Enrollment limited to eight students.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7031 (3) Regulation of Financial Institutions

Focuses on the core banking law and works outward to cover a broader spectrum of bank-like financial institutions. Covers bank licensing, restrictions on bank business, regulating safety and soundness of banks, consumer protection of depositors and other bank customers, and regulatory examination and enforcement. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-7045 (3) Criminal Procedure: Adjudicative Process

Focuses primarily on criminal procedure at and after trial. Looks at bail, prosecutorial discretion, discovery, plea bargaining, speedy trial, jury trial, the right to counsel at trial, double jeopardy, appeal, and federal habeas corpus.

School of Law Law Litigation and Procedure

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## LAWS-7055 (3) Education Law

Considers issues raised by the interaction of law and education. Issues may include the legitimacy of compulsory schooling, alternatives to public schools, socialization and discipline in the schools, and questions of equal educational opportunities.

School of Law Law Government and Public

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## LAWS-7061 (1) Contract Drafting

Begins with value creation by transactional lawyers, and emphasizes the opportunity for lawyers to reduce information and agency costs, and mitigate strategic behavior by using tools such as disclosure, representation and warranties, incentive compensation and earnouts. Shifts to negotiation and drafting, focusing on basic drafting principles and strategies to advance one's clients' interests. Introduces the basic framework of contracts (recitals, reps, and warranties, capitalized terms, definitions, indemnifications and escrow). Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-7065 (3-4) Immigration and Citizenship Law

Covers legal issues pertaining to noncitizens of the United States, especially their right to enter and remain as immigrants and nonimmigrants. Topics include admission and exclusion, deportation, and refugees and political asylum. Approaches topics from various perspectives, including constitutional law, statutory interpretation, planning, ethics, history, and policy. Prerequisites: Restricted to Law students only.

School of Law Law International

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## LAWS-7079 (2) Wrongful Convictions

Focuses on the issues and remedies in cases of people who have been convicted, whose traditional appellate remedies have been exhausted, and who continue to claim actual innocence. Preference given to those who have taken or are taking more criminal procedure courses.

School of Law Law

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## LAWS-7085 (2) Law and Religion

Uses judicial decisions as well as historical and theoretical materials to explore significant aspects of the relationship between law and religion. The religion clauses of the First Amendment are a central but not exclusive subject of study. Offered in alternate years.

School of Law Law Jurisprudence and Perspective

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## LAWS-7095 (2) Women in Law

Explores the role of women in the legal system by looking at women as parties, jurors, witnesses, lawyers, law professors, and judges. Explores the relationship of law and society to women as victims and offenders. Investigates law and society's response to adoption, lesbian/gay issues, rape, surrogate and bad mothers, and sexual harassment.

School of Law Law

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## LAWS-7100 (2-3) International Criminal Law: Theory and Practice

Exposes students to the rapidly growing body of jurisprudence, both international and national, wherein international humanitarian and human rights law are being applied for the purposes of prosecution, trial and punishment of individuals alleged to be responsible for the commission of war crimes, crimes against humanity, genocide and, more recently, terrorism. Prereq., LAWS 6400.

School of Law Law International

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## LAWS-7101 (4) Deals: Engineering Financial Transactions

Explores the business lawyer's role in creating value by helping clients identify, assess, and manage business risks through efficient contract design while achieving the optimal legal, tax or regulatory treatment for the deal. Includes case studies of actual transactions.

School of Law Law Business

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## LAWS-7102 (2-3) Oil and Gas

Deals with the legal problems associated with private arrangements for the ownership and development of oil and gas: deeds and leases to oil and gas rights, trespass, adverse possession, implied covenants in leases, conveyances of fractional interests, and the interaction of private rights and conservation regulation. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7105 (3) Family Law

Focuses on nature of marriage, actions for annulment and divorce, problems of alimony and property division, separation agreements, and custody of children. Also considers illegitimacy, abortion, contraception, the status of married women in common law and under modern statutes, and relations of parent and child. Prerequisites: Restricted to Law students only.

School of Law Law Family, Gender, and Health

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## LAWS-7106 (1-2) Rothgerber Moot Court Competition

Offers an intensive involvement in legal research, appellate brief writing, and oral arguments in a competitive context. Student finalists may continue involvement in regional and national competitions. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7111 (3) Contract Theory: Collisions of Contracting and Culture

Explores various contract theories and principles emanating from classical and neoclassical law, legal realism, law and economics, critical legal studies, law and society, relational theory, and others. Considers and critiques these theories as applied to particular contracting cultures, especially as applied to construction contracts.

School of Law Law Business

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## LAWS-7115 (2) Juvenile Justice

Covers a wide array of issues dealing with the legal rights of the unborn, children, and juveniles. Covers the legal status of parent-child abuse, delinquency and crime, and emancipation. Prerequisites: Restricted to Law students only.

School of Law Law Family, Gender, and Health

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## LAWS-7121 (3) Advanced Contracts: Commercial Transactions

Studies Article 2 and Article 2A of the Uniform Commercial Code, together with the Convention and the International Sale of Goods. Advanced contracts topics are explored in depth. Among other subjects, warranties, title, remedies, and risk of loss in the sale of lease of goods will be studied.



# Courses

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LAWS

## LAWS-7122 (2-3) Mining and Energy Law

Addresses major issues affecting the development of mineral resources through mining activity. Includes the regulation of the impacts of mining on the environment on both public and private land. Covers the Mining Law of 1872, the Federal Coal Leasing Amendments, and state regulation of the impacts of mining on the environment.

[School of Law](#)
[Law](#)
[Envir, Nat Resources, Amer Ind](#)

## LAWS-7125 (2) Advanced Domestic Relations

Offers advanced study of several domestic relations subjects, including both theoretical and lawyering issues. Tentative subjects include discovery, client interviewing and deposition preparation, asset valuation, working with expert witnesses, children as clients, and alternative dispute resolution. Recommended prereq., LAWS 7105.

[School of Law](#)
[Law](#)

## LAWS-7128 (2-4) Jurisprudence

Addresses a number of fundamental questions, such as: What is law? What should it be? How is it created? Our readings consist of cutting-edge articles from leading modernist/postmodernist schools of thought including legal formalism, legal realism, interpretive theory, law and economics, feminist jurisprudence, critical legal studies, and law and literature. Same as LAWS 8128.

[School of Law](#)
[Law](#)
[Jurisprudence and Perspective](#)

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## LAWS-7132 (3) Energy, Insecurity, Sustainable Law

Examines why national security deals not only with armed aggression and the ability to thwart military invasions or subversion, but also includes critical threats to vital national and international support systems such as the economy, energy, and the environment.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7135 (3) Parent, Child, and State

Examines the legal rights of parents and children in a constitutional framework, as well as the state's authority to define and regulate the parent-child relationship. Addresses rights of parents and children to freedom of expression and religious exercise, termination of parental rights and adoption, paternity orientation, and culture in defining the family.

School of Law Law Family, Gender, and Health

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## LAWS-7145 (3) Comparative Family Law

Examines and critiques law, legal institutions and traditions of the country of focus and the US as they affect children, families, and work. Enhances research and writing skills, including field and international research. Contributes to host country through scholarship and service. Increases cultural competence through active engagement with peers and with social justice issues in another country. Includes required field study component and service learning project over spring break. Prerequisites: Restricted to Law students only.

School of Law Law Family, Gender, and Health

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## LAWS-7154 (3) Land Use Planning

Explores mechanisms for public control of private land uses, such as planning, zoning, and regulation of land development; including consideration of federal and state constitutional and statutory limitations on local governments. Offered in alternate years.

School of Law Law Property

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## LAWS-7159 (2) Advanced Trial Advocacy

Offers an advanced course covering trial practice elements. Open only to students who have taken LAWS 6109. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7164 (2) Land Conservation Law

Focuses on private land conservation efforts in the United States, and particularly Colorado, and also considers public land conservation programs. Analyzes real property principles and instruments used to protect land, and the development and acceptance of conservation easements in gross as a mechanism for protection, financing mechanisms for land conservation, including direct government funding and

indirect funding through tax incentives at the federal, state and local levels. Understanding of Real Property and Tax concepts helpful.

School of Law Law Property

## LAWS-7169 (2) Motions Advocacy

Provides practical training in preparing and arguing pretrial, post-trial, and chambers motions to an experienced federal judge based on materials from actual case files. Assigns some research papers. Limited to 15 third-year students with interest in trial advocacy and willingness to participate in confrontational exercises. Counts as practice hours. Prerequisites: Restricted to Law students only.

School of Law Law Practice:Clinical & Simulation

## LAWS-7200 (3) Anthropology of Law

Reviews the relationship between the social and cultural features of both developed and developing country societies and the formal and informal legal institutions within them. Considers the nature of social control and constraint, judicial reasoning, fact finding, conciliation, mediation and arbitration, and legal discourse.

School of Law Law

## LAWS-7201 (3) Antitrust

Studies American competition policy: collaborations among competitors, including agreements on price and boycotts, definition of agreement, monopolization, vertical restraints such as resale price maintenance, and territorial confinement of dealers. Offered in alternate years.

School of Law Law Business

## LAWS-7202 (3) Environmental Law

Examines and analyzes important federal pollution control statutes, including the National Environmental Policy Act, the Clean Air Act and Clean Water Act, Solid Waste Act, and Superfund. Considers related economic theory, ethics, and policy issues.

School of Law Law Envir, Nat Resources, Amer Ind

## LAWS-7205 (3) Administrative Law

Covers practices and procedures of administrative agencies and limitations thereon, including the Federal Administrative Procedure Act, and the relationship between courts and agencies.

## LAWS-7207 (3) Federal Estate and Gift Tax

Analyzes federal estate and gift taxation of inter vivos and testamentary transfers, introduces income taxation of estates and trusts, and involves elementary estate planning. Prerequisites: Restricted to Law students only.

## LAWS-7209 (4) Natural Resources Law Clinic

Offers hands-on experience in the practice of natural resources law in the Rocky Mountain region to a select number of clinic students. The clinic's docket of active cases focuses on public land law and the environmental statutes protecting those lands and their resources. Students participate in projects that test the full range of lawyering skills, including traditional litigation, administrative advocacy, legislative drafting, and the conduct of complex negotiations and settlements. Prerequisites: Restricted to Law students only.

## LAWS-7211 (3) Business Planning

Focuses on the development and use of concepts derived from a number of legal areas in the context of business planning and counseling. Topics such as formation of business entities, sale of a business, recapitalization, division, reorganization, and dissolution are considered. Prereqs., LAWS 6007,6201, and 6251 or 6211.

## LAWS-7212 (2) Environmental Litigation

Examines the litigation strategies and procedures used to enforce and defend against enforcement under environmental protection statutes, such as the Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, and the Toxic Substances Control Act. Covers civil enforcement, and citizen's suits.

## LAWS-7217 (2) Estate Planning

Discusses problems and solutions for owners of various-sized estates and different types of assets including jointly-held property, stock in closely-held corporations and farms, analysis of federal taxation of generation-skipping transfers in trust, postmortem estate planning, and drafting of trusts and wills. Prereqs., LAWS 6104 and LAWS 7207. Prerequisites: Requires pre-requisite courses of LAWS 6104 and 7207.

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## LAWS-7221 (2-3) Government Regulation of Business.

Covers themes that explore the nature of the regulatory state and the realities of how businesses react to regulation. Provides an understanding of regulatory institutions; the tools of governmental regulation; and a critical perspective on regulation.

School of Law Law Business

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## LAWS-7228 (2) Intellectual Origins of the Constitution

Examines the views of the Constitution's framers as expressed in contemporaneous and antecedent writings and debates. Offered in alternate years.

School of Law Law

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## LAWS-7232 (3) Energy Justice

Establishes why nearly a third of the world populated by the energy oppressed poor, presents a major national and international "legislative" or socio political problem calling for answers from governments and civil societies in the developed and developing world. Explains and elucidates the concept of energy justice, its jurisprudential heritage, and its meaning and relevance in contemporary society. Case studies present problem solving frameworks spanning the political, social, behavioral, engineering, natural sciences, and law. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7241 (3) Telecommunications Law and Policy

Examines laws governing telecommunications industries, including federal and state regulation and international aspects. Includes telephone, cable, satellite, cellular, and other wireless systems, and the Internet. Same as TLEN 5240. Prerequisites: Restricted to Law students only.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7248 (3) History of Criminal Justice

Explores the social, cultural, and legal history of Anglo-American criminal justice from the 17th to the 20th centuries. Also examines tensions between various methods that historians employ to study crime and law.

School of Law Law

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# LAWS-7251 (3) Non-Profit Law

Examines the creation of a non-profit organization, in particular whether to choose a trust or a corporate form, how to qualify for federal tax exemption, and differences between private foundations and public charities. Examines fiduciary duty issues, restrictions on political activity and private benefit, and unrelated business income tax. Addresses tax incentives for charitable giving and state fundraising laws.

School of Law Law

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## Courses

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LAWS

### LAWS-7255 (3) Local Government

Studies state legislative and judicial control of the activities, powers, and duties of local governmental units, including home-rule cities and counties, and some problems of federal, state, and local constitutional and statutory limitations on governmental powers when exercised by local governmental units (e.g., the powers to regulate private activities, tax, spend, borrow money, and condemn private property for public uses). Offered in alternate years.

School of Law Law Government and Public

### LAWS-7261 (3) Corporate Finance

Examines a variety of important legal issues related to the funding and financing corporations including creditor protection laws, the Trust Indenture Act of 1939, fiduciary duties, bond indenture provisions, securities laws, and rights of equity holders. Covers efficient capitalization structures, corporated valuation techniques, capital markets and the efficient market theory, and cost of capital concept. Prereq., LAWS 6211 or 6251.

School of Law Law Business

### LAWS-7271 (3) Venture Capital and Private Equity

Provides overview of the legal and financial principles to represent privately held companies, their founders and managers, and their investors. Emphasizes transaction structuring rather than judicial opinions. Includes the organization and financing of start-ups, structuring buyout transactions, exit strategies, legal organization of investment funds and other financial intermediaries. Discusses the relevant regulatory landscape, including securities law, bankruptcy, ERISA, and tax law.

School of Law Law Business

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## LAWS-7285 (2) Education and the Constitution

Teaches the substantive constitutional law governing public education. Students will teach constitutional materials to high school students in the local Denver Metro area high schools. Interested students must apply and requires a commitment to a full-year curriculum. Encourages individual development as teachers, writers, and critical thinkers and provides an opportunity to grow as colleagues and teammates. Recommended prereq. LAWS 7055. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-7300 (2-3) International Litigation

Examines the special issues that arise in litigation in U.S. courts when one or more of the parties is a foreign individual, corporation, or government, or when the subject of the litigation concerns events occurring wholly or partly outside of this country. Includes personal jurisdiction over foreign defendants, extraterritorial service of process and evidence gathering, choice of forum, foreign sovereign immunity, the act of state doctrine, extraterritorial application of U.S. law, and recognition of enforcement of foreign judgments.

School of Law Law

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## LAWS-7301 (2-3) Copyright

Examines state and federal laws relating to the protection of works of authorship ranging from traditional works to computer programs. Studies the 1976 Copyright Act as well as relevant earlier acts. Gives attention to state laws, such as interference with contractual relations, the right of publicity, moral right, protection of ideas, and misappropriation of trade values, that supplement federal copyright. Same as TLEN 5265.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7303 (3) Complex Civil Litigation

Covers civil procedure in modern complex multiparty suits, including class actions in such settings as employment discrimination and mass torts, and problems in discovery, joinder, res judicata, collateral estoppel, and judicial management in such suits. Offered in alternate years.

School of Law Law Litigation and Procedure

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## LAWS-7307 (3) Taxation of Natural Resources

Considers the federal income tax aspects applicable to the exploration for, the development of, and the operation of natural resources, as well as the financing thereof. Also considers oil and gas, hard minerals, timber, and water. Offered in alternate years. Recommended prereq., LAWS 6007.

School of Law Law

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## LAWS-7309 (2-4) American Indian Law Clinic

Offers a clinical education course involving participation in the representation and advocacy of Indian causes---land or water claims, Indian religious freedom, job or other discrimination based on race, and issues implicating tribal sovereignty. Recommended prereq., LAWS 7725. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7310 (3) International Dispute Settlement

Examines various mechanisms for the settlement of international disputes. Includes negotiation, inquiry, mediation, conciliation, arbitration, and adjudication. Focuses on intergovernmental dispute resolution.

School of Law Law International

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## LAWS-7311 (2-3) Patent Law

Covers selected topics, such as patentable subject matter, patentability, and utilization of patent rights through licensing and infringement litigation. Covers practice and procedure of the patent and trademark office.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7320 (3) International Criminal Law

Surveys international human rights law and international crime and punishment. Addresses idea of rights from a historical, philosophical, conceptual and analytical perspective; explores the "Primary rules of conduct" as well as adjudication and remedies, and selected rights from a comparative perspective. Recommended prereq., LAWS 6400.

School of Law Law International

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## LAWS-7321 (2) IP and Technology Contracting

Covers transactions, and often high-tech deals involving intellectual property rights. Studies IP ownership; assignment or rights; commercialization transactions (licensing, distribution, strategic); antitrust; and emerging issues. Gives students essential tools to draft and analyze technology contracts. Prereqs., LAWS 6301 or 7301.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7323 (2) Patent Litigation

Focuses on unique aspects of patent litigation: substantive patent law, civil procedure, federal jurisdiction, and litigation strategy; includes claim construction, infringement, anticipation and obviousness defenses, unenforceability challenges, declaratory judgments, injunctions, damages, settlements, licenses, and trial strategy. Of interest and useful to those interested in intellectual property generally, not just patents or in litigation.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7325 (3) Election Law

Examines the rapidly evolving field of election law: the right to vote, voting procedures, redistricting, candidate selection, campaign finance laws, and direct democracy. Emphasizes federal law, including applicable constitutional jurisprudence.

School of Law Law Government and Public

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## LAWS-7331 (2) Sports Law

Covers the application of rules from agency, antitrust, contracts, constitutional law (including sex discrimination), labor law, property, torts, unincorporated associations, and other subjects to those persons involved in the production and delivery of athletic competition to consumers. Explores the development of the application of these rules to a sports setting and related economic issues. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-7333 (2) Advanced Evidence: Forensic Science and the Criminal Courts

Explores the admissibility of forensic science opinion and expert testimony, its use as evidence at a trial, and the challenges that such evidence may pose for the courts and the entire criminal justice system in the future.

School of Law Law Litigation and Procedure

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## LAWS-7335 (1) The Law of Presidential Elections

Examines the laws and regulations that uniquely shape presidential selection, analyzing practical applications as well as the broader constitutional and policy considerations. A combination of federal, state, and local laws shapes how Americans select their president. But more than ever before, Americans are questioning the rules that influence presidential selection, such as the major party primary system, ballot access, presidential campaign financing, and the electoral college.

School of Law Law

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## LAWS-7341 (3) Trademark and Unfair Competition Law

Examines trademark protection, the interaction of trademark and unfair competition law with other intellectual property doctrines, the requirements for acquiring and retaining federal trademark rights, false advertising and other misrepresentations, the right of publicity and related claims, remedies for infringement, and international aspects of trademark protection.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7345 (2) Comparative Criminal Procedure

Takes an in-depth look at some of the basic features of modern criminal justice systems that share the civil law tradition with the hope that such study will provide a vehicle for a deeper understanding of the strengths and weaknesses of the American system of criminal justice. Prereq., LAWS 6045.

School of Law Law Litigation and Procedure

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## LAWS-7361 (2) Privacy, Security, and Digital Rights Management

Introduces students to the laws that regulate the basic technologies of the Internet and the management of information in the digital age. It examines the most significant statutes, regulations, and common law principles that comprise this emerging legal framework, including the Federal Wiretap Act, the HIPAA Privacy Rule, and the Digital Millennium Copyright Act.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7371 (3) Standardization and Standards Wars

Examines current issues in the standardization of telecommunications and information technologies. Covers the importance of standards, government and private sector perspectives, and the impact of information age technologies on standards of development. Emphasizes key national and international organizations.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-7375 (3) U.S. Races and Justice Systems

Examines the unique but related legal, social, and economic problems and accomplishments of those persons in this country whose ancestry originated in Africa, Asia, Latin America, or North America, and explores the developing literature on whites and whiteness.

School of Law Law

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## LAWS-7381 (3) Intellectual Property Counseling and Prosecution

Introduces strategic development and procurement of IP, including patents, trademarks, copyrights, and trade secrets. Evaluates the latest cases and legal trends from a practical and strategic perspective. Focuses on widely accepted best practices and critical thinking in these areas. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#)

## LAWS-7401 (3) Securities Regulation

Stresses statutory interpretation of the various federal statutes regulating the issue of corporate securities and the cases and regulations that have arisen out of those statutes.

[School of Law](#) [Law](#) [Business](#)

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## Courses

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Search by Course Number

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LAWS

### [LAWS-7402 \(2\) The Law of Toxic and Hazardous Wastes](#)

Examines the EPA's federal hazardous waste statutes, including the Resource Conservation and Recovery Act of 1976 (RCRA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). Analyzes the RCRA "Cradle-to-grave" hazardous waste program, and addresses the evolving CERCLA liability scheme and cleanup process.

[School of Law](#) [Law](#) [Envir, Nat Resources, Amer Ind](#)

### [LAWS-7405 \(2-3\) Health Law 2: Medical Malpractice and Quality Regulation](#)

Explores (1) the law controlling ethical issues that arise during the delivery of medical care, (2) the substantive law of medical malpractice and tort reform aimed at reducing the frequency and severity of medical malpractice verdicts, and (3) the practical aspects of litigating a medical malpractice case. Cross-listed at the Health Sciences Center; will include field trips there.

[School of Law](#) [Law](#) [Family, Gender, and Health](#)

### [LAWS-7406 \(1\) International Moot Court Competition](#)

Open only to students who actively participate in the seminar preparing for the competition, in the preparation of memorials for the competition, and in the practice of oral arguments or regional oral arguments.

[School of Law](#) [Law](#) [Practice:Clinical & Simulation](#)

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## LAWS-7409 (3) Legal Negotiation

Explores the fundamentals of effective negotiation techniques and policies for lawyers. Students engage in mock negotiations of several legal disputes. Credit is not given for both LAWS 7419 Legal Negotiation and Dispute Resolution and this course.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7411 (2-3) Mergers, Acquisitions, and Reorganizations

Studies the planning of corporate mergers, acquisitions, and reorganizations, examining the application and integration of state corporate law, federal securities law, accounting principles, tax law, labor law, products liability law, environmental law, ERISA, and antitrust law.

School of Law Law Business

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## LAWS-7420 (2) European Union Law

Covers all the essential aspects of the EU law: EU institutions, competences, the making and the application of EU law, and the content of the fundamental principles of EU law and the common market.

School of Law Law

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## LAWS-7425 (2-3) Health Law

Acquaints students with the issues arising at the interface between law and medicine through analysis of cases and other materials. Critically analyzes methods used by courts and legislatures to address medical/legal problems in an effort to determine whether the legal resolution was reasonable and appropriate in light of medical, social, and political considerations. Offered in alternate years.

School of Law Law Family, Gender, and Health

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## LAWS-7428 (3) Bioethics Law and Literature

Interdisciplinary study of law, medicine, and bioethics. Addresses such issues as confidentiality in medical treatment, rejecting life-sustaining treatment, death and dying, reproductive law and genetic technology, human experimentation, and access to health care.

School of Law Law

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## LAWS-7429 (2) Alternative Dispute Resolution

Examines a variety of dispute resolution processes, such as mediation, arbitration, minitrials, and court-annexed settlement procedures, as alternatives to traditional court adjudication. Credit not given for both LAWS 7419 Legal Negotiation and Dispute Resolution and this course. Prerequisites: Restricted to Law students only.

School of Law Law Practice:Clinical & Simulation

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## LAWS-7439 (2-3) Mediation

Explores mediation, one of the more important methods of alternative dispute resolution, and the legal issues that may arise related to mediation. Considers what kinds of persons and disputes are most appropriate for mediation. Includes role playing.

School of Law Law Practice:Clinical & Simulation

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## LAWS-7440 (3) International Human Rights and Humanitarian Law

Surveys international human rights both in law and in philosophy, both current and historical.

School of Law Law International

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## LAWS-7449 (2-4) Juvenile Law Clinic

Examines the world of child welfare from the view of the child client, by representing their best interests in abuse and neglect cases. As Guardians ad litem, students will represent children in abuse and neglect cases from the beginning, at the temporary shelter hearing, through the conclusion of the case at a permanency orders hearing. Prereq., LAWS 6353. May be repeated up to 8 total credit hours.

School of Law Law Practice:Clinical & Simulation

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## LAWS-7451 (3) Law and Finance for Entrepreneurs

Studies unique legal problems faced by entrepreneurs, including formation issues (choice of entity, rights of the founders, initial investors), operation issues (governance, key employees, intellectual property, financing), IPOs, and buy-outs.

School of Law Law Business

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## LAWS-7458 (2) Law and Literature

Focuses on the question of what literature can teach lawyers through a variety of literary works and films. Covers traditional works by Shakespeare, Tolstoy, Camus, Kafka, and Melville, as well as more contemporary works by Toni Morrison and Norman Mailer. Several short reflection papers, a journal, and a final eight page paper are required.

School of Law Law

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## LAWS-7475 (2) Advanced Torts

Studies selected tort actions and theories. Topics covered may include "Dignitary torts" (e.g., defamation, privacy, etc.), business torts, and product liability. Offered in alternate years.

School of Law Law Government and Public

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## LAWS-7505 (2) Sexuality and the Law

Examines the regulation of sexuality in local, state, and federal law, with particular emphasis on sexual orientation. Explores how sexuality shapes, and is shaped by, an array of laws and policies, which may include family law, military regulations, tax law, employment law, trusts and estates, obscenity law, and criminal law.

School of Law Law Family, Gender, and Health

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## LAWS-7507 (2-3) State and Local Taxation

Examines the operation of the income, property and sales tax used to finance our state and local governments. Includes requirements of equal protection and due process. Covers jurisdiction to tax allocation of the tax base among different state and local governments. Same as ACCT 6760.

School of Law Law

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## LAWS-7509 (1) Trial Competition

Student teams further develop trial and advocacy skills in a competitive mock-trial format involving two or more rounds of trials. Requires preparation of trial briefs and drafting other court pleadings and documents. Credit is limited to the top two teams (six students). Student finalists may continue involvement in regional and national competitions. May be repeated within the term up to 4 total credit hours. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7513 (3) Domestic Violence

Explores the law, policy, history, and theory of domestic violence. Examines the limits of legal methods and remedies for holding batterers accountable and keeping victims safe; the dynamics of abusive relationships; the history of the criminal justice system's response to domestic violence; the defenses available to battered persons who kill their abusers; the legal paradigm of the sympathetic victim; psychological and feminist theories about abusive relationships; civil rights and tort liability for batterers and third parties; and the intersection of domestic violence with international human rights.

School of Law Law Family, Gender, and Health

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## LAWS-7515 (3) Poverty Law

Explores the legal and policy responses to poverty in the United States and addresses how the law shapes the lives of poor people and communities. Examines the extent of poverty in the United States, the root causes, and the historical development of social welfare policy. Focuses on the rights-based aspect of poverty law and various policies that attempt to ameliorate poverty. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-7523 (2) Juvenile Law

Takes a critical look at the juvenile justice system and how it responds to the needs of juveniles who are either delinquents and/or victims of abuse. Issues include the rights and responsibility of parents, parental responsibility programs, delinquents, and the future of our juvenile courts.

School of Law Law

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## LAWS-7525 (3) Race and American Law

Examines the judiciary's approach to racial discrimination from America's colonial period to the present day. Concludes with an analysis of the contemporary status of racial subordination in the legal system and considers recent scholarly critiques of the law's limitations in effecting racial justice. Employs an interdisciplinary approach and covers the experiences of American Indians, African Americans, Asian Pacific Americans, and Chicana/os.

School of Law Law Government and Public

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## LAWS-7529 (1) Appellate Advocacy Competition

Gives students the opportunity to participate in an intermural appellate advocacy competition, in which a brief must be filed and reviewed, critiqued, and deemed credit-worthy by a member of the faculty. (Law School Rule 3-2-9 (b) should be consulted prior to enrollment.)

School of Law Law

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## LAWS-7541 (2-3) Employment Discrimination

Examines statutory and constitutional prohibitions of discrimination in employment on the basis of race, gender, age, religion, national origin, and disability.

School of Law Law Business

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## LAWS-7601 (2-3) Business Transactions

Provides a practical understanding of how to apply the law in both transactional and litigation settings. Gives an interdisciplinary look at how various areas of the law are brought together in common factual settings. Teaches students to negotiate, document, and close the acquisition of a business covering the areas of practice of corporate, contracts, real property, secured transactions, and bankruptcy law. Tests, in a litigation setting, the decisions made during the acquisition stage.

[School of Law](#) [Law](#) [Business](#)

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# Courses

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LAWS

## LAWS-7605 (2) Refugee and Asylum Law

Focuses on protections offered under international and domestic law for persons who are threatened by persecution or other adverse conditions in their country of origin. Covers who is a refugee and the protections they have or do not have under United States and international law.

[School of Law](#) [Law](#) [International](#)

## LAWS-7609 (1-2) Law Practice Management

Studies the establishment of a solo or small-firm legal practice. Topics include the business structure (PC, LLC, etc.), office systems, marketing and development, staffing, liability insurance, managing time, technology, and billing. (This practice course counts toward the 14 credit hour maximum of practice hours.) Course supported by the Section of Law Practice Management of the ABA in memory of Harold A. Feder, CU Law '59.

[School of Law](#) [Law](#) [Practice:Clinical & Simulation](#)

## LAWS-7611 (2-3) International Business Transactions

Examines the sources of international business law, the relationship between such law and the U.S. legal system, the choice of law in international business disputes, the special issues that arise when doing business with foreign governments, the law governing international sales and the shipment of goods, and international intellectual property protection. Offered in alternate years.

[School of Law](#) [Law](#) [International](#)

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## LAWS-7615 (4) Immigration Law and Immigrants' Rights

Addresses four broad questions: Who is a citizen of the United States? Who else can come to this country? When and why can noncitizens be forced to leave? Who has the authority to answer these questions? These questions prompt us to examine the history of U.S. immigration, the constitutional-statutory-regulatory framework that governs immigration and citizenship law, and the federal agencies that administer it. Also addresses contemporary challenges to, and assertions of, immigrants' rights. Prerequisites: Restricted to Law students only.

School of Law Law International

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## LAWS-7617 (3) International Taxation

Covers basic aspects of the United States taxation of income earned abroad by its citizens and the taxation of income derived by foreign persons from U.S. sources, including the implications of income tax treaties. Prereq., LAWS 6007 or 6157. Same as ACCT 6780.

School of Law Law Taxation

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## LAWS-7619 (2) Entrepreneurial Law Clinic

Advise indigent clients who need legal services in the founding of their business or not-for-profit firms, registering LLCs, and drafting employment and intellectual property agreements. Prereq., two of the following courses: Agency Partnership and the LLC, Corporations, Securities, Seminar on Corporate Law, Law and Finance for Entrepreneurs, Accounting Issues for Lawyers, Patent Law, Trademark, and International Business Transactions. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7725 (3) American Indian Law I

Investigates the federal statutory, decisional, and constitutional law that bears upon American Indians, tribal governments, and Indian reservation transactions. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7735 (3) American Indian Law II

Investigates the legal history and current legal status of Alaska Natives and Native Hawaiians. Addresses other current topics such as tribal water rights, tribal fishing and hunting rights, tribal justice systems, religious freedom, and tribal natural resource and environmental management. Prereq., LAWS 7725.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7745 (2-3) Jurisdiction in Indian Country

Examines the current state of the justice system within Indian nations today. Includes understanding the respective roles of tribal and

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state law enforcement authorities, as well as the Bureau of Indian Affairs' Office of Justice Services, the Federal Bureau of Investigation, and the Drug Enforcement Administration. Examines relationship between federal and tribal courts; substantive laws; and advocates who appear before them. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-7751 (3) Arbitration

Discusses the nature of arbitration, tactical considerations in whether to use this form or another form of dispute resolution, the drafting of effective contracts to arbitrate the enforceability of these contracts, and the enforcement of arbitration awards. Covers the preclusive effect of arbitration proceedings, multiparty arbitration, and choice of law. Students conduct simulated arbitrations.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7775 (1) Gender Law and Public Policy

Examines the relationship of law and gender in criminal law, and constitutional law, using feminist theoretical perspectives as the organizing principle. Each perspective is applied to cases and material on such topics as violence against women, prostitution, pornography, and discrimination in education and athletics.

School of Law Law Family, Gender, and Health

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## LAWS-7809 (2-4) Technology Law and Policy Clinic

Features technology law advocacy before administrative and legislative bodies. The mission of TLPC is: 1) to train and produce students equipped to conduct thoughtful analysis, and 2) provide unbiased assistance in the public interest concerning technology issues to regulatory entities, courts, legislatures and standard setting bodies. Recommended prereqs., LAWS 6301, 6318 or 7241. LAWS 7809 and TLEN 5250 are the same course.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7846 (1-3) Independent Legal Research

Involves independent study and preparation of a research paper under faculty supervision. Students produce a research paper equivalent to a seminar research paper. A draft is submitted, subjected to critique by the faculty member, and redrafted. Available during or after the fifth semester of law school. Prereq., instructor consent. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7896 (1) Independent Legal Research: Law Review

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the University of

Colorado Law Review. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7906 (2) Independent Legal Research: Law Review

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the University of Colorado Law Review. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7916 (1) Independent Legal Research: Journal of International Environmental Law and Policy

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the Colorado Journal of International Environmental Law and Policy. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7926 (2) Independent Legal Research: Journal of International Environmental Law and Policy

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the Colorado Journal of International Environmental Law and Policy. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7936 (1) Independent Legal Research: Journal of Telecommunications and High Technology

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the Journal of Telecommunications and High Technology Law. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-7939 (1-7) Extern Program

Extern credit may be earned for uncompensated work for a sponsor, which may be any lawyer, judge, or organization that employs lawyers or judges and is approved by the Academic and Student Affairs Committee. Work is done under the direction of a field instructor (a lawyer or judge as the sponsor) and a member of the law faculty. Requires a substantial writing component and 50 hours of working time per credit hour. a minimum of 1 and a maximum of 7 credit hours may be earned. Classified as practice credit. Prerequisites: Restricted to Law students only.

School of Law Law Practice: Clinical & Simulation

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## LAWS-7946 (2) Independent Legal Research: Journal of Telecommunications and High Technology

Gives students the opportunity to participate in the research, writing, and editing activities involved in publishing the Journal of Telecommunications and High Technology Law. Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-8005 (2) Seminar: Advanced Constitutional Law Equality and Privacy

Addresses "Equal Protection" rights under the Fourteenth Amendment and "Privacy" rights to personal autonomy. Analyzes varied constitutional grounds for recognizing or rejecting abortion rights; limits on Congressional power to pass civil rights laws granting broader rights than the Fourteenth Amendment does; treatment of sexual orientation-related laws and government actions as "Privacy" versus "Equality" matters; and "Benign"/"remedial" race- and sex-based government decisions such as affirmative action and same-sex schools.

School of Law Law Government and Public

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## LAWS-8011 (1-3) Seminar: Humanizing Contracts: Service Learning

Examines contract theory and policy, while providing community-based service. Students analyze and discuss readings exploring doctrinal and theoretical bases of contract law, and see "Contracts in action" through participating in a service project. Requires a final paper linking theory and doctrine with service experiences. Note: this is a year-long seminar (2 credits per semester); students must enroll in both semesters but receive only one grade at the end of the year. Students participate in a service project that may include off-campus and weekend participation.

School of Law Law

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## LAWS-8013 (2) Seminar: Habeas Corpus: The Great Writ of Liberty

Includes readings on the history of the writ, its constitutional status, and its use as a civil rights remedy, as well as case studies of important Supreme Court decisions, and a review of contemporary jurisdictional and procedural issues.

School of Law Law

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## LAWS-8015 (1-3) Seminar: Constitutional Theory

Examines the role of the courts and the other branches of government in defining and enforcing constitutional values. Relevant readings are from philosophy, social sciences, and legal scholarship, as well as cases. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-8021 (3) Seminar: Consumer Empowerment

Considers contract theories and principles emanating from classical and neoclassical law, legal realism, law and economics, and critical legal studies. Explores and questions tensions among theories, focusing on how they interact with norms, goals, and functions of contract and consumer protection law. Observes these tensions "In action" through volunteer work with Heritage House, a home for young women who are "At risk" and cannot live with their families at this time for different reasons.

[School of Law](#) [Law](#) [Business](#)

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## Courses

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LAWS

### LAWS-8025 (2) Seminar: Advanced Topics in Federalism

Explores the development of "Our Federalism", the relationship between federal and state governments, from the founding period of the US Supreme Court's recent New Federalism jurisprudence. Studies historical material, commentary, and case law, and addresses how federalism is defined; the values that federalism serves; the role of federalism in our interconnected, global society; the Supreme Court's boundaries of federalism; the direction of New Federalism.

[School of Law](#) [Law](#) [Government and Public](#)

### LAWS-8035 (2) Seminar: Intersection of Antidiscrimination and First Amendment Law

Addresses past and continuing debates involving potential tensions between antidiscrimination principles and free speech, free exercise, and establishment clause values. Examines constitutional protections under the First Amendment and the equal protection clause, together with an array of existing and proposed federal and state antidiscrimination laws regulating employment, housing, and public accommodations, among other areas.

[School of Law](#) [Law](#) [Government and Public](#)

### LAWS-8045 (2) Seminar: Comparative Constitutional Law

Examines legal structures and concepts typically found in constitutions, including judicial review, distinction between legislative and executive authority, federalism and the principle of subsidiarity, the relationship between church and state, free speech and press, and social welfare rights. Examines differences between constitutional law and other domestic law, role of comparative constitutional law in domestic constitutional law adjudication. Emphasizes American and Swedish perspectives.

[School of Law](#) [Law](#) [Government and Public](#)

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## LAWS-8055 (1-2) Seminar: Media, Popular Culture, and the Law

Examines how the institutions, practices, and the very identity of law are in part affected by the media through which law is apprehended and communicated. Hence the general question posed in this seminar: To what extent and how are the forms and methods of the new media having an effect on the perception, role, and identity of law? This is a year-long seminar.

School of Law Law Government and Public

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## LAWS-8075 (2) Seminar: Race, Racism, and American Law

Focuses on issues of race reform law, in particular the group of issues dealing with Black Americans. (Students of all hues and persuasions are welcome.)Offers an interpretive or critical dimension, rather than a litigation-oriented one. Helps students understand how race reform law works and how attitudes and historical forces have shaped that body of law.

School of Law Law

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## LAWS-8095 (2) Seminar: Problems in Constitutional Law

Explores how theories of social freedom and self-governance developed in the United States. Analyzes the most controversial socio-legal issues as they relate to privacy, equal protection and other questions of substantive due process. Discusses recent trends in national security and information privacy to evaluate their overall relevance to civil liberties and nascent influence on the fundamental rights debate in the US and abroad.

School of Law Law Government and Public

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## LAWS-8101 (3) Business Law Colloquium

Business law scholars from CU and around the country present research papers at this weekly colloquium. Topics may include contracts, corporate law, securities regulation, tax, intellectual property, venture capital and private equity, and the legal profession. No prior knowledge of law and economics is expected, although some knowledge of business organizations will be useful. Prereq., LAWS 6211 or 6201. Prerequisites: Restricted to Law students only.

School of Law Law Business

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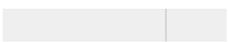
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## LAWS-8103 (2) Seminar: Alternative Dispute Resolution Ethics

Explores the ethics of mediators and other alternative dispute resolvers and facilitators, of attorneys representing clients in alternative dispute resolution processes, and of judges serving in alternative roles. Issues include confidentiality, providing appropriate notice to those concerned, and avoidance of conflicts of interest.

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## LAWS-8104 (2) Seminar: Cities, Suburbs, and the Law

Explores dynamics that play out in the relationship between cities, suburbs, exurbs and other patterns of urban development. Explores the nature of local power, relations between local jurisdictions, and metropolitan and regional approaches to governance. Includes fiscal disparities, ethnic and racial segregation, sprawl and growth controls, affordable housing, transportation, and the urban/rural divide.

## LAWS-8105 (3) Seminar: Comparative Family Law

Examines and critiques law, legal institutions and traditions of the country of focus and the U.S. as they affect children, families and work. Enhances research and writing skills, including field and international research. Contributes to the host country through scholarship and service. Increases cultural competence through active engagement with peers and with social justice issues in another country. Includes required field study component and service learning project over spring break. Prerequisites: Restricted to Law students only.

## LAWS-8112 (2-3) Seminar: Advanced Natural Resources Law

Provides in-depth study and analysis of current problems in natural resources law, using historical, literary, and scientific materials. Includes field-trip, and requires additional field trip expenses. LAWS 6112 is strongly recommended as a prerequisite, however students must have taken or be concurrently enrolled in any three of the following: LAWS 6002, 6112, 6302 or 7725. May be repeated up to 5 total credit hours.

## LAWS-8115 (2) Seminar: Child Abuse and the Law

Explores legal responses to child abuse by examining the constitutional framework for legal proceedings, effective strategies for preventing child abuse and punishing offenders, alternatives to the current system, and cultural aspects of child abuse and the legal response to it. Examines physical abuse and neglect, and focuses on sexual abuse.

## LAWS-8122 (2) Seminar: Mineral Development

Deals with legal and policy issues surrounding mineral development and its environmental impacts. Emphasizes the problems associated with hard rock minerals and coal development, with some treatment of oil and gas leasing and development issues. Focuses on western public lands with some discussion of international and private lands issues.

## LAWS-8125 (2) Seminar: Law and the Politics of Family Law

Examines issues that have been raised under the United States Constitution with respect to state regulation of families. Topics include questions of family and individual privacy, the status of children, procreation, marriage and divorce, the definition of family relationships, and problems of federalism and the role of the Supreme Court in the regulation of families.

## LAWS-8128 (2-3) Jurisprudence

Same as LAWS 7128.

## LAWS-8135 (2) Seminar: Gender, Work, and Family

Explores the social and legal problems that develop at the intersection of work and family, and considers legal/non-legal solutions that have been and could be used to accommodate both women and men in their efforts to deal with these problems.

## LAWS-8138 (2) Seminar: The Rhetoric of Law

Considers how Anglo-American law operates rhetorically, how it persuades, builds character, offers proof, approximates the truth, establishes legitimacy, and makes things happen. It will also explore the ethics of rhetoric and note the relationship of rhetoric to other bodies of legal scholarship (e.g., law and literature, legal pragmatism, law and culture). It will hone student advocacy skills, prepare students to anticipate and defend against the rhetorical stratagems of different legal actors, and enrich students' sense of professional identity. Restricted to LAWS students. Prerequisites: Restricted to Law students only.

## LAWS-8154 (2) Seminar: Land Use Planning

Discusses public control of private land uses through planning, zoning, and regulation of land development, including consideration of constitutional and statutory limitations on legislatively created techniques. Offered in alternate years.

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## LAWS-8202 (2) Seminar: Environmental Policy

Examines issues of environmental justice, including the disparate impacts of pollution and land use controls on certain communities and ethnic groups. Topics may include concentration of waste facilities in neighborhoods occupied by poor and minority populations, adequate protection of migrant farmworkers from the impacts of pesticide hazards, and environmental controls that inhibit economic growth and development sought by Indian tribes.

School of Law Law

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## LAWS-8205 (3) Seminar: Law and Democratic Governance

Explores cutting-edge debates in election law. Studies different perspectives on the current controversies in the field, in addition to select opportunities to engage scholars directly about their work. Develops students' understanding of the law of democracy, exposing students to some of the best scholarship, and improving students' ability to evaluate and critique legal scholarship. Recommended prereq., LAWS 7325. Same as PSI 7171. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-8210 (2) Seminar: Comparative Law

Studies discrete topics in Jewish law such as family law, commercial law, criminal law, etc., using the text Jewish Law: Cases and Materials, and other sources such as guest lectures. The collection of books that we received from the Touro Law Center will provide a valuable resource for student research.

School of Law Law

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## LAWS-8212 (2) Seminar: Environmental Law Practice and Policy

Focuses on the translation of environmental policies and purposes into environmental law and practice. Investigates policy issues on prevention of significant deterioration of air quality (PSD), the particulate matter national ambient air quality standard (PM NAAQS), and global climate changes. Emphasizes legal structure issues, including the role of national, state, and local governments in implementing environmental law and policy as well as counterpart global structures and mechanisms for responding to global or transboundary environmental problems. Prereq., LAWS 7202.

School of Law Law

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## LAWS-8222 (2) Seminar: Environmental Philosophy and Law

Investigates the changing philosophical underpinnings of U.S. environmental law and policy and how philosophy and legal institutions interact.

School of Law Law

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## LAWS-8251 (2) Seminar: Advanced Corporate Law

Explores current issues in corporate and securities law, including developments in fiduciary duties of officers and directors, corporate governance, executive compensation, revisions to the model business corporation act, and state and federal litigation reform.

[School of Law](#) [Law](#)

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## LAWS-8285 (2-3) Seminar: Education and the Constitution

Teaches the substantive constitutional law governing public education. Students will teach constitutional materials to high school students in the local Denver Metro area high schools. Interested students must apply, and requires a commitment to a full-year curriculum. Encourages individual development as teachers, writers, and critical thinkers, and provides an opportunity to grow as colleagues and teammates. Requires extra time outside of class. Recommended prereq., LAWS 7055. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Government and Public](#)

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# Courses

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Search by Course Number

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LAWS

## LAWS-8300 (3) Seminar: International Adjudication

Focuses on writing briefs and memoranda of law suitable for practice before tribunals such as the International Courts of Justice. Emphasis will be on students writing, legal analysis, and presentation of oral arguments. Instruction identifies how to research and analyze international materials, such as treaties, covenants, and international customary law.

[School of Law](#) [Law](#)

## LAWS-8301 (2) Seminar: Innovation, Network Theory, Social Entrepreneurship

Covers topics related to the legal and public policy implications of innovation, entrepreneurship, and social networks including normative ideals of entrepreneurship, the concept of regional advantage, whether startups should be subsidized and the design of such subsidies, the role of universities in commercializing ideas, impact of the tax code on entrepreneurship, the role of corporate responsibility in startups, and more.

[School of Law](#) [Law](#)

## LAWS-8302 (2) Seminar: Advanced Problems in Water Resources Law

Explores the use of watersheds as geographic and political entities for addressing water-related issues and how laws and institutions facilitate or impede watershed-based problem solving.

[School of Law](#) [Law](#)

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## LAWS-8310 (2) Seminar: International Crimes Punishment

Addresses issues in international criminal law in three parts: 1) basic contents of international law, 2) international criminal tribunals that enforce international criminal law, and 3) national efforts to bring international criminal prosecutions. Recommended prereqs., LAWS 6400 and 7440. Prerequisites: Restricted to Law students only.

School of Law Law International

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## LAWS-8311 (2) Seminar: Computer Crimes

Explores legal issues that judges, legislators, prosecutors, and defense attorneys confront with the recent explosion in computer related crime. Includes Fourth Amendment in cyberspace, law of electronic surveillance, computer hacking and other computer crimes, encryption, online economic espionage, cyberterrorism, First Amendment in cyberspace, federal and state relations in enforcement of computer crime laws, and civil liberties online.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-8315 (2) Seminar: Advanced Criminal Justice

Studies policy and practice issues rather than case law. Focuses primarily on how American criminal justice is dispensed in cases that do not reach trial, including police behavior, prosecutorial discretion, defense services, bail, plea bargaining, and sentencing.

School of Law Law

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## LAWS-8318 (2) Seminar: Law and Economics

Introduces the uses and limitations of microeconomic theory for understanding and resolving legal problems. Emphasizes concepts prominent in the law and economics literature such as cost, transaction costs, utility, and rational self interest.

School of Law Law Jurisprudence and Perspective

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## LAWS-8320 (2) Seminar: Oil and International Relations

Addresses the extent to which the international community of nations is oil dependent. Assesses the impact and the geopolitical dangers to international relations arising from the expanding demand for scarce oil from developing, as well as developed, economies.

School of Law Law International

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## LAWS-8321 (2) Seminar: Computers and Law

Explores a range of topics surrounding the juxtaposition of computers and law. Most are aware of the impact that law has on computers

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through the myriad of regulations that govern computers and related technologies. Less well known is the impact that computer technology is having on governance and on the practice of law. Explores both sides of this dynamic interplay between law impacting computing, and computing impacting law.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-8325 (2) Seminar: Reforming Criminal Trials

Starts from the premise that reform of our criminal trial system to make it less complicated, less expensive, and more reliable should be considered. Examines trial systems in other countries and U.S. changes over recent decades. Student papers make and defend proposals for reform.

School of Law Law

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## LAWS-8335 (2) Seminar: Advanced Criminal Procedure

Focuses on a particular topic in criminal procedure. Topics include the privilege against self-incrimination, juries, and defense and prosecution ethics.

School of Law Law Litigation and Procedure

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## LAWS-8341 (3) Seminar: Law and Economics of the Information Age

Examines basic regulatory and legal challenges of our information economy and digital age. Emphasizes the "Networked" information industries, the proper role of "Unbundling" policies to advance competition, and how intellectual property and antitrust rules should be developed. Prereq., LAWS 7201, 7241, or 7301. Same as TLEN 5260.

School of Law Law

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## LAWS-8351 (2) Seminar: Law and Economics of Utility Regulation

Discusses economics of regulation and matters ranging from neoclassical economic analysis to public choice theory to new institutional economics. Discusses several regulatory domains, including antitrust law, telecommunications regulation, and energy regulation. Highlights both economic and non-economic goals, including universal service, sustainability (e.g., renewable energy), and architecture (e.g., free speech concerns with regard to telecommunications networks). Prereqs., LAWS 6301 or 7201 or 7241 or TLEN 5835. Restricted to Law and TLEN students.

School of Law Law Business

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## LAWS-8355 (2) Seminar: Sentencing Law and Policy

Studies sentencing law against the backdrop of criminal justice policy and concerns of public policy. Covers theories of punishment, the merits of indeterminate sentencing, sentencing guidelines, and nonincarcerative sanctions. Confronts problems of race, class, and other disparities in criminal sentencing.

School of Law Law

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## LAWS-8361 (2) Seminar: Information Privacy

Explores the laws that regulate the basic technologies of the Internet and the management of information in the digital age. It examines the most significant statutes, regulations, and common law principles that comprise this emerging legal framework, including the Federal Wiretap Act, the HIPAA Privacy Rule, and the Digital Millennium Copyright Act. Prerequisites: Restricted to Law students only.

School of Law Law Intell Prop, Tech, and Telecom

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## LAWS-8375 (2) Seminar: Advanced Immigration and Citizenship

Explores the law and policy of citizenship in the United States, starting with legal questions regarding acquisition and loss of citizenship as well as the consequences of citizenship, but also examines the fundamental premises underlying American citizenship and the concept of citizenship generally.

School of Law Law

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## LAWS-8395 (2) Seminar: Separation of Powers

Explores the constitutional relationships among the three branches of the federal government in the sphere of domestic matters, omitting foreign affairs and war. Develops topics including executive orders, Congressional control of the executive and the courts, appointment and removal of officers, impeachment, executive privilege, use of military tribunals, and the election of 2000. a seminar paper will be required.

School of Law Law Government and Public

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## LAWS-8401 (2) Seminar: Securities Litigation and Enforcement

Designed for students interested in studying topics related to securities litigation. Covers civil liability under the Securities Act of 1933, proxy fraud, class actions (with special emphasis on the Private Securities Litigation Reform Act and the Securities Litigation Uniform Standards Act), market manipulation, SEC enforcement actions, enforcement issues involving attorneys and accountants, criminal enforcement, international securities fraud, and securities arbitration.

School of Law Law Business

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## LAWS-8405 (2) Seminar: Public Health Law and Ethics

Explores rules of law pertaining to the American public health care system and the ethical issues raised by the government's effort to protect the health of the American people. To be held at Health Sciences Campus.

School of Law Law Government and Public

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## LAWS-8407 (2) Seminar: Tax Policy

Explores current issues in tax policy. Topics may include the tax legislative process, consumption taxes, taxes and distributive justice, the tax exemption for nonprofits, carbon taxes, corporate taxes and integration, and taxes and entrepreneurship. Prereqs., Federal Income Tax and LAWS 6109. Prerequisites: Restricted to Law students only.

School of Law Law Taxation

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## LAWS-8409 (2) Seminar Special Problems in Conflict Resolution and Management

Develops a comprehensive description of dispute; creates a conflict assessment of the stakeholders in and dynamics of dispute; assess obstacles to and opportunities for mediation; recommend strategy for addressing and managing the dispute. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-8415 (2) Seminar: Bioethics and Law

Focuses on legal, moral, and economic analyses of problems posed or soon to be posed by advances in biomedical technologies.

School of Law Law Family, Gender, and Health

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## LAWS-8421 (2) Seminar: Duties of the Professional Advisor

Studies ethical and legal regulation of lawyers, auditors, and investment bankers, who have been described as "Gatekeepers" to the investment markets. Considers changes in ethical and legal regulation that can be adopted to restore a sense of integrity for these professionals.

School of Law Law

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## LAWS-8425 (2) Seminar: Advanced Torts

Explores how dignitary interests have influenced the development of and have been incorporated into law, using the common law of torts and the constitutional rights of life and liberty as a general (but not exclusive) focal point of discussion.

## LAWS-8428 (2) Seminar: Women in Law and Literature

Considers both legal and literary depictions of women and their legal and extralegal situations. Topics may include women as mothers, women as sexual beings, women's silence, women's violence and women as criminals, women at work, and women as the "Other" in law and literature.



# Courses

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LAWS

## LAWS-8430 (2) Seminar: Comparative Public Health Law and Ethics

Compares public health law systems to those in other countries. Studies the goals, legal structures, and services provided, together with such issues of coercion as quarantines, monitoring, mandates and prohibitions, and forcing pharmaceutical companies to make available inexpensive generic drugs.

School of Law    Law    International

## LAWS-8440 (2) Seminar: International Human Rights

Investigates the sources of international human rights law and issues of jurisdiction to prescribe, adjudicate, and enforce norms. Students study treaties and reservations, customary law, declarations, resolutions, and the U.S. courts' and activists' use of materials. Topics include sovereignty and self-determination, culture, privacy, right to equality, language and speech rights, right to development, immigration, workers and globalization, and citizenship.

School of Law    Law

## LAWS-8450 (2) Seminar: Law and Economic Development

Explores past and present debates over the role of the legal order in economic development. Studies the relationships among economic ideas, legal ideas and the development policies pursued at the national and international level in successive historical periods, beginning in the Seventeenth Century to the present. Focuses on the potential for an alliance of various traditions from economics, law and other disciplines to understand development.

School of Law    Law

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## LAWS-8458 (2) Seminar: Law and Literature

Focuses on the question of what literature can teach lawyers through a variety of literary works and films. Covers traditional works by Shakespeare, Tolstoy, Camus, Kafka, and Melville, as well as more contemporary works by Toni Morrison and Norman Mailer. Several short reflection papers, a journal, and a final paper will be required.

School of Law Law Research and Writing

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## LAWS-8505 (2) Sem Interdisciplinary Perspectives on Law and Social Change

Introduces legal institutions engaged in social change, from courts, to Congress, to bureaucracies and organizations. Posits tension between tasks of dispute resolution and public policy development and institutional adaptations. Considers the role of public opinion and the classics of legal formalism to more critical accounts. Considers postmodern theory and empirical legal scholarship. Presents alternatives to court-centered approaches to change, including community lawyering and organizing, law and social movements, and legislation. Prerequisites: Restricted to Law students only.

School of Law Law Jurisprudence and Perspective

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## LAWS-8508 (2) Seminar: Constitutional Foundations Core Ideas

Focuses on core ideas in U.S. constitutional law, such as means/ends analysis, institutional competence, rights definitions, and juridical techniques for limiting governmental powers. Draws from historical writings, contemporary press accounts, learned treatises, oral arguments, law review articles, and key judicial opinions such as *McCullough v. Maryland*, *Lochner v. New York*, *Brown v. Board of Education*.

School of Law Law Government and Public

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## LAWS-8511 (2) Seminar: Wal-Mart

Examines issues raised by Wal-Mart's size, power, and business model. Considered issues bring numerous areas of law into play, including employment and labor law, social welfare legislation, class actions, antitrust, zoning, international labor and human rights regulation, and international trade. The course will show how different areas of the law are integrated in practice.

School of Law Law

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## LAWS-8515 (2) Seminar: Forced Labor

Reviews several regimes of compulsory labor that have been central to the American experience: Black chattel slavery in the antebellum South; debt peonage, criminal surety, and related institutions of agricultural involuntary servitude; convict leasing and other forms of compulsory inmate labor; "White slavery" and prostitution; and forced labor among immigrants. Emphasizes the complicated role that the law has played, and in some respects continues to play, in both supporting and undermining such institutions.

School of Law Law Government and Public

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## LAWS-8521 (2) Seminar: Comparative Labor Law

Explores the laws and economic transformations that affect labor relations on a global scale.

School of Law Law Business

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## LAWS-8531 (2) Seminar: Labor and Employment in Transportation

Explores legal, social, and economic issues arising from labor relations in the industries transporting goods and people by road, rail, air, and water, among the most critical sectors of the economy.

School of Law Law

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## LAWS-8533 (2) Seminar: Criminal Law in Context: Legal and Social Images of Victims and Perpetrators

Contextualizes criminal law by engaging in an in depth study of the legal and social characterizations of victims and perpetrators in U.S. law, politics, and popular culture. Prerequisites: Restricted to Law students only.

School of Law Law Litigation and Procedure

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## LAWS-8535 (2) Seminar: Class and Law

Explores issues relating social class to such areas as labor relations, law enforcement, controls on radical movements, and the distribution of wealth and power. Considers problems defining social class.

School of Law Law Government and Public

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## LAWS-8538 (2) Seminar: Modern Legal Theory Core Ideas

Explores key ideas that have shaped American law and legal thought, such as Holmes' bad man, the Coase Theorem, the "Hunch" theory of law, and others. Focuses on researching and writing many short papers.

School of Law Law Jurisprudence and Perspective

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## LAWS-8545 (2) Seminar: Food Law and Policy

Introduces students to the laws and regulations that govern our food supply. The focus is federal law provided by the U.S. Food and Drug Administration, with additional readings, videos and speakers. Topics to be covered include legal definitions for food, rules on food labeling, standards for food safety, biotechnology, international trade, organic and environmental regulation, hunger, farmer's markets and obesity. Prerequisites: Restricted to Law students only.

School of Law Law Family, Gender, and Health

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## LAWS-8548 (2) Seminar: Theory of Punishment

Explores the various justifications that philosophers have developed to explain why we have the right to punish. Examines the historical evolution of our punishment system and focuses on the death penalty as a critical contemporary issue in the debate about the proper role of punishment in our society.

School of Law Law Jurisprudence and Perspective

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## LAWS-8555 (2) Seminar: Race, Education and American Law

Explores issues of equity, access, and reform in American public education, particularly as it pertains to race, including desegregation, diversity, equal protection and public education, tracking and high-stakes testing, courts or the political branches, charters and vouchers. Restricted to Law students only. Recommended prereq., LAWS 7525. Prerequisites: Restricted to Law students only.

School of Law Law Government and Public

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## LAWS-8608 (2) Seminar: Power, Ethics, and Professionalism

Examines critically the possibility and character of ethical reasoning within the legal profession in light of its institutional structures. Explores descriptive/normative accounts of the profession's structure, "Professionalism," and individual conscience. Put simply, the seminar explores whether it is possible to be a good lawyer and ethical person.

School of Law Law Jurisprudence and Perspective

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## LAWS-8613 (2) Seminar: Civil Liberties Litigation

Studies issues unique to the prosecution and defense of civil liberties lawsuits. Discusses litigation strategies with reference to lawsuits currently pending in the federal courts.

School of Law Law

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## LAWS-8628 (2) Seminar: Law, Power, and Politics

Draws upon various works of political theory, social theory, and jurisprudence to examine different conceptualizations of politics, power,

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law, and their relations.

School of Law Law

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## LAWS-8648 (2) Seminar: The Law of Politics

Examines the legal framework that governs the political process, including such topics as the political question doctrine, the "Right to vote," the 2000 presidential election controversy, term limits, bicameralism and presentment, campaign finance, direct democracy, and the interpretation of the legislative product (i.e., statutes).

School of Law Law

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## LAWS-8701 (2) Seminar: Counseling Families in Business

Explores the legal aspects of owning, managing, and participating in a successful family business system, including corporate structure, legal issues, succession planning and estate management, internal capital markets in private enterprise, ownership issues in private businesses, how lawyers can assist with family governance, planning for and managing family philanthropy, gender issues in family business, and conflict resolution. Recommended prereqs., LAWS 6104, 6157, 6211, and/or 7409.

School of Law Law Business

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## LAWS-8705 (2) Seminar: Affordable Housing

Explores the policy, legal, and practical dynamics that drive the development and preservation of privately owned, government subsidized affordable housing. Investigates the nature of the market for housing, with particular emphasis on multifamily rental housing, and debates about market failure in that context and then outline and contrast the major regulatory responses to such market failure. Explores how subsidy programs work in practice, focusing on model documents to frame sample transactions.

School of Law Law Government and Public

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## LAWS-8718 (2) Seminar: Modern Theorists and Law

Considers the work of Levi-Strauss, Steven Lukes, Pierre Bordieu, Alfred Schutz, Anthony Giddens, Culler, David Harvey, Denis Cosgrove, Michel Foucault, and Emily Martin with respect to social control and law. Focuses on the way in which social control is exercised through the organization of space, time, and the human body. Topics include consideration of meaning, intersubjectivity in the law, social construction of time, and the body as a real and cultural artifact.

School of Law Law

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## LAWS-8725 (2) Seminar: Advanced Topics in American Indian Law

Examines a variety of current issues related to American Indian Law. The topics will change to reflect the subjects that emerge at each time that the seminar is offered. Some examples of topics considered in this seminar include legal protections for American Indian religion and culture, cultural property, Tribal law, gaming law, and Native American natural and cultural resources law. Coreq., LAWS 7725.

[School of Law](#) [Law](#) [Envir, Nat Resources, Amer Ind](#)

## LAWS-8755 (2) Seminar: Higher Education and the Law

Examines the goals, governance, norms, and ideals of American institutions of higher education, and how those policies are shaped by the legal system. Examines the legal relationship between institutions of higher education and its various constituents: faculty, presidents, governing boards, students, alumni, and staff. Spans several traditional doctrinal categories, including contract, torts, employment law, constitutional law, intellectual property, tax, and antitrust.

[School of Law](#) [Law](#) [Government and Public](#)

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## Courses

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LAWS

### LAWS-8765 (2) Seminar: Gender, Law, and Public Policy

Examines the relationship of law and gender in criminal law, and constitutional law, using feminist theoretical perspectives as the organizing principle. Each perspective is applied to cases and materialson such topics as violence against women, prostitution, pornography, and discrimination in education and athletics. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Family, Gender, and Health](#)

### LAWS-8775 (2) Seminar: Advanced Topics in Health Law and Policy

Addresses advanced legal issues in representing physicians, long-term care institutions, hospitals, and other health providers. Issues range from economic policy, distributive justice, and bioethical questions to antitrust and regulatory issues. Recommended prereq., LAWS 7425. To be taught at Health Sciences Center.

[School of Law](#) [Law](#)

### LAWS-9002 (3) Public Land Law

Deals with the legal status and management of resources on federal lands, including national forests, parks, and BLM lands. Explores federal law, policy, and agency practice affecting the use of mineral, timber, range, water, wildlife, and wilderness resources on public lands. Restricted to Law students only. Prereq., LAWS 6112. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Envir, Nat Resources, Amer Ind](#)

### LAWS-9061 (1) Contract Drafting

Begins with value creation by transactional lawyers, and emphasizes the opportunity for lawyers to reduce information and agency costs,

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and mitigate strategic behavior by using tools such as disclosure, representation and warranties, incentive compensation and earnouts. Shifts to negotiation and drafting, focusing on basic drafting principles and strategies to advance one's clients' interests. Introduces the basic framework of contracts (recitals, reps and warranties, capitalized terms, definitions, indemnifications and escrow). Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-9101 (4) Deals: Engineering Financial Transactions

Explores the business lawyer's role in creating value by helping clients identify, assess, and manage business risks through efficient contract design while achieving the optimal legal, tax or regulatory treatment for the deal. Includes case studies of actual transactions. Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-9104 (3) Wills and Trusts

Covers intestate succession; family protection; execution of wills; revocation and revival; will contracts and will substitutes; creation of trusts; modification and termination; charitable trusts; fiduciary administration, including probate and contest of wills; construction problems in estate distribution. Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Property

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## LAWS-9111 (4) Business Law Colloquium

Business law scholars from CU and around the country present research papers at this weekly colloquium. Topics may include contracts, corporate law, securities regulation, tax, intellectual property, venture capital and private equity, and the legal profession. No prior knowledge of law and economics is expected, although some knowledge of business organizations will be useful. Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-9112 (2-3) Advanced Natural Resources Law

Provides in-depth study and analysis of current problems in natural resources law, using historical, literary, and scientific materials. Includes field-trip and requires additional field trip expenses. May be repeated up to 5 total credit hours. Restricted to Law students only. Recommended prereq., LAWS 6112 or students must have taken or be currently enrolled in any three of the following: LAWS 6002, 6112, 6302 or 7725. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-9167 (3) Partnership Taxation

Studies federal income taxation of pass-through entities such as are used by most small businesses in the U.S. Includes creation, operation, distributions, sales of interests, and liquidation. Restricted to Law students only. Prerequisites: Restricted to Law students only.

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## LAWS-9209 (4) Natural Resources Law Clinic

Engages in litigation and advocacy aimed at protecting the natural resources of the Rocky Mountain region. Students will represent clients in matters involving public lands, wildlife, and other resources. The seminar component will focus on practical aspects of environmental litigation, including administrative practice and decision-making, client representation, citizen suits, and ethical issues. Restricted to Law students only. Prerequisites: Restricted to Law students only.

## LAWS-9341 (3) Law and Economics of the Information Age

Examines basic regulatory and legal challenges of our information economy and digital age. Emphasizes the "Networked" information industries, the proper role of "Unbundling" policies to advance competition, and how intellectual property and antitrust rules should be developed. Restricted to Law students only. Prereq., LAWS 7201, 7241 or 7301. Same as TLEN 5620. Prerequisites: Restricted to Law students only.

## LAWS-9401 (3) Securities Regulation

Stresses statutory interpretation of the various federal statutes regulating the issue of corporate securities and the cases and regulations that have arisen out of those statutes. Restricted to Law students only. Prerequisites: Restricted to Law students only.

## LAWS-9409 (3) Legal Negotiation

Explores the fundamentals of effective negotiation techniques and policies for lawyers. Students engage in mock negotiations of several legal disputes. Restricted to Law students only. Credit is not given for LAWS 741 and this course. Prerequisites: Restricted to Law students only.

## LAWS-9410 (3) International Trade Law

Examines the law of the World Trade Organization and the General Agreement on Tariffs and Trade. Examines rules restraining national restrictions on trade that addresses tariff and non-tariff barriers, discrimination, regionalism, anti-dumping, countervailing duties, and safeguards. Considers the relationship between trade and other regulatory areas or social values, such as environmental protection, health and safety standards, human rights, intellectual property protection. Restricted to Law students only. Prerequisites: Restricted to Law students only.

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## LAWS-9701 (2) Counseling Families in Business

Explores the legal aspects of owning, managing, and participating in a successful family business system, including corporate structure, legal issues, succession planning and estate management, internal capital markets in private enterprise, ownership issues in private businesses, how lawyers can assist with family governance, planning for and managing family philanthropy, gender issues in family business, and conflict resolution. Restricted to Law students only. Recommended prereqs., LAWS 6104, 6157, 6211, and/or 7409  
Prerequisites: Restricted to Law students only.

School of Law Law Business

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## LAWS-9712 (3) Climate Change Law and Policy

Examines the science of climate change and the broader role of science in public policymaking. Reviews the changing legal landscape to abate greenhouse gas emissions, and key issues in policy design. Reviews the Supreme Court's April 2, 2007 decision in Massachusetts v. EPA, overturning EPA's refusal to regulate greenhouse gas pollution from motor vehicle tailpipes, and the aftermath in the courts, Executive Branch and Congress. Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-9722 (3) Energy Law and Regulation

Provides an introduction to energy law and regulation in the United States. Covers basic principles of rate regulation and public utilities, the division of jurisdiction between federal and state governments, and the key federal statutes and regulatory regimes governing natural gas, electricity, and nuclear power. Focuses on the basic federal frameworks for natural gas and electricity regulation, with an emphasis on understanding the messy and uneven transition to wholesale competition in these sectors and, in the electricity context, the experience with state restructuring and retail completion. Restricted to Law students only. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-9735 (3) American Indian Law II

Investigates the legal history and current legal status of Alaska Natives and Native Hawaiians. Addresses other current topics such as tribal water rights, tribal fishing and hunting rights, tribal justice systems, religious freedom, and tribal natural resource and environmental management. Restricted to Law students only. Prereq., LAWS 7725. Prerequisites: Restricted to Law students only.

School of Law Law Envir, Nat Resources, Amer Ind

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## LAWS-9846 (1) LLM Seminar

LLM students study academic legal writing in this 1-credit per semester yearlong course. Topics covered will include: the purpose of academic legal writing; how academic legal writing differs from other forms of legal writing; topic selection; legal research (methods and ethics); first drafts; editing; academic workshops; and publishing. In addition, guest speakers will talk to LLM students about career planning and job seeking. International LLM students will learn about the American legal system. Restricted to Law students only.  
Prerequisites: Restricted to Law students only.

School of Law Law Research and Writing

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## LAWS-9856 (2-4) LL.M Thesis

LL.M students are required to write a thesis in order to graduate. Requires significant work of original research on a topic chosen in close consultation with advisors and other law school faculty, and assignments include due dates for topic selection, drafts, and workshop delivery. Thesis is worth two credits. In exceptional circumstances and only after pre-approval, an LL.M student may enroll for a third or fourth credit. Prerequisites: Restricted to Law students only.

[School of Law](#) [Law](#) [Research and Writing](#)

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# Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

LDSP

## LDSP-1000 (3) The Foundations of 21st Century Leadership

Introduces students to the critical need for and approaches to the practice of creative and effective leadership. Premised on the idea that the potential for leadership is present in all of us. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Chancellor Leaderships Residential Academic Program](#)

## LDSP-1561 (1) Compassionate Leadership and Mindfulness

Explores various practices and traditions that lead to a balanced, physical, mental, emotional, and spiritual life critical to the practice of effective leadership. May be repeated up to 3 total credit hours.

[College of Arts & Sciences](#) [Chancellor Leaderships Residential Academic Program](#)

## LDSP-1571 (1) Topics in Leadership

Examines the complex nature of leadership by applying knowledge and practice to contemporary and social issues. May be repeated up to 3 total credit hours.

[College of Arts & Sciences](#) [Chancellor Leaderships Residential Academic Program](#)

## LDSP-2400 (3) Understanding Privilege and Oppression in Contemporary Society-Leadership

Broad-based, multicultural, multidisciplinary course. Covers the interaction of privilege and oppression in the U.S., focusing on race,

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socioeconomic class, sexual orientation, and physical ability, as well as leadership skills needed to function in a multicultural, global society. Same as FARR 2400. Approved for arts and sciences core curriculum: human diversity or contemporary societies.

College of Arts & Sciences Chancellor Leadership Residential Academic Program

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## LDSP-2820 (3) Multilevel Issue in Leadership

Studies multilevel issues that originate in organizational settings but carry community and global implications. Encourages students to fully explore the complexity and interrelatedness of issues with a special emphasis on leadership and ethical implications. Same as PRLC 2820.

College of Arts & Sciences Chancellor Leadership Residential Academic Program

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## LDSP-2910 (1-3) Field Practicum 1

Offers supervised campus and off-campus experiences tied to course work in the Leadership RAP or the INVST program. See also LDSP 2920. May be repeated up to 6 total credit hours. Same as EDUC 2910.

College of Arts & Sciences Chancellor Leadership Residential Academic Program

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## LDSP-2920 (1-3) Field Practicum 2

Offers supervised campus and off-campus experiences tied to course work in the Leadership RAP or the INVST program. See also LDSP 2910. May be repeated up to 6 total credit hours. Same as EDUC 2920.

College of Arts & Sciences Chancellor Leadership Residential Academic Program

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## LDSP-3100 (3-4) Multicultural Leadership: Theories, Principles and Practices

Focuses on leadership theories and skills necessary for effectiveness in multicultural settings. Students gain understanding of traditional and culturally diverse approaches to leadership and change through comparative analyses of western and non-western theories and practices. Same as ETHN 3201 and INVS 3100. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Chancellor Leadership Residential Academic Program

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## LDSP-4010 (4) Critical Issues in Leadership: A Capstone Course

Critical thinking is fundamental to leadership competency. Leaders must have skill at making judgments and collecting information from a

variety of sources and on topics in which they have limited expertise. Students read, discuss, and write critical evaluations of contemporary leadership theory from an ethical, military, community building, and business perspective. Prereq., a minimum of 10 credit hours towards the Leadership Certificate completed.

[College of Arts & Sciences](#) [Chancellor Leaderships Residential Academic Program](#)

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## LDSP-4932 (1-6) Community Leadership in Action, Part 2

Develops students' expertise as community leaders working for a just and sustainable world. Under the supervision of an instructor and a community advisor, students learn organizational and leadership skills by designing, implementing and evaluating a community-based project. First-hand experience provides students with a deepened understanding of the complex issues facing humanity, and competence with solution-based strategies. May be repeated up to 6 total credit hours. INVS 4932 and LDSP 4932 are the same course.

[College of Arts & Sciences](#) [Chancellor Leaderships Residential Academic Program](#)

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# Courses

Search by College, Department & Category

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All

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**Subject    Number**

LGBT

## LGBT-2000 (3) Introduction to Lesbian, Gay, Bisexual, and Transgender Studies

Investigates the social and historical meanings of racial, gender, and sexual identities and their relationship to contemporary lesbian, bisexual, gay, and transgender communities. Same as WMST 2030. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences | [Lesbian, Gay, Bisexual, Transgender Studies](#)

## LGBT-2707 (3) Introduction to Lesbian, Bisexual, and Gay Literature

Offers students at sophomore and junior levels an introduction to some of the forms, concerns, and genres of contemporary lesbian, bisexual, transgender, and gay writing in English. Prereq., sophomore standing. Same as ENGL 2707.

College of Arts & Sciences | [Lesbian, Gay, Bisexual, Transgender Studies](#)

## LGBT-3796 (3) Queer Theory

Surveys theoretical, critical, and historical writings in the context of lesbian, bisexual, transgender, and gay literature. Examines relationships among aesthetic, cultural, and political agendas, and literary and visual texts of the 20th century. Prereq., sophomore standing. Same as ENGL 3796.

College of Arts & Sciences | [Lesbian, Gay, Bisexual, Transgender Studies](#)

## LGBT-3930 (3) Lesbian, Gay, Bisexual, Transgender, and Queer Studies Internship

Matches selected students with supervised internships in university programs and advocacy groups, local businesses, human service or government agencies. Internships will focus on lesbian, gay, bisexual, transgender or queer issues, such as anti-violence programs, educational outreach, and civil rights initiatives. Recommended prereq., LGBT 2000.

College of Arts & Sciences Lesbian, Gay, Bisexual, Transgender Studies

## LGBT-4287 (3) Studies in Lesbian, Gay, Bisexual, and Transgender Literature

Examines selected British, American, and French literary representations of lesbian and gay identity from the early 16th century to the present. Discusses the changing status of alternate sexuality as a literary and cultural topos, including how same-sex desire is defined, and the rhetorical and ideological difficulties involved in its representation. Specific topics vary each semester. May be repeated up to 9 total credit hours. Restricted to juniors and seniors. Same as ENGL/WMST 4287.

College of Arts & Sciences Lesbian, Gay, Bisexual, Transgender Studies

## LGBT-4840 (3) Independent Study in LGBTQ Studies

Self-directed research project in LGBTQ studies supervised by a faculty member and approved by one of the Co-Directors of the LGBT Studies Certificate Program.

College of Arts & Sciences Lesbian, Gay, Bisexual, Transgender Studies

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# Courses

Search by College, Department & Category

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All

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Subject Number

LIBB

## LIBB-1500 (3) The Dialogue of Art and Religion

Focuses on interdisciplinary study of visual art from diverse cultural traditions. Addresses role and training of the artist; aesthetic issues related to the object; the audience or viewer for which the work is intended; and the context of the work, especially religious and social history. Cultural traditions include Russian Orthodox icons, Himalayan Buddhist thangkas, and Navaho sandpaintings. (In different semesters, the content may shift to include other traditions such as Islamic or Celtic manuscripts, or Haida totem poles.) Approved for arts and sciences core curriculum: ideals and values. Restricted to Libby RAP students. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

## LIBB-1600 (3) Gender and Film

Explores a wide variety of cinematic forms and styles and discusses the treatment of femininity, masculinity, sexuality, and how gender is represented as an artifact of mass culture. Although the course title privileges issues of gender, the course also includes the study of issues of race and ethnicity in film and the inherent connections between the cinematic representations of race and gender. Approved for arts and sciences core curriculum: human diversity. Restricted to Libby RAP students. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

## LIBB-1700 (3) The History of Communication from Caves to Cyberspace

Surveys the history, evolution, and nature of communication and communication technologies. Students learn about the ongoing media revolution and its broader context, considering the interdependence of communication, culture, and society. They critically examine utopian, deterministic, and pessimistic arguments about the influence of new technologies and arts. Course combines lecture, discussion, and group work in a seminar format. Approved for arts and sciences core curriculum: historical context. Restricted to Libby RAP students. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

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## LIBB-2013 (3) Film and the Quest for Truth

Concerns the subjectivity and relativity of truth. Focuses on how and why we pursue (or fail to pursue) the truths about ourselves and about the people and events around us, and how and why such truths are often elusive, fragmentary, and impermanent. Restricted to Libby RAP students. Formerly FILM 2013. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

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## LIBB-2500 (1-3) Special Topics in Libby Residential Academic Program

Introduces timely studio subjects in the visual and performing arts that cannot be offered on a regular basis. Information concerning the studio topics offered in any given semester is available prior to registration from the Libby RAP. May be repeated up to 7 total credit hours. Restricted to Libby RAP students. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

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## LIBB-2510 (1-3) Special Topics in Libby Residential Academic Program

Introduces timely subjects in the visual and performing arts that cannot be offered on a regular basis. Information concerning the seminar topics offered in any given semester is available prior to registration from the Libby RAP. May be repeated up to 7 total credit hours. Restricted to Libby RAP students. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

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## LIBB-2800 (3) Horror Films and American Culture

Examines American horror films in an historical context through which students learn to recognize how horror films represent our culture's "collective fears" and provides an analysis of the horror film genre. Considers the cultural contexts in which horror films are made through study of the creation and reception of these films during specific times in American history. Prereq., FILM 1502. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to Libby Residential Academic Program students only.

[College of Arts & Sciences](#) [Libby Residential Academic Program](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

LIBR

## LIBR-2000 (3) Research Strategies on the Electronic Campus

Critical examination and practical exploration of computer technologies, digital communication, and electronic information systems and services for new students. Restricted to freshmen and sophomores only.

[College of Arts & Sciences](#) [Libraries](#)

## LIBR-3010 (3) Methods of Electronic Library Research

Exploration of the structure, organization, retrieval, and evaluation of electronic information sources through the formulation of search strategies useful for undergraduate research.

[College of Arts & Sciences](#) [Libraries](#)

## LIBR-3900 (1-3) Independent Library Research

In-depth library research project for upper-division students. Prereq., instructor consent.

[College of Arts & Sciences](#) [Libraries](#)

## LIBR-4900 (1-3) Independent Library Research

In-depth library research project for upper-division students. Prereq., instructor consent.

[College of Arts & Sciences](#) [Libraries](#)



# Courses

Search by College, Department & Category

**College/School**

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LING

## LING-1000 (3) Language in U.S. Society

Nontechnical exploration of the ways that language is used in America. Emphasizes language as a social institution and how values and goals of both public institutions and private groups shape and are shaped by language and its use. Meets MAPS requirement for social science: general. Approved for arts and sciences core curriculum: United States context or contemporary societies.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-1010 (3) The Study of Words

Study of English words of Latin and Greek origin, focusing on etymological meaning by analysis of component parts (prefixes, bases, suffixes) and on the ways in which words have changed and developed semantically. Same as CLAS 1010.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-1020 (3) Languages of the World

Explores the issue of human diversity by examining how languages vary around the world. Outlines historical, geographic, and typological classifications of languages across human societies, and the criteria used by linguists for grouping them into language families. Theorizes the relationship between linguistic and cognitive diversity, and considers the impact of language death on humanity. No formal training in linguistics is required. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Linguistics](#)

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## LING-1500 (3) Understanding Grammar

Presents fundamentals of grammar in the Western tradition. Emphasizes making concepts and uses of grammar (as exemplified in English and closely related foreign languages) understandable to the nonspecialist.

College of Arts & Sciences Linguistics

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## LING-1900 (1) Service Learning Practicum: Adult Literacy

Practicum for selected students in LING 1000. Provides practical experience of the impact of illiteracy on individuals, families, and the community at large. Coregistration in service learning recitation is required. Coreq., LING 1000.

College of Arts & Sciences Linguistics

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## LING-2000 (3) Introduction to Linguistics

Introduces the study of languages as structural systems. Principles of sound patterns, word formation, meaning, and sentence structure. Gives attention to language acquisition, psycholinguistics, language families, dialects, historical change in languages, and different language types. Meets MAPS requirement for social science: general.

College of Arts & Sciences Linguistics

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## LING-2400 (3) Language and Gender

Familiarizes students with the effects of gender on language use; discusses popular beliefs and scholarly theories about language and communication. Provides students with tools for exploring the role of language and gender. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Linguistics

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## LING-3005 (3) Cognitive Science

Introduces cognitive science, drawing from psychology, philosophy, artificial intelligence, neuroscience, and linguistics. Studies the linguistic relativity hypothesis, consciousness, categorization, linguistic rules, the mind-body problem, nature versus nurture, conceptual structure and metaphor, logic/problem solving and judgment. Emphasizes the nature, implications, and limitations of the computational model of mind. Prereqs., two of the following: PSYC 2145, LING 2000, CSCI 1300, and PHIL 2440. Same as PSYC 3005, PHIL 3310, and CSCI 3702.

College of Arts & Sciences Linguistics

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## LING-3100 (3) Language Sound Structures

Introduces the sounds of languages and their organization into phonological structures. Prereq., LING 2000 or equivalent.

College of Arts & Sciences Linguistics

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## LING-3220 (3) American Indian Languages in their Social and Cultural Context

A sampling of the many languages and cultures found in America before Columbus. Emphasizes those living in what eventually became the United States, but also gives attention to the languages and higher civilizations of Latin America. Prereq., junior standing. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Linguistics

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## LING-3430 (3) Semantics

Theoretical and practical study of meaning in natural language. Considers both semantic theories and semantic phenomena from diverse languages. Does not treat techniques for improving the use of language. Prereq., LING 2000 or equivalent. Prerequisites: Restricted to junior or senior Linguistics (LING) majors only.

College of Arts & Sciences Linguistics

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## LING-3500 (3) Language and the Public Interest

Studies language in public and private use, concentrating on semantic devices as found in language of political propaganda, advertising, business, and government, as well as everyday use of language between people.

College of Arts & Sciences Linguistics

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## LING-3545 (3) World Language Policies

Examines the economic and sociopolitical impact of choosing English vs. other languages in the U.S. Introduces the study of language policies, rights, and planning in other countries, including the worldwide use of English in social, business, and legal contexts.

College of Arts & Sciences Linguistics

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## LING-3800 (1-4) Special Topics in Linguistics

Intensive study of a selected area or problem in linguistics. May be repeated up to 9 total credit hours.

## LING-4100 (3) Perspectives on Language

Provides extended critical examination of a few selected issues, chosen each term for their general interest and relevance, e.g., the relation between language and thought, or human language vs. animal languages, and computer languages. Prereqs., LING 2000 or equivalent, and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

## LING-4220 (3) Language and Mind

Studies processes of perceiving speech, interpreting it as meaningful, and expressing intentions to communicate as utterances. Emphasizes roles of the brain and of perceptual and motor systems. Writing, gestural, and animal communicative systems also are treated. Prereqs., PSYC 1001 and LING 2000. Same as PSYC 4220.

## LING-4420 (3) Morphology and Syntax

Introduces principles of word formation and sentence structure. Covers major morphological and syntactic structures found in the world's languages, and methods for describing grammatical structures, and includes practice in analyzing data from a variety of languages. Prereq., Ling 2000 or equivalent. Same as Ling 5420.

## LING-4450 (3) Introduction to Formal Syntax

Introduces formal generative grammar, including determining constituent structure, drawing trees, writing rules, understanding the properties of the lexicon and their interaction with syntax, X-bar theory and its modifications, and movement analysis. Prereq., LING 4420 on instructor consent.

## LING-4560 (3) Language Development

Emphasizes acquisition of language by young children; development in later years and into adulthood is also treated. Particular attention given to roles of environment and of neurophysiological endowment in learning to communicate with words, sentences, and narratives. Restricted to Linguistics majors only. Prereqs., LING 2000 and PSYC 1001. Same as SLHS 4560 and PSYC 4560. Prerequisites: Restricted to Linguistics Majors only.

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## LING-4610 (3) English Structure for Teachers of English to Speakers of Other Languages

Description of morphological and syntactic categories and structures of English. Prereq., LING 2000. Same as LING 5610.

College of Arts & Sciences Linguistics

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## LING-4800 (3) Language and Culture

Principles of language structure and how language and culture interrelate; how language and language use are affected by culture; and how culture may be affected by use of, or contact with, particular languages. Prereq., junior standing. Same as ANTH 4800.

College of Arts & Sciences Linguistics

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## LING-4830 (3) Honors Thesis

Required for students who elect departmental honors. Students write an honors thesis based on independent research under the direction of a faculty member. May be repeated up to 7 total credit hours.

College of Arts & Sciences Linguistics

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## LING-4900 (1-3) Independent Study

May be repeated up to 8 total credit hours.

College of Arts & Sciences Linguistics

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## LING-5030 (3) Linguistic Phonetics

Introduces practical and theoretical aspects of phonetics. Provides training in recognition and production of speech sounds, and instruction on fundamentals of articulatory, acoustic, and auditory phonetics. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-5200 (3) Introduction to Computational Corpus Linguistics

Covers computer methods for doing linguistics with on-line corpora. Includes extensive introduction (with lab) to the Python programming

language, UNIX corpus tools, concordance programs, syntactic treebanks, propbanks, and corpora for discourse and phonology research. Restricted to graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Linguistics](#)

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# Courses

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All

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**Subject**   **Number**

LING

## LING-5300 (3) Research in Psycholinguistics

After a general introduction to issues and research methods in psycholinguistics (language production and comprehension, language and cognition, language acquisition), several major current research topics, such as models of speech production, and theories of brain specialization for language, are explored. Prereq., at least one graduate-level course in linguistics, psychology, or computer science. Same as PSYC 5300.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-5410 (3) Phonology

Studies sound systems of language. Introduces both principles of organization of sound systems and major kinds of phonological structures found worldwide. Provides extensive practice in applying phonological principles to data analysis. Prereq., LING 5030 or instructor consent.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-5420 (3) Morphology and Syntax

Introduces principles of word formation and sentence structure. Covers major morphological and syntactic structures found in the world's languages, and methods for describing grammatical structures, and includes practice in analyzing data from a variety of languages. Same as LING 4420. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Linguistics](#)

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## LING-5430 (3) Semantics and Pragmatics

Explores fundamental concepts of semantics and pragmatics, including theories of communication and meaning, representation, conversational implications, speech acts, and discourse structure. Prereq., LING 5420 or instructor consent.

College of Arts & Sciences Linguistics

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## LING-5570 (3) Introduction to Diachronic Linguistics

Familiarizes students with terminology, methods, and theories dealing with phenomena of language change through time. Prereq., LING 5410 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-5610 (3) English Structure for Teachers of English to Speakers of Other Languages

Description of morphological and syntactic categories and structures of English. Prereq., graduate standing. Same as LING 4610.

College of Arts & Sciences Linguistics

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## LING-5620 (3) Teaching ESL Pronunciation

Examines the phonetics and phonology of American English (including prosody) and explores techniques for teaching pronunciation skills to non-native speakers. Treats both general issues and specific problems for students from particular language backgrounds. Prereq., LING 3100 or LING 5030 and 5410. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-5630 (3) Methods and Materials for Teaching English as an Additional Language

Provides an overview of methods and materials for teaching English as an additional language, along with opportunities for students to observe, discuss and analyze these in relation to language teaching principles, linguistic considerations, and global and local contexts. Aimed primarily at the teaching of English to nonnative speaking adults, the course also addresses second and foreign language teaching generally. Recommended prereqs., LING 5610 or 5620. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-5832 (3) Natural Language Processing

Explores the field of natural language processing as it is concerned with the theoretical and practical issues that arise in getting computers to perform useful and interesting tasks with natural language. Covers the problems of understanding complex language

phenomena and building practical programs. Prereq., graduate standing or instructor consent. Same as CSCI 5832.

College of Arts & Sciences Linguistics

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## LING-5900 (1-3) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Linguistics

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## LING-5910 (1-3) TESOL Practicum

Provides observation and supervised teaching experiences in classroom and other contexts involving the teaching of English to speakers of other languages, especially adults and young adult learners in settings outside K-12. Meetings provide opportunities to debrief and to consult on teaching practice; help students connect theory, methods and practice; and support a professional teaching portfolio process. May be repeated up to 6 total credit hours. Prereq., LING 4610/5610 or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6200 (3) Issues and Methods in Cognitive Science

Interdisciplinary introduction to cognitive science, examining ideas from cognitive psychology, philosophy, education, and linguistics via computational modeling and psychological experimentation. Includes philosophy of mind; learning; categorization; vision and mental imagery; consciousness; problem solving; decision making, and game-theory; language processing; connectionism. Prereqs., graduate standing, or at least one course at the 3000-level or higher in computer science, linguistics, philosophy, or psychology. No background in computer science will be presumed Same as CSCI 6402, EDUC 6504, PHIL 6310, and PSYC 6200. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6300 (3) Topics in Language Use

Discusses current issues and research in a selected area related to language use and function. Sample topics include conversational interaction, language policy, language content, and sociolinguistic variation. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6310 (3) Sociolinguistic Analysis

Serves as an advanced introduction to the empirical and theoretical foundations of contemporary sociolinguistic analysis, with special emphasis on linguistic variation, diversity and change. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6320 (3) Linguistic Anthropology

Serves as an advanced introduction to the empirical and theoretical foundations of contemporary linguistic anthropology, with special emphasis on the ways in which culture and society emerge semiotically through language and discourse. Same as ANTH 6320.

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6450 (3) Syntactic Analysis

Introduces the major constructs used by formal theories of syntax to capture the relationship between meaning and syntactic form and uses data from diverse languages to explore the universality of these constructs. Restricted to graduate students.

College of Arts & Sciences Linguistics

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## LING-6510 (3) Language Structures

Surveys the structure of one or more languages, emphasizing understanding how parts of the language interact. Designed to supplement courses in which parts of languages are used to illustrate theoretical claims. Prereqs., LING 5410 and 5420. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6520 (3) Topics in Comparative Linguistics

Students compare and contrast selected structures of languages treated from a typological, genetic, or a real perspective. No special prior knowledge of the subject language is required. Prereqs., LING 5410, 5420, and 5570, or equivalent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-6560 (3) Language Acquisition

Theories and research methods in first-language acquisition of phonology, morphology, syntax, semantics, and pragmatics. Prereqs., LING 5410, 5420, and 5430, or instructor consent.

College of Arts & Sciences Linguistics

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## LING-6940 (1) Master's Degree Candidate

## LING-6950 (1-6) Master's Thesis

## LING-7000 (3) Methods of Typological Research 1

Research practicum that provides experience in discovering generalizations about language from observations over a sample of individual languages. Students practice the steps in such research from formulation of research questions to preliminary sketch of results under close faculty supervision. Prereqs., LING 5410, 5420, and 5570; or equivalent.

## LING-7030 (3) Phonetic Theory and Analysis

Provides students with the practical skills and the conceptual framework to do independent research in phonetics (or in other areas relying on phonetic data). Introduces current and traditional issues in phonetic research (both experimental and theoretical) and gives training in analytical methods. Prereqs., LING 5030 and 5410 or equivalent.

## LING-7100 (3) Field Methods 1

Introduces the process of discovering structure of a language from data obtained directly from its speakers. Emphasizes effectiveness in the field context, rapid recognition of structural features, and preliminary formulation using computational tools. Prereqs., LING 5410 and 5420, or equivalent.

## LING-7320 (3) Narrative and Identity

Examines the ways in which identities are constructed, contested, and negotiated through narrative practice.



# Courses

Search by College, Department & Category

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**Subject**    **Number**

LING

## LING-7350 (3) Language and Gender in Cultural Perspective

Examines organizations of language and gender in a variety of societies and cultures from the perspectives of sociolinguistics, linguistic anthropology, and socially-oriented discourse analysis.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-7360 (3) Language and Sexuality

Explores the role of language in the social construction and articulation of sexuality.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-7410 (3) Phonological Theory

Phonetic and morphophonological representations: distinctive features, segments, prosodic structures, morphological structures. Phonological processes and their interaction. Naturalness conditions. Prereq., LING 5410 or equivalent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Linguistics](#)

## LING-7415 (2) Cognitive Science Research Practicum

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint Phd in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., CSCI 6402 or EDUC

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6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereq., CSCI 7762 or EDUC 6505 or LING 7762 or PHIL 7310 or PSYC 7762. Same as PSYC 7415, CSCI 7412, PHIL 7415, and EDUC 6506. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-7420 (3) Syntactic Theory

Covers various topics in syntactic theory. May be repeated up to 9 total credit hours with instructor consent. Prereq., LING 5420 or equivalent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-7425 (2) Cognitive Science Research Practicum 2

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint Phd in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., LING 7415 or PSCY 7415 or CSCI 7412 or EDUC 6506. Same as PSYC 7425, CSCI 7422, PHIL 7425, and EDUC 6516. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Linguistics

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## LING-7430 (3) Semantic Theory

Current developments in the theory of linguistic semantics. Topics include truth-conditional theories, generative linguistic theories, semantic theories of communicative competence, and integration of these theories in development of a combined theory of semantics and pragmatics. Prereq., LING 5430 or instructor consent.

College of Arts & Sciences Linguistics

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## LING-7570 (3) Advanced Diachronic Linguistics

Presents theories of language change. Discusses mechanisms of language change, its trajectories over linguistic categories and items, and its relation to theories of grammar and of language variation. Prereqs., LING 5410, 5420, and 5570, or equivalent. .

College of Arts & Sciences Linguistics

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## LING-7762 (1-2) Readings and Research in Cognitive Science

Interdisciplinary reading of innovative theories and methodologies of cognitive science. Participants share interdisciplinary perspectives through in-class and online discussion and analysis of controversial texts and of their own research in cognitive science. Prereq., graduate standing. Same as CSCI 7762, EDUC 6505, and PSYC 7765.

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## LING-7775 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the ICS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in ICS Cognitive Science Academic Programs. Same as PSYC 7775, CSCI 7772, EDUC 7775, SLHS 7775, and PHIL 7810. Prerequisites: Restricted to Graduate Students only.

## LING-7800 (1-3) Open Topics in Linguistics

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. Contact the department office for information. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## LING-7900 (1-3) Independent Study

May be repeated up to 7 total credit hours.

## LING-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

MATH

## MATH-1005 (3) Introduction to College Mathematics

Introductory level mathematics course which presents a college level introduction to algebraic functions and their applications. Credit not granted for this course and MATH 1011. Course is only offered through the Student Academic Service Center. Meets MAPS requirement for mathematics.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-1011 (3) Fundamentals and Techniques of College Algebra

Covers simplifying algebraic expressions, factoring linear and quadratic equations, inequalities, exponentials, logarithms, functions, and graphs, and systems of equations. Credit not granted for this course and MATH 1005 or 1150. Prereq., one year high school algebra. Meets MAPS requirement for mathematics. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-1012 (3) Quantitative Reasoning and Mathematical Skills

Promotes mathematical literacy among liberal arts students. Teaches basic mathematics, logic, and problem-solving skills in the context of higher level mathematics, science, technology, and/or society. This is not a traditional math class, but is designed to stimulate interest in and appreciation of mathematics and quantitative reasoning as valuable tools for comprehending the world in which we live. Credit not granted for this course and QRMS 1010. Meets MAPS requirement for mathematics. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

[College of Arts & Sciences](#) [Mathematics](#)

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## MATH-1021 (2) Numerical and Analytical College Trigonometry

Covers trigonometric functions, identities, solutions of triangles, addition and multiple angle formulas, inverse and trigonometric functions, and laws of sines and cosines. Credit not granted for this course and MATH 1150, 1030 or 1040. Prereqs., MATH 1011 or 1020 or 1 1/2 years of high school algebra and 1 year of high school geometry.

College of Arts & Sciences Mathematics

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## MATH-1071 (3) Finite Mathematics for Social Science and Business

Discusses systems of linear equations and introduces matrices, linear programming, and probability. Prereq., MATH 1011 or 1 1/2 years of high school algebra. Credit not granted for this course and MATH 1050, 1060 and 1070. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1081 (3) Calculus for Social Science and Business

Covers differential and integral calculus of algebraic, logarithmic, and exponential functions. Prereq., MATH 1011, 1071, 1010, or 1070 or placement exam score for MATH 1020 or two years high school algebra. Credit not granted for this course and MATH 1080, 1090, 1100, 1300, 1310, APPM 1350, and ECON 1088. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1110 (3) The Spirit and Uses of Mathematics 1

For prospective elementary teachers. Includes a study of problem-solving techniques in mathematics, the uses and role of mathematics in our society, and the structure of our familiar number systems. Additional topics are chosen from number theory, ancient numeration systems, computer sciences, modern geometry and algebra and elementary logic. Prereq., one year of high school algebra and one year of plane geometry. The combination MATH 1110 and 1120 is approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1120 (3) The Spirit and Uses of Mathematics 2

Continuation of MATH 1110. Prereq., one year of high school algebra and one year of plane geometry. The combination MATH 1110 and 1120 is approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1130 (3) Mathematics from the Visual Arts

Introduces mathematical concepts through the study of visual arts. Credit not granted for this course and QRMS 1130. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1150 (4) Precalculus Mathematics

Develops techniques and concepts prerequisite to calculus through the study of trigonometric, exponential, logarithmic, polynomial, and other functions. Prereq., one and a half years of high school algebra. Students having credit for college algebra and trigonometry may not receive additional credit for MATH 1150. Students with credit for college algebra receive only 2 additional hours of credit for MATH 1150. Similar to MATH 1000, 1010, 1020, 1011, 1021, 1030, and 1040. Meets MAPS requirement for mathematics. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1300 (5) Calculus 1

Topics include limits, derivatives of algebraic and trigonometric functions, applications of the derivative, integration and application of the definite integral. Prereqs., two years high school algebra, one year geometry, and 1/2 year trigonometry or MATH 1150. Credit not granted for this course and MATH 1081, 1310, APPM 1345, 1350, and ECON 1088. Similar to MATH 1080, 1090, and 1100. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1310 (5) Calculus, Stochastics, and Modeling

Calculus, probability, statistics, and discrete and continuous modeling are central to understanding the behavior of complex systems, ranging from gene networks and cells to brains and ecosystems. This course is similar to MATH 1300, but a greater emphasis is placed on relevance and applications to complex systems. Especially recommended for biology majors. Prereq., 2 years high school algebra, 1 year geometry, and 1/2 year trigonometry, or MATH 1150. Credit not granted for this course and MATH 1080, 1081, 1090, 1100, 1300, APPM 1350, or ECON 1088. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-1410 (3) Mathematics for Secondary Educators

Assists students in meeting state mathematics certification requirements. Topics include problem solving, number systems, geometry and measurement, probability and statistics. Enrollment is restricted to students already admitted to or intending to apply for admission to the

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secondary teacher education program. Prereqs., one year high school algebra, one year geometry. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills. Prerequisites: Restricted to PRED, EDEL, EDEN, EDSS, EDSC, EDMU, EDSP, EDFR, EDGR, EDIT, EDJP or EDLT Students only.

College of Arts & Sciences Mathematics

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## MATH-2001 (3) Introduction to Discrete Mathematics

Introduces the ideas of rigor and proof through an examination of basic set theory, quantification theory, elementary counting, discrete probability, and additional topics. Prereq., MATH 1300 or APPM 1350.

College of Arts & Sciences Mathematics

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## MATH-2300 (5) Calculus 2

Continuation of MATH 1300. Topics include transcendental functions, methods of integration, polar coordinates, conic sections, improper integrals, and infinite series. Prereq., MATH 1300. Credit not granted for this course and MATH 1320 or APPM 1360.

College of Arts & Sciences Mathematics

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## MATH-2380 (3) Mathematics for the Environment

An interdisciplinary course where analysis of real phenomena such as acid rain, population growth, and road-killed rabbits in Nevada leads to consideration of various fundamental concepts in mathematics. One-third of the course consists of individual projects chosen by students. Prereq., proficiency in high school mathematics. Credit not granted for this course and QRMS 2380. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Mathematics

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## MATH-2400 (4) Calculus 3

Continuation of MATH 2300. Topics include vectors, three-dimensional analytic geometry, partial differentiation and multiple integrals, and vector analysis. Prereq., MATH 2300. Credit not granted for this course and APPM 2350.

College of Arts & Sciences Mathematics

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## MATH-2510 (3) Introduction to Statistics

Elementary statistical measures. Introduces statistical distributions, statistical inference, and hypothesis testing. Prereq., two years of high school algebra. Credit not granted for this course and MATH 4520/5520 or MATH 3510.

## MATH-3001 (3) Analysis 1

Provides a rigorous treatment of the basic results from elementary Calculus. Topics include the topology of the real line, sequences of numbers, continuous functions, differentiable functions, and the Riemann integral. Prereq., MATH 2001.

## MATH-3110 (3) Introduction to Theory of Numbers

Studies the set of integers, focusing on divisibility, congruences, arithmetic functions, sums of squares, quadratic residues and reciprocity, and elementary results on distributions of primes. Prereq., MATH 2001. Offered each spring.

## MATH-3120 (3) Functions and Modeling

Engages the students in lab-based activities designed to strengthen and expand knowledge of the topics in secondary mathematics, focusing especially on topics from Precalculus and Calculus. The labs will involve the use of multiple representations, transformations, data analysis techniques, and interconnections among geometry, probability and algebra. A recurrent theme will be building relationships between discrete and continuous reasoning. Prereqs., Calculus I, MATH 2001, or instructor consent.

## MATH-3130 (3) Introduction to Linear Algebra

Examines basic properties of systems of linear equations, vector spaces, linear independence, dimension, linear transformations, matrices, determinants, eigenvalues, and eigenvectors. Prereq., MATH 2300 or APPM 1360. Credit not granted for this course and APPM 3310.

## MATH-3140 (3) Abstract Algebra 1

Studies the elementary theory of groups, rings, fields, polynomials, group and ring homomorphisms, and isomorphisms. Prereq., MATH 2001 and 3130.

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## MATH-3170 (3) Combinatorics 1

Covers basic methods and results in combinatorial theory. Includes numeration methods, elementary properties of functions and relations, and graph theory. Emphasizes applications. Prereq., MATH 2001.

[College of Arts & Sciences](#) [Mathematics](#)

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## MATH-3210 (3) Euclidean and Non-Euclidean Geometry

Axiomatic systems. Foundations of Euclidean and Lobachevskian geometries. Prereq., MATH 2001 and 3130.

[College of Arts & Sciences](#) [Mathematics](#)

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**    **Number**

MATH

## MATH-3510 (3) Introduction to Probability and Statistics

Introduces the basic notions of Probability: random variables, expectation, conditioning, and the standard distributions (Binomial, Poisson, Exponential, Normal). This course also covers the Law of Large Numbers and Central Limit Theorem as they apply to statistical questions: sampling from a random distribution, estimation, and hypothesis testing. Prereqs., MATH 2001 and MATH 2300 or APPM 1360. Credit not granted for this course and MATH 2510 or MATH 4510.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-3850 (1) Seminar in Guided Mathematics Instruction

Provides Learning Assistants with an opportunity to analyze assessment data for formative purposes, and develop instructional plans as a result of these analyses. These formative assessment analyses will build on the literature in the learning sciences. Students will gain direct experiences interacting with the tools of the trade, especially with actual assessment data and models of instruction. May be repeated up to 3 total credit hours. Restricted to Learning Assistants in Math. Coreq., EDUC 4800.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-4000 (3) Foundations of Mathematics

Focuses on a complete deductive framework for mathematics and applies it to various areas. Presents Goedel's famous incompleteness theorem about the inherent limitations of mathematical systems. Uses idealized computers to investigate the capabilities and limitations of human and machine computation. Prereq., MATH 2001 plus one of 3001, 3130, 3140, or 3210. Same as MATH 5000.

[College of Arts & Sciences](#) [Mathematics](#)

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## MATH-4001 (3) Analysis II

Provides a rigorous treatment of infinite series, sequences of functions, and an additional topic chosen by the instructor (for example, multivariable analysis, the Lebesgue integral, or Fourier analysis). Prereqs., MATH 3001 and MATH 3130.

College of Arts & Sciences Mathematics

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## MATH-4120 (3) Introduction to Operations Research

Studies linear and nonlinear programming, the simplex method, duality, sensitivity, transportation, and network flow problems, some constrained and unconstrained optimization theory, and the Kuhn-Tucker conditions, as time permits. Prereqs., MATH 3130 or APPM 3310. Same as MATH 5120 and APPM 4120.

College of Arts & Sciences Mathematics

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## MATH-4140 (3) Abstract Algebra 2

Covers group actions, Sylow theory, Field theory, and some Galois theory. Prereq., MATH 3140.

College of Arts & Sciences Mathematics

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## MATH-4200 (3) Introduction to Topology

Introduces the basic concepts of point set topology. Includes topological spaces, metric spaces, homeomorphisms, connectedness, and compactness. Prereqs., MATH 3001 or MATH 4310.

College of Arts & Sciences Mathematics

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## MATH-4210 (3) Euclidean and Non-Euclidean Geometry II

Continues the study of Euclidean and non-Euclidean geometry from MATH 3210 and examines a more advanced topic from geometry chosen by the instructor (e.g., projective geometry or three-dimensional geometry). Prereq., MATH 3120.

College of Arts & Sciences Mathematics

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## MATH-4230 (3) Geometry of Curves and Surfaces

Introduces the modern differential geometry of plane curves, space curves, and surfaces in space. Computers are used, but no prior knowledge of computer programming is required. Prereqs., Calculus 3 and MATH 3130.

## MATH-4320 (3) Multivariable Analysis

Instructs students in calculus of several variables. Topics include continuity, differentiation and integration, implicit function theorem, inverse function theorem, and if time permits, Fourier series. Prereq., MATH 3130 or APPM 2360.

## MATH-4330 (3) Fourier Analysis

The notion of Fourier analysis, via series and integrals, of periodic and nonperiodic phenomena is central to many areas of mathematics. Develops the Fourier theory in depth, and considers such special topics and applications as wavelets, Fast Fourier Transforms, seismology, digital signal processing, differential equations, and Fourier optics. Prereq., MATH 3001 or instructor consent. Same as MATH 5330.

## MATH-4430 (3) Ordinary Differential Equations

Involves an elementary systematic introduction to first-order scalar differential equations,  $n$ th order linear differential equations, and  $n$ -dimensional linear systems of first-order differential equations. Additional topics are chosen from equations with regular singular points, Laplace transforms, phase plane techniques, basic existence and uniqueness, and numerical solutions. Prereqs., Calculus 3, and MATH 3130 or APPM 3310 (min grade C). Similar to APPM 2360.

## MATH-4440 (3) Mathematics of Coding and Cryptography

Gives an introduction, with proofs, to the algebra and number theory used in coding and cryptography. Basic problems of coding and cryptography are discussed; prepares students for the more advanced ECEN 5032 and 5682. Prereq., MATH 3130. Recommended prereqs., MATH 3110 and 3140. Same as MATH 5440.

## MATH-4450 (3) Introduction to Complex Variables

Theory of functions of one complex variable, including integrals, power series, residues, conformal mapping, and special functions. Prereqs., MATH 2400 and 3001.

## MATH-4470 (3) Partial Differential Equations 1

Studies initial, boundary, and eigenvalue problems for the wave, heat, and potential equations. Solution by separation of variables, Green's function, and variational methods. Prereq., MATH 4430 or equivalent. Same as MATH 5470.

## MATH-4510 (3) Introduction to Probability Theory

Studies axioms, combinatorial analysis, independence and conditional probability, discrete and absolutely continuous distributions, expectation and distribution of functions of random variables, laws of large numbers, central limit theorems, and simple Markov chains. Prereqs., MATH 2400, or APPM 2350, and MATH 3130. Credit not granted for this course and APPM 3570, ECEN 3810, or MATH 3510.

## MATH-4520 (3) Introduction to Mathematical Statistics

Examines point and confidence interval estimation. Principles of maximum likelihood, sufficiency, and completeness: tests of simple and composite hypotheses, linear models, and multiple regression analysis. Analyzes variance distribution-free methods. Prereq., MATH 4510 or APPM 3570. Same as MATH 5520 and APPM 4520. Credit not granted for this course and MATH 2510.

## MATH-4540 (3) Introduction to Time Series

Stresses basic properties, linear extrapolation, and filtering of stationary random functions. Topics also include spectral analysis and estimation of the power spectrum using computers. Prereqs., MATH 4510/APPM 3570 and MATH 4520/APPM 4520. Same as MATH 5540 and APPM 4540.

## MATH-4650 (3) Intermediate Numerical Analysis 1

Focuses on numerical solution of nonlinear equations, interpolation, methods in numerical integration, numerical solution of linear systems, and matrix eigenvalue problems. Stresses significant computer applications and software. Prereqs., Appm 3310 or Math 3130, and knowledge of a programming language. Same as Appm 4650.

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## MATH-4660 (3) Intermediate Numerical Analysis 2

Topics include solution of algebraic and transcendental equations, and linear and nonlinear systems of equations. Highlights interpolation, integration, solution of ordinary differential equations, least squares, sources of error and error analysis, computer implementation of numerical methods, matrix eigenvalue problems, and summation of infinite series. See also MATH 4650. Prereq., MATH 4650. Same as APPM 4660.

College of Arts & Sciences Mathematics

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## MATH-4730 (3) Set Theory

Studies in detail the theory of cardinal and ordinal numbers, definition by recursion, the statement of the continuum hypothesis, simple cardinal arithmetic, and other topics chosen by the instructor. Prereq., MATH 2001 plus one upper division MATH class.

College of Arts & Sciences Mathematics

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## MATH-4805 (1) Mathematical Teacher Training: Inclusive Pedagogy

Designed to train students to teach mathematics in an inclusive, multicultural environment. Students teach a math course within the McNeill Academic Program (Student Academic Services Center) meeting weekly with faculty and colleagues to learn to re-design curriculum, fine-tune pedagogical practices, create assessments, mentor undergraduate instructor assistants and create an inclusive classroom environment. May be repeated up to 4 total credit hours. Prereqs., senior or graduate standing, experience with college-level instruction.

College of Arts & Sciences Mathematics

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## MATH-4820 (3) History of Mathematical Ideas

Examines the evolution of a few mathematical concepts (e.g., number, geometric continuum, or proof), with an emphasis on the controversies surrounding these concepts. Begins with Ancient Greek mathematics and traces the development of mathematical concepts through the middle ages into the present. Prereq., two upper division courses in mathematics. Recommended prereq., completion of upper division Written Communication requirement.

College of Arts & Sciences Mathematics

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## MATH-4890 (1-3) Honors Independent Study

Offered for students doing a thesis for departmental honors.

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## MATH-4900 (1-3) Independent Study

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# Courses

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Search by Course Number

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MATH

## MATH-5000 (3) Foundations of Mathematics

Focuses on a complete deductive framework for mathematics and applies it to various areas. Presents Goedel's famous incompleteness theorem about the inherent limitations of mathematical systems. Uses idealized computers to investigate the capabilities and limitations of human and machine computation. Restricted to graduate students only. Prereqs., MATH 3130 and 3140. Same as MATH 4000.

Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-5030 (3) Intermediate Mathematical Physics 1

Surveys classical mathematical physics, starting with complex variable theory and finite dimensional vector spaces. Discusses topics in ordinary and partial differential equations, the special functions, boundary value problems, potential theory, and Fourier analysis.

Prereqs., MATH 4001 and 4320. Undergraduates must have approval of the instructor. Same as PHYS 5030. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Mathematics](#)

## MATH-5040 (3) Intermediate Mathematical Physics 2

Surveys classical mathematical physics, starting with complex variable theory and finite dimensional vector spaces. Discusses topics in ordinary and partial differential equations, the special functions, boundary value problems, potential theory, and Fourier analysis. Prereq., MATH 5030. Undergraduates must have approval of the instructor. Same as PHYS 5040.

[College of Arts & Sciences](#) [Mathematics](#)

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## MATH-5120 (3) Introduction to Operations Research

Prereq., MATH 3130 or APPM 3310. Undergraduates must have approval of the instructor. Same as MATH 4120, APPM 5120.

College of Arts & Sciences Mathematics

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## MATH-5150 (3) Linear Algebra

Highlights vector spaces, linear transformations, eigenvalues and eigenvectors, and canonical forms. Prereq., MATH 3130.

Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

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## MATH-5330 (3) Fourier Analysis

Undergraduates must have approval of the instructor. Prereq., MATH 4001. Same as MATH 4330. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5430 (3) Ordinary Differential Equations

Introduces theory and applications of ordinary differential equations, including existence and uniqueness theorems, qualitative behavior, series solutions, and numerical methods, for scalar equations and systems. Prereqs., MATH 3130 and 4310. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5440 (3) Mathematics of Coding and Cryptography

Undergraduates must have approval of the instructor. Prereq., MATH 3130. Recommended prereqs., MATH 3110 and 3140. Same as MATH 4440. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5470 (3) Partial Differential Equations 1

Prereq., MATH 4430 or APPM 2360. Undergraduates need instructor consent. Same as MATH 4470. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5520 (3) Introduction to Mathematical Statistics

Prereq., MATH 4510 or APPM 3570. Undergraduates must have approval of the instructor. Same as MATH 4520 and APPM 5520.  
Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5540 (3) Introduction to Time Series

Prereqs., MATH 4510/APPM 3570 and MATH 4520/APPM 4520. Undergraduates must have approval of the instructor. Same as MATH 4540/APPM 5540.

College of Arts & Sciences Mathematics

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## MATH-5600 (3) Numerical Analysis 1

Solution of nonlinear algebraic equations, interpolation, approximation theory, and numerical integration. Prereqs., APPM 3130 or MATH 3130, and experience with a scientific programming language. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-5610 (3) Numerical Analysis 2

Solution of linear systems, eigenvalue problems, optimization problems, and ordinary and partial differential equations. Prereq., MATH 5600 or APPM 5600. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

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## MATH-5905 (1) Mathematics Teacher Training

Designed to train students to become effective teachers. Students teach a mathematics course, meeting weekly with faculty to discuss problems particular to the teaching of mathematics. Prereqs., graduate standing and experience as a teaching assistant. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-6000 (3) Model Theory

Proves the compactness theorem, showing the essential finiteness of logical implication. Proves many basic properties of theories, showing how the syntactic form of statements influences their behavior w.r.t. different models. Finally, studies properties of elements that cannot be stated by a single formula (the type of the element) and shows it can be used to characterize certain models. Prerequisites: Restricted to Graduate Students only.

## MATH-6010 (3) Computability Theory

Studies the computable and uncomputable. Shows that there are undecidable problems, and from there builds up the theory of sets of natural numbers under Turing reducibility. We will study Turing reducibility, the arithmetical hierarchy, oracle constructions, and end with the finite injury priority method. Recommended prereq., MATH 6000. Prerequisites: Restricted to Graduate Students only.

## MATH-6110 (3) Introduction to Number Theory

Examines divisibility properties of integers, congruencies, diophantine equations, arithmetic functions, quadratic residues, distribution of primes, and algebraic number fields. Prereq., MATH 3140. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

## MATH-6130 (3) Algebra 1

Studies group theory and ring theory. Prereq., MATH 3140. Undergraduates need instructor consent. Prerequisites: Restricted to Graduate Students only.

## MATH-6140 (3) Algebra 2

Studies modules, fields, and Galois theory. Prereq., MATH 6130. Undergraduates need instructor consent.

## MATH-6150 (3) Commutative Algebra

Introduces topics used in number theory and algebraic geometry, including radicals of ideals, exact sequences of modules, tensor products, Ext, Tor, localization, primary decomposition of ideals, and Noetherian rings. Prereq., MATH 6140. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

## MATH-6170 (3) Algebraic Geometry

Introduces algebraic geometry, including affine and projective varieties, rational maps and morphisms, and differentials and divisors.

Additional topics might include Bezout's Theorem, the Riemann-Roch Theorem, elliptic curves, and sheaves and schemes. Prereq., MATH 6140. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

## MATH-6180 (3) Algebraic Number Theory

Introduces number fields and completions, norms, discriminants and differentials, finiteness of the ideal class group, Dirichlet's unit theorem, decomposition of prime ideals in extension fields, decomposition, and ramification groups. Prereqs., MATH 6110 and 6140. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

## MATH-6190 (3) Analytic Number Theory

Acquaints students with the Riemann Zeta-function and its meromorphic continuation, characters and Dirichlet series, Dirichlet's theorem on primes in arithmetic progressions, zero-free regions of the zeta function, and the prime number theorem. Prereqs., MATH 6110 and 6350. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

## MATH-6210 (3) Introduction to Topology 1

Introduces elements of general topology, algebraic topology, and differentiable manifolds. See also MATH 6220. Prereqs., MATH 3130, 3140 and 4320. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

## MATH-6220 (3) Introduction to Topology 2

Introduces elements of general topology, algebraic topology, and differentiable manifolds. See also MATH 6210. Prereq., MATH 6210. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics



## Courses

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MATH

### MATH-6230 (3) Introduction to Differential Geometry 1

Instructs students on fundamental concepts such as manifolds, differential forms, de Rham cohomology, Riemannian metrics, connections and curvatures, fiber bundles, complex manifolds, characteristic classes, and applications to physics. Prereqs., MATH 3130 and 4320. Undergraduates must have instructor consent. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Mathematics](#)

### MATH-6240 (3) Introduction to Differential Geometry 2

Continuation of MATH 6230. Undergraduates must have instructor consent.

[College of Arts & Sciences](#) [Mathematics](#)

### MATH-6250 (3) Theory of Rings

Studies semi-simple Artinian rings, the Jacobson radical, group rings, representations of finite groups, central simple algebras, division rings and the Brauer group. Prereq., MATH 6130, 6140. Undergraduates must have approval of the instructor.

[College of Arts & Sciences](#) [Mathematics](#)

### MATH-6260 (3) Geometry of Quantum Fields and Strings

Focuses on differential geometric techniques in quantum field and string theories. Topics include spinors, Dirac operators, index theorem, anomalies, geometry of superspace, supersymmetric quantum mechanics and field theory, and nonperturbative aspects in field and string theories. Prereq., MATH 6230, PHYS 5250, or instructor consent. Recommended prereqs., MATH 6240 and PHYS 7280.

Undergraduates must have approval of the instructor. Same as PHYS 6260.

College of Arts & Sciences Mathematics

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## MATH-6270 (3) Theory of Groups

Studies nilpotent and solvable groups, simple linear groups, multiply transitive groups, extensions and cohomology, representations and character theory, and the transfer and its applications. Prereq., MATH 6130. Recommended prereq., MATH 6140. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

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## MATH-6280 (3) Advanced Algebraic Topology

Covers homotopy theory, spectral sequences, vector bundles, characteristic classes, K-theory and applications to geometry and physics. Prereq., MATH 6220 or instructor consent. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-6290 (3) Homological Algebra

Studies categories and functors, abelian categories, chain complexes, derived functors, Tor and Ext, homological dimension, group homology and cohomology. If time permits, the instructor may choose to cover additional topics such as spectral sequences or Lie algebra homology and cohomology. Prereqs., MATH 6130 and 6140. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-6310 (3) Introduction to Real Analysis 1

Presents the basic notions of analysis, e.g., limits,  $\limsup$  and  $\liminf$ , continuity, and the topology of the real line; develops the number theory of Lebesgue measure and the Lebesgue integral on the line, emphasizing the various notions of convergence and the standard convergence theorems. Applications are made to the classical  $L^p$  spaces. Prereq., MATH 4001. Instructor consent required for undergraduates. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-6320 (3) Introduction to Real Analysis 2

Covers general metric spaces, the Baire Category Theorem, and general measure theory, including the Radon-Nikodym and Fubini theorems. Presents the general theory of differentiation on the real line and the Fundamental Theorem of Lebesgue Calculus. Prereq., MATH 6310. Instructor consent required for undergraduates.

## MATH-6350 (3) Functions of a Complex Variable 1

Focuses on complex numbers and the complex plane. Includes Cauchy-Riemann equations, complex integration, Cauchy integral theory, infinite series and products, and residue theory. Prereq., MATH 4001. Undergraduates need instructor consent. . Prerequisites: Restricted to Graduate Students only.

## MATH-6360 (3) Functions of a Complex Variable 2

Focuses on conformal mapping, analytic continuation, singularities, and elementary special functions. Prereq., MATH 6350. Instructor consent required for undergraduates.

## MATH-6534 (3) Topics in Mathematical Probability

Offers selected topics in probability such as sums of independent random variables, notions of convergence, characteristic functions, Central Limit Theorem, random walk, conditioning and martingales, Markov chains, and Brownian motion. Prereq., MATH 6310 or equivalent. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

## MATH-6550 (3) Introduction to Stochastic Processes

Systematic study of Markov chains and some of the simpler Markov processes, including renewal theory, limit theorems for Markov chains, branching processes, queuing theory, birth and death processes, and Brownian motion. Applications to physical and biological sciences. Prereqs., MATH 4001, 4510 or APPM 3570 or 4560. Undergraduates must have approval of the instructor. Same as APPM 6550. Prerequisites: Restricted to Graduate Students only.

## MATH-6730 (3) Set Theory

Presents cardinal and ordinal arithmetic, and basic combinatorial concepts, including stationary sets, generalization of Ramsey's theorem, and ultrafilters, consisting of the axiom of choice and the generalized continuum hypothesis. Prereqs., MATH 4000 and 4730, or MATH 5000, or instructor consent. Undergraduates need instructor consent. Prerequisites: Restricted to Graduate Students only.

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## MATH-6740 (3) Forcing

Presents independence of the axiom of choice and the continuum hypothesis, Souslin's hypothesis, and other applications of the method of forcing. Introduces the theory of large cardinals. Prereq., MATH 6730. Undergraduates need instructor consent.

College of Arts & Sciences Mathematics

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## MATH-6900 (1-3) Independent Study

Undergraduates must have approval of the instructor. May be repeated up to 6 total credit hours.

College of Arts & Sciences Mathematics

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## MATH-6940 (1) Master's Degree Candidate

This course is for students preparing for the no-thesis option for a master's degree. The content is set by the students' advisors. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-6950 (1-6) Master's Thesis

College of Arts & Sciences Mathematics

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## MATH-8114 (3) Topics in Number Theory

May include the theory of automorphic forms, elliptic curves, or any of a variety of advanced topics in analytic and algebraic number theory. Prereq., MATH 6110. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-8174 (3) Topics in Algebra I

Prereqs., MATH 6130 and 6140. Undergraduates must have approval of the instructor.

College of Arts & Sciences Mathematics

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## MATH-8250 (3) Mathematical Theory of Relativity 1

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Focuses on Maxwell equations, Lorentz force, Minkowski space-time, Lorentz, Poincare, and conformal groups, metric manifolds, covariant differentiation, Einstein space-time, cosmologies, and unified field theories. Prereq., instructor consent. Undergraduates must have approval of the instructor.

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## MATH-8304 (3) Topics in Analysis 1

Presents advanced topics in analysis including Lie groups, Banach algebras, operator theory, ergodic theory, representation theory, etc. Prereqs., MATH 8330 and 8340, or instructor consent. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-8330 (3) Functional Analysis 1

Introduces such topics as Banach spaces (Hahn-Banach theorem, open mapping theorem, etc.), operator theory (compact operators and integral equations, and spectral theorem for bounded self-adjoint operators), and Banach algebras (the Gelfand theory). See also MATH 8340. Prereqs., MATH 6310 and 6320. Undergraduates must have approval of the instructor. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

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## MATH-8340 (3) Functional Analysis 2

Introduces such topics as Banach spaces (Hahn-Banach theorem, open mapping theorem, etc.), operator theory (compact operators and integral equations, and spectral theorem for bounded self-adjoint operators), and Banach algebras (the Gelfand theory). See also MATH 8330. Prereq., MATH 8330. Undergraduates must have approval of the instructor.

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## MATH-8370 (3) Harmonic Analysis 1

Examines trigonometric series, periodic functions, diophantine approximation, and Fourier series. Also covers Bohr and Stepanoff almost periodic functions, positive definite functions, and the L1 and L2 theory of the Fourier integral. Applications to group theory and differential equations. See also MATH 8380. Prereq., MATH 5150 and 6320. Undergraduates must have approval of the instructor.

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# Courses

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MATH

## MATH-8714 (3) Topics in Logic 1 and 2

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## MATH-8815 (1-3) Ulam Seminar

May be repeated up to 3 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Mathematics

## MATH-8900 (1-3) Independent Study

Undergraduates must have approval of the instructor. May be repeated up to 6 total credit hours.

College of Arts & Sciences Mathematics

## MATH-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School portion of the catalog.

College of Arts & Sciences Mathematics



## Courses

Search by College, Department & Category

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MBAC

### MBAC-6000 (3) Socially Responsible Enterprise

Prepares future managers for confronting the truly difficult situations that arise when deploying economic resources, altering the physical environment, and making decisions that affect the lives of investors, employees, community members and other stakeholders. Case-based challenges will be examined in a broad range of contexts, and essential ethical concepts will be explored by drawing on theories from ethics, sociology, economics, political science and philosophy. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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### MBAC-6010 (3) Managerial Economics

Studies the elements of the business firm's fundamental problem---how to maximize profits. Develops for each element managerial theory based upon introductory and intermediate-level microeconomics. Analyzes various applications and misapplications of relevant concept, primarily through case studies. Differential calculus and statistics are used throughout the course. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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### MBAC-6011 (2) Managerial Economics 1

Studies the elements of the business firm's fundamental problem---how to maximize profits. Develops for each element managerial theory based upon introductory and intermediate-level microeconomics. Analyzes various applications and misapplications of the relevant concept, primarily through case studies. Differential calculus and statistics are used throughout the course. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6012 (2) Managerial Economics 2

See MBAC 6011. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6020 (3) Financial Accounting

Introduces the financial reporting system used by business organizations to convey information about their economic affairs. Develops an understanding of financial reports and what they tell about a business enterprise. Focuses on how alternative accounting measurement rules represent different economic events in financial reports. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6030 (3) Quantitative Methods

Covers foundations for statistical reasoning and statistical applications in business. Topics include graduate-level treatment of descriptive statistics, probability, probability distributions, sampling theory and sampling distributions, and statistical inference (estimation and hypothesis testing). Provides an introduction to regression analysis, analysis of variance, time series forecasting, decision analysis, index numbers, and nonparametric methods. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6031 (2) Quantitative Methods

Covers foundations for statistical reasoning and statistical applications in business. Topics include graduate-level treatment of descriptive statistics, probability, probability distributions, sampling theory, sampling distributions, and statistical inference (estimation and hypothesis testing). Provides an introduction to regression analysis, analysis of variance, time series forecasting, decision analysis, index numbers and nonparametric methods. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6040 (3) Management Behavior in Organizations

Develops an awareness of the impact of individual and group processes on effective organizational functioning, an understanding of the impact of behavioral concepts, and practices their application through discussion and experiential learning. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6050 (3) Strategy

Analyzes how firms can attain and sustain competitive advantage in today's competitive environment. Focuses on industry dynamics, competitive positioning, firm capabilities, and corporate innovation. Introduces a set of tools for assisting managers in solving complex, real-world business problems in strategy development. Integrates MBA learning in functional areas, and emphasizes the fit between competitive analysis and the role of management and organization. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6052 (3) Capstone Projects

Provides students with an opportunity to focus on a specific project which would have a positive strategic impact on the company for which they work. For those who have entrepreneurial aspirations, this project could result in a business plan for a new venture. Final deliverable should address marketing, financial, operational, and management implications and strategic impact.

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## MBAC-6060 (3) Corporate Finance

Analyzes the implications of modern finance theory for the major decisions faced by corporate financial managers. Develops the basic skills necessary to apply financial concepts to the various problems faced by a firm. Includes capital budgeting, capital structure, long term financing, short term financial management, and financial planning topics. Prereq., MBAC 6020. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6080 (3) Decision Modeling and Applications

Integrates topics from decision analysis and operations management as they relate to modeling management decisions. Field projects involve the university, local companies, and/or government agencies. Prereq., MBAC 6030. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6090 (3) Marketing Management

Provides a solid foundation of marketing knowledge by focusing on principles of marketing. Introduces the role that marketing cases play in advancing understanding and skill development in the field of marketing. Case discussions illustrate concepts discussed, and case studies are used to introduce the marketing decision making process. Emphasizes the international nature of marketing, as well as the importance of analysis and the understanding of the economic, demographic, political-legal-regulatory, sociocultural, technological, and natural environments. Prereq., MBAC 6030. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAC-6097 (2) Business Simulation Seminar

Uses interactive, competitive, computer-based simulation designed to illustrate the process of implementing a strategy in a changing, technology-driven environment. The simulation uses advanced computer algorithms to create a market-driven business environment where customer preferences change, market segments shift, competitors emerge, technologies advance, and company fortunes rise and fall--depending on the decisions the student teams make. Prereqs., MBAC 6000, 6010, 6020, 6030,6040, and 6080. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

## MBAC-6098 (1) Business Writing

Develops business writing skills, with specific focus on style rather than content. Assists students in improving their writing skills in order to be effective communicators in their professional careers. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

## MBAC-6099 (2) Professional Development

Develops presentation and interview skills to help students become effective communicators in their professional careers and to acquaint themselves well in the job placement process. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.



# Courses

Search by College, Department & Category

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MBAX

## MBAX-6051 (2) Strategy

Analyzes how firms can attain and sustain competitive advantage in today's competitive environment. Focuses on industry dynamics, competitive positioning, firm capabilities, and corporate innovation. Introduces a set of tools for assisting managers in solving complex, real-world business problems in strategy development. Integrates MBA learning in functional areas, and emphasizes the fit between competitive analysis and the role of management and organization.

[Leeds School of Business](#) [Master of Business Administration](#) [MBA: Management](#)

## MBAX-6100 (3) Entrepreneurship

Examines the environments of entrepreneurial firms from start-up to development of ventures. Allows students to assess their fit with entrepreneurial firms. Key element is learning the process of determining the difference between ideas and commercializable opportunities through feasibility analysis and plans. Prereq., MBAC 6020 or instructor consent. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

[Leeds School of Business](#) [Master of Business Administration](#) [MBA: Entrepreneurship](#)

## MBAX-6101 (2) Entrepreneurship

Examines the environments of entrepreneurial firms from start-up to development of ventures; allows students to assess their "fit" with entrepreneurial firms. A key element is learning the process of determining the difference between ideas and commercializable opportunities through feasibility analysis and plans. Prereqs., MBA core courses.

[Leeds School of Business](#) [Master of Business Administration](#) [MBA: Entrepreneurship](#)

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## MBAX-6110 (3) Entrepreneurial Finance

Addresses a variety of topics including financial valuation, various sources of funds, structures and legal issues in arranging financing, the private and public venture capital markets, and preparation for, and execution of, an initial public securities offering. Prereq., MBAC 6020. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Entrepreneurship

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## MBAX-6111 (2) Entrepreneurial Finance

Addresses a variety of topics including financial valuation, various sources of funds, structures and legal issues in arranging financing, the private and public venture capital markets, and preparation for, and execution of, an initial public securities offering. Prereqs., MBA core courses.

Leeds School of Business | Master of Business Administration | MBA: Entrepreneurship

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## MBAX-6120 (3) Entrepreneurial Marketing

Addresses the marketing challenges that face the entrepreneur or start up firm with a limited budget. From initially positioning the company and its products to marketing that position to key shareholders for a new venture, to establishing channels of distribution and reaching the consumer, take a specialized look at the development and implementation of a marketing plan. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Entrepreneurship

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## MBAX-6170 (3) Business Plan Preparation

Completion of a sophisticated business plan within task groups from concept through all the elements of a professionally written business plan. Provides students high interaction with businesses and entrepreneurs. Prereq., MBAC 6020 and MBAX 6100, or instructor consent. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Entrepreneurship

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## MBAX-6171 (2) Business Plan Preparation

In this course students will be responsible for the completion of a sophisticated business plan within task groups from the concept through all the elements of a professionally written business plan. The course provides students high interaction with businesses and entrepreneurs. Prereqs., MBAC core courses and MBAX 6100, or instructor consent.

Leeds School of Business | Master of Business Administration | MBA: Entrepreneurship

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## MBAX-6180 (3) Startup Execution

Covers a variety of topics in applied entrepreneurship, including the steps required to legally launch a business and procedures for executing standard business functions (organization, marketing, sales, advertising, operations, team building, and finance) with minimal resources (cash, personnel, and equipment). Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6190 (3) Projects in Entrepreneurial Companies

Limited to 12 students per section, each student is matched with an entrepreneurial company to complete a project that is key to company strategy. Students experience total company environment from the top management level through attending management meetings and interacting with cross-functional managers and employees. E-mail and face-to-face meetings result in discussing opportunities and issues resulting from experiences in companies. Prereq., MBAX 6100. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6200 (3) Advanced Corporate Finance

Covers the theory of asset pricing, which is then applied to capital budgeting, capital structure choice, mergers and acquisitions, and risk management. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6210 (3) Applied Financial Management

Analyzes the financial condition, planning, and control of current assets, current liabilities, and long-term financial arrangements. Topics include financial planning, managing working capital, short- and long-term financing, capital budgeting, valuation, and capital structure policies. Case studies are emphasized. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6211 (2) Applied Financial Management

Focuses on how to apply key concepts in finance to real-world situations. Topics include valuation, capital structure, highly leveraged transactions, and financial distress and bankruptcy. Heavy emphasis on how to perform various kinds of valuations. Mixture of lectures and case discussions. Prereq., MBAC 6060.

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## MBAX-6220 (3) Investment Management and Analysis

Covers managing investment portfolios by blending academic theories and evidence with practitioner experience. Topics include risk and return relationships, securities, value theory (capital asset, arbitrage, and option pricing), portfolios, and performance evaluations. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Finance

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## MBAX-6221 (2) Investment Management & Analysis

Covers managing investment portfolios by blending academic theories and evidence with practitioner experience. Topics include risk and return relationships, securities, value theory (capital asset, arbitrage, and option pricing), portfolios, and performance evaluations. Prereqs., MBAC core courses.

Leeds School of Business | Master of Business Administration | MBA: Finance

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## MBAX-6230 (3) International Financial Management

Examines the financial procedures, policies, and risks faced by firms conducting business internationally. Topics include examining the international finance environment, managing foreign exchange risk exposure, managing international working capital, conducting analysis, and developing an understanding of international financial markets. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Finance

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## MBAX-6240 (3) Financial Markets and Institutions

Deals with the economics of financial markets and the management of financial institutions. Covers factors influencing the cost and availability of capital for financing business firms. Examines both domestic and international markets and institutions. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Finance

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## MBAX-6250 (3) Derivative Securities

Derivatives, like options, futures, forwards, and swaps, encompass all aspects of finance. Topics cover the characteristics, valuation, and trading strategies associated with derivatives as well as their use in risk management. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6260 (3) Fixed Income Investing

Fixed income securities are those that nominally promise a fixed stream of payments. They include government and corporate long and short term debt issues that far exceed the amount of corporate stock issues, as well as long term personal debt (i.e., home mortgages). Develops practical analytical tools for describing these securities, the markets where they are traded, and their purchase and management by financial intermediaries. Stresses the huge market for U.S. government debt, because it provides a foundation for the development of more specialized tools used in other markets. Prereq., MBAC 6060. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6300 (3) Marketing Communication

Focuses on the strategic and decision making aspects of marketing communication from a managerial perspective. Increases students' understanding of specific decision elements within an integrated marketing communications framework. Topics include promotional objectives, agency relations, media selection, budgeting, and advertising research. Also explores relevant advertising models and the economic and social effects of promotional activity. Prereq., MBAC 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Marketing](#)

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## MBAX-6301 (2) Marketing Communications

Focuses on the strategic and decision-making aspects of marketing communication from a managerial perspective. Designed to increase students' understanding of specific decision elements within an integrated marketing communications framework. Topics covered include promotional objectives, agency relations, media selection, budgeting, and advertising research. Explores relevant advertising models and the economic and social effects of promotional activity. Prereqs., MBA core courses.

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Marketing](#)

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## MBAX-6310 (3) Marketing Strategy

Marketing strategy has developed into an increasingly critical managerial activity as businesses recognize the importance of creating customer value and being customer oriented. Discusses key elements of successful marketing strategy including market/customer analysis and competitor analysis, and identifies strategic approaches managers may adopt to succeed in today's highly competitive and rapidly changing business environment. Prereq., MBAC 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6311 (2) Marketing Strategy

Marketing strategy is a critical managerial activity that recognizes the importance of a strong market focus and the delivery of superior customer value as bases for long term financial success. This course examines key elements of successful marketing strategy including optimal market definition, strong segmentation and positioning approaches, high levels of customer satisfaction, and effective management of critical exchange relationships.

## MBAX-6330 (3) Market Intelligence

Market Intelligence is a decision-oriented course geared toward gathering, analyzing, and interpreting data about markets and customers. Students learn how to: define the marketing problem and determine what information is needed to make the decision; acquire trustworthy and relevant data and judge its quality; analyze the data and acquire the necessary knowledge to make certain classic types of marketing decisions. Prereq., MBAC 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

## MBAX-6331 (2) Market Intelligence

Market Intelligence is a marketing decision-oriented course geared toward gathering, analyzing, and interpreting data about markets and customers for both products and services. It is for managers as users of market information across marketing management, consulting, general management, and entrepreneurship to address problems of market selection, segmentation, positioning, new products, customer value and retention, pricing, communication, channel, etc. Prereq., MBAC core courses.



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MBAX

### MBAX-6340 (3) Marketing Field Project

Develops skills in marketing decision making. Teams design and complete a project located at a client business or other organization in the metropolitan area. Team members organize and assign responsibilities, interact with middle- and top-level managers, apply quantitative and behavioral tools presented in marketing and other courses, meet deadlines, and present results of project activities. Prereq., MBAC 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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### MBAX-6350 (3) Digital Marketing

Covers a variety of ways an organization uses online presence to support its goals. The main approaches covered are search engine optimization (SEO); online advertising, especially search ads (also called search engine marketing, SEM); and social media. SEO is setting up your website so that the right people can find you. Emphasis placed on selecting keywords and tracking responses to changes to a website. SEM refers to paid ("sponsored") ads on search engines. We will focus on AdWords. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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### MBAX-6360 (3) New Product Development

Provides a better understanding of the new-product development process, highlighting the inherent risks and strategies for overcoming them. Using a combination of lectures, cases, and a project, this course examines the process of designing, testing, and launching new products. Emphasizes the interplay between creativity and analytical marketing research throughout the development process. Also covers branding issues, such as brand extensions and their impact on brand equity. Prereq., MBAC 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6361 (2) New Product Development

Provides students with a better understanding of the new-product development process, highlighting the inherent risks and different strategies for overcoming them. Using a combination of lectures, cases, and a project, this course will examine the process of designing, testing and launching new products. Prereqs., MBA core courses.

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## MBAX-6410 (3) Business Process Design

Covers the concepts and tools to design and manage business processes. Emphasizes modeling and analysis, information technology support for process activities, and management of process flows. Graphical simulation software is used to create dynamic models of business processes and predict the effect of changes. Prepares students for a strong management or consulting career path in business processes. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6420 (3) IT and Business Strategy

Although some companies are very successful in discovering and cultivating innovative technology-enabled business strategies, many fail in the process. Combines theories and frameworks with practical approaches to provide students with the skills required to help companies identify business opportunities, find appropriate information related technologies, and lead adoptions efforts to success. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6421 (2) IT & Business Strategy

Although some companies are very successful in discovering and cultivating innovative technology-enabled business strategies, many fail in the process. This course combines theories and frameworks with practical approaches to provide students with the skills required to help companies identify business opportunities, find appropriate information related technologies, and lead adoption efforts to success. Prereqs., MBA core courses.

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## MBAX-6440 (3) Project Management

Acquaints students with multidisciplinary aspects of project management, including the relationship between schedule, cost and performance. The course uses a hands-on project where the student interacts with a real customer, providing an opportunity to utilize the qualitative and quantitative tools taught in the classroom. At the conclusion of the course, the student may be eligible to apply for a project

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management certification from Project Management Institute based on previous work experience. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6441 (2) Project Management

Acquaints the student with multidisciplinary aspects of project management, including the relationship between scope, schedule, cost and performance. Uses a hands-on project from your own company, providing an opportunity to utilize the qualitative and quantitative tools taught in the classroom. During the course students will earn hours toward project management certification from the Project Management Institute. Prereqs., MBA core courses.

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## MBAX-6450 (3) International Operations Management

Takes a broad comprehensive perspective on managing and operating in a rapidly growing global economy. Explores regional and national approaches to international operations including trade practices; penetration strategies; financial, marketing, services, and manufacturing operations; ethical and sustainability issues; and global competitive strategy. Compares global business practices in Asia, South America, Europe, and Africa. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6460 (3) Supply Chain Management

Explores the key issues related to the design and management of supply chains. Covers the efficient integration of suppliers, production facilities, warehouses, and stores so that the right products in the right quantity reach customers at the right time. Focuses on the minimization of the total supply chain cost subject to service requirements imposed by a variety of industries. Recommended prereq., MBAC 6080. Same as OPIM 4050. Formerly MBAX 6865. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6500 (3) Management of Organizational Change

Explores ways to improve organizations to meet demands of changing environments. Emphasizes theoretical framework and models of organization change, barriers to implementing change and ways to overcome them, and the roles of the change agent and/or consultant. Prereq., MBAC 6040. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6530 (3) Negotiating and Conflict Management

Explores and builds skills for conflict management and negotiation problems faced by managers (e.g., dealing with subordinates, peers, superiors, or clients). Content is relevant to all MBA students, especially those interested in management, accounting, entrepreneurship, finance, and marketing. Prereq., MBAC 6040. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Management

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## MBAX-6531 (2) Negotiations

Practice the art and science of successful negotiations. Provides students high interaction with businesses and entrepreneurs.

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## MBAX-6540 (3) Consulting Skills

Provides an integrative, hands-on exercise in managing change. Develops skills in contracting, collecting, and analyzing data, and writing reports. Teams practice these skills by conducting an organizational diagnosis, consulting project within an organization. Prereq., MBAC 6040. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Management

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## MBAX-6550 (3) Management of Technology and Innovation

Examines a variety of issues common to management of technology, such as technology strategies, methods of technology transfer, selecting technology standards, managing the research and development process, and encouraging and rewarding innovation. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6560 (3) Executive Leadership

Examines organizational leadership from the executive perspective, including private and public sector firms, and non-profits. Studies how executives lead change and innovation, interact with the top management team, and deal with the board of directors. Topics include governance of the firm, strategies for enhancing executive influence, assessing and understanding diverse leadership styles, and the ethics and responsibilities of an executive. Formerly MBAX 6890. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6561 (2) Executive Leadership

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Provides an opportunity to examine leadership from the executive perspective in organizations including private and public sector firms and non-profits. Topics covered include how executives lead change and innovation in organizations, interact with the top management team, deal with the board of directors, leadership issues involved with governance of the firm and strategies for enhancing executive influence. Prereqs., MBA core courses.

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## MBAX-6600 (3) Real Estate Principles

Studies methods of analyzing real estate opportunities, local government controls and regulations of the development process. Majority of class material is provided via case studies and guest lecturers. Last portion of the course will be the presentation of student group projects. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

Leeds School of Business | Master of Business Administration | MBA: Real Estate

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## MBAX-6610 (3) Real Estate Finance and Investment Analysis

Objectives of the course are to conduct income property investment analysis; to develop the technical competence necessary to structure real estate transactions; and to understand the financial assets securitized by real estate. Students will analyze income properties using Excel spreadsheets and Argus Financial Software. Techniques for structuring real estate transactions examined in this course include lender participations, sale-leasebacks, joint ventures, and real estate syndications. Prereq., MBAX 6600 or equivalent, or instructor consent. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6620 (3) Real Estate Project Competition

Develops skills in real estate decision making. Teams design, complete, and present a real estate project in a competition forum. Students gain an understanding and working knowledge of real estate, use a piece of real property to determine its highest and best use, create a sales plan, and prepare a real estate financing package. Team members organize and assign responsibilities, interact with real estate professionals, and apply appropriate quantitative and qualitative tools and procedures. Prereqs., MBAX 6600, 6610 and 6640, or equivalent, or instructor consent. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6630 (3) Real Estate Economics

Examines real estate market operations and discusses alternative methodologies for estimating real estate values. Examines various theories of land price determination and uses these models to understand how the private market allocates land to competing residential, office, retail, industrial/warehouse, hotel, and other end users. Examines how factors influencing the demand for real estate interact with the supply of real estate to determine market rents and how the flow of future expected income is capitalized to yield the market price of the asset. Prereqs., MBAC 6011 and MBAC 6060. Formerly MBAX 6835. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6640 (3) Real Estate Law

Examines the legal issues associated with developing, acquiring, transferring, and leasing real property. Topics include real estate contracts, land use and development agreements, vehicles for owning real estate, real estate covenants, conditions and restrictions, loan transactions, negotiating real estate contracts, commercial leases and real estate taxation. Material for this course will consist of assigned articles and real estate cases. Prereq., MBAX 6600 or equivalent, or instructor consent. Formerly MBAX 6855. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

## MBAX-6700 (3) Corporate Financial Reporting

Provides an in-depth study of the concepts underlying contemporary financial accounting practice. Includes preparation and analysis of financial statements and the application of concepts to selected current issues. Prereq., MBAC 6020 or equivalent. Same as ACCT 6220. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

## MBAX-6710 (3) Financial Statement Analysis

Focuses on the use of accounting information by decision makers external to the firm. Considers judgments made by security analysts, bank lending officers, and auditors. Emphasizes credit scoring, risk analysis, and equity valuation. Prereq., MBAC 6020 or equivalent. Same as ACCT 6250. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.



## Courses

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MBAX

### MBAX-6760 (3) Accounting for Managers

Explores cost management, especially as related to organizational decision making, planning, and control. Emphasizes case analysis and applications. Prereq., MBAC 6020 or equivalent or instructor consent. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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### MBAX-6761 (2) Managerial Accounting

Introduces managerial accounting, which includes the concepts, models, and systems that provide this information and control. The course will familiarize participants with the terminology and basic concepts of managerial accounting, touching on topics ranging from development and use of cost information for decision-making to management control systems. Prereq., MBAC 6020.

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### MBAX-6801 (3) Global Perspectives Seminar

Provides students with an in-depth perspective about a specific country or region outside the United States. The course can focus on a different region or country each time it is offered. If demand for this type of experience is strong, multiple sections of the course could be offered in a given semester, each focusing on a different region or country. The choice of region and the specific focus of each course would depend on the faculty member teaching the course. May be repeated up to 6 total credit hours. Prereqs., MBAC 6010, 6060 and 6090. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6802 (3) Pricing Strategy and Tactics

Pricing provides the means to capture value. The course covers theories, analytical tools and conceptual frameworks needed for devising price strategy as part of the value proposition for products and services. It draws upon principles from economics, marketing and psychology. Primary and secondary data based analysis is used to understand price response and competitive pricing. Substantive topics include customized pricing, price negotiations, bidding and auctions, price discounting, trade promotion, bundling, behavioral pricing, among others. Prereqs., all MBA core courses. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6803 (3) Microfinance

Links financial markets with entrepreneurship to create a platform for the poor to start their own business. Participants learn how to combine technical knowledge of finance and international business development with the socially and ethically important microfinance field to help with sustainable economic development and reduce poverty worldwide, including the United States. Prerequisites: Restricted to Graduate Students only.

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## MBAX-6804 (3) Leading Effectively in Today's Environment

Explores a set of concepts, models and tools that you can use to lead and manage effectively in today's environment. Covers three key topics: leading change, building success through people, working effectively in a global environment. Provides better understanding of challenges managers face when leading change.

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## MBAX-6805 (3) Entrepreneurship and the Venture Capital Process

This course will be articulated into two main parts, tightly interrelated: Entrepreneurship and the Venture Capital Process. The first part has the objective to lead the students to understand what venture capital is, how it works, how you structure capital raising, and how it helps entrepreneurial initiatives. The second part concerns how venture capitalists manage their operations, secure investment deals, and maintain their portfolios. Prereqs., MBAC 6011, 6020, 6031, 6040, 6060, 6080, and 6090. Restricted to LAWS students and graduate students in business. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6815 (3) Survey of Best Practices in Sustainable Real Estate Development

Explores techniques, processes, tools, and capabilities required to manage growth and land use change in the light of shifts beginning to transform the way we approach land use and real estate development. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6825 (3) Topics in Sustainable Business

Provides a comprehensive overview of the core concepts, strategies and practices of sustainable business, emphasizing innovative business practices and entrepreneurial opportunities created by the sustainability "movement". The topic of sustainability will be approached from the unique perspectives of seven core disciplines of business administration: economics, strategy, ethics, organizational behavior, operations, finance and accounting, and marketing. Prereq., 1st semester MBA core courses. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6841 (2) Decision Making for Managers

Covers both behavioral/psychological aspects and analytical approaches to making decisions with multiple objectives. The focus is learning to frame decisions that involve multiple stakeholders with multiple objectives and then learning the various techniques used to evaluate the choices. Influence diagrams, decision heuristics using spreadsheets, and decision trees will all be explored with user-friendly decision tree software. Prereqs., MBA core courses.

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## MBAX-6843 (3) Supply Chain and Operations Analytics

Analyzes key issues related to the design and management of operations and supply chains using quantitative tools such as linear, integer, and non-linear programming, regression, and statistical analysis. Covers important topics such as forecasting, aggregate planning, inventory theory, transportation, risk pooling, production control and scheduling, and facilities location, among others. Uses mathematical modeling, spreadsheet analysis, case studies, and pedagogical simulations to deliver material. Prereqs., MBAC 6031 and 6080. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6845 (3) Social Entrepreneurship in Emerging Markets

Social entrepreneurs adopt business approaches to solving global, social and environmental problems that have not been effectively addressed by government, business or traditional nonprofits. The course provides a framework for student teams to assist social entrepreneurs in developing countries, helping them achieve their social mission while operating sustainably and with measurable impact. Prereqs., MBAC 6010, 6060, and 6090. Recommended prereq., MBAX 6170. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6885 (3) Interpreting the Economic Environment

The macroeconomic environment is vitally important to business managers regardless of their area of focus. Most macroeconomic events portend future economic changes that influence business and/or industry. Develops a basic understanding of the macroeconomy and its relationship to an individual business or industry through understanding macroeconomic concepts and data sources, developing a basic model, understanding relevant policy instruments, and integrating this information into the global economy. Prereq., MBAC 6010. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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## MBAX-6966 (3) Independent Study-Real Estate

Independent study in the field of real estate. Prerequisites: Restricted to Master of Business Admin (MBAD), MBA with Dual Degree (DMBA), Joint Juris Doctor/MBA (JMBA) or Professional MBA Program (PMBA) majors only.

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MCDB

### MCDB-1030 (3) Plagues, People, and Microorganisms

Discusses the biology, history, ecology, and social impact of human plagues, including Aids, smallpox, polio, bubonic plague, tuberculosis, leprosy, the impact of the Irish potato blight, and emerging human pathogens. The biology of pathogens and the human immune responses are treated in detail. Discusses the impact of molecular biology on curtailing the impact of diseases. For nonmajors. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-1041 (3) Fundamentals of Human Genetics

Covers the basic principles of genetics, human pedigree analysis, and how genetic diseases affect DNA, RNA, and proteins. Considers implications of this research for medicine and society. For nonmajors. Recommended prereq., good background in high school chemistry and biology. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-1150 (3) Introduction to Cellular and Molecular Biology

Covers biologically important macromolecules and biological processes, together with an introduction to cell structure, function, and physiology. Provides the foundation for advanced MCDB courses to majors, and a rigorous overview of modern biology to nonmajors. MCDB 1151 must be taken concurrently by MCDB and biochemistry majors and prehealth science students. Prereq., high school chemistry and algebra. Coreq., MCDB 1151 for majors. Credit not granted for this course and MCDB 1111. Meets MAPS requirement for natural sciences: lab. Approved for arts and science core curriculum: natural science.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

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## MCDB-1151 (1) Introduction to Cell and Molecular Biology Lab

Offers one two-hour lab per week designed to acquaint students with research techniques and concepts in molecular and cellular biology. Topics include cell structure, function, physiology, and recombinant DNA. MCDB 1150 must be taken concurrently. Credit not granted for this course and MCDB 1111. Meets MAPS requirement for natural sciences: lab. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-1152 (1) Problem Solving Co-Seminar for Introduction to Molecular and Cellular Biology

Uses problem solving and other interactive group work to aid student learning in co-requisite course MCDB 1150. Students will work in small groups on learning and practicing how to solve difficult conceptual problems, as well as using hands-on activities and concept mapping to help learn content. Coreq., MCDB 1150.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-1161 (2) From Dirt to DNA: Phage Genomics Laboratory I

Provides laboratory experience working on a bacteriophage genomics research project. Students will study novel bacteriophage they isolate from the environment. Topics covered include phage biology, bacteria and phage culturing and amplification, DNA isolation, restriction digest analysis, agarose gel electrophoresis, and electron microscopy. Coreq., MCDB 1150 or successful completion of 2 semesters of General Biology AP credit.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-2150 (3) Principles of Genetics

Introduces the behavior of genes and chromosomes in eukaryotic and prokaryotic organisms. Covers three areas: transmission genetics, molecular genetics, and population genetics. Attention is given to genetic mapping, recombinant DNA procedures, and gene expression. MCDB 2151 must be taken by MCDB or biochemistry majors and prehealth science students concurrently or when next offered. Prereqs., MCDB 1150 or 1111 or EBIO 1210 or general biology. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-2151 (1) Principles of Genetics Laboratory

One two-hour lab per week. Provides hands-on experience with principles introduced in MCDB 2150. Topics include mitosis, meiosis, classical genetics, complementation, mutagenesis, DNA replication, natural selection, and evolution. Prereqs., MCDB 1150 and 1151. Coreq., MCDB 2150. Approved for arts and sciences core curriculum: natural science.

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College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-2152 (1) Problem Solving Co-Seminars for Genetics

Uses problem solving and other interactive group work to aid student learning in co-requisite course MCDB 2150. Students will work in small groups on learning and practicing how to solve difficult conceptual problems, as well as using hands-on activities and concept mapping to help learn content. Coreq., MCDB 2150.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-2161 (2) From DNA to Genes, Phage Genomics Laboratory II

Provides laboratory experience working on a bacteriophage isolated during the previous semester. Topics include bioinformatics, genome annotation, open reading frame and RNA identification, BLAST analysis, phylogenetics and submission to a genomic database. Prereqs., MCDB 1150 and 1161. Coreq., MCDB 2150.

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## MCDB-2840 (1-3) Lower-Division Independent Study

May be repeated for credit, but only 8 hours of MCDB 2840 plus MCDB 4840 can be counted toward graduation. Students with adequate prerequisites should take MCDB 4840. Prereqs., instructor consent and independent study contract. Coreq., MCDB 1150.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3135 (3) Molecular Cell Biology I

Examines the central dogma of biology by discussing the most important molecules in cells (DNA, RNA, and protein) and how their synthesis (DNA replication, transcription, RNA processing, and translation) is regulated. Incorporated into the discussion is how recombinant DNA techniques are used to discover and dissect cellular processes, how to design and interpret experiments, and understanding the limits of experiments to draw conclusions. These principles are the foundation for subsequent examination of intracellular mechanisms in MCDB 3145. Prereqs., MCDB 2150 or EBIO 2070. Prereq., or coreq., CHEM 1133. Recommended coreq., MCDB 3140. Credit not granted for this course and MCDB 3120.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3140 (2) Cell Biology Laboratory

One four-hour lab per week. Provides experience with and exposure to modern cell biology laboratory techniques. Topics include microscopy, immunocytochemistry, Western blotting, Southern blotting, and flow cytometry. This course does not use vertebrate animals.

Coreq., MCDB 3135 or 3145.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3145 (3) Molecular Cell Biology II

Examines intracellular mechanisms, including transport of ions and small molecules across membranes; protein targeting to organelles; membrane trafficking between organelles; signal transduction; the cytoskeleton; and the cell cycle. Analysis of these activities is from the experimental perspective established in MCDB 3135. Prereq., MCDB 3135. Recommended prereq or coreq., MCDB 3140 concurrent with either 3135 or 3145. Students may not receive credit for MCDB 3145 and 3500.

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## MCDB-3150 (3) Biology of the Cancer Cell

Highlights dimensions of the cancer problem; cancer as a genetic/cellular disease; chemicals, viruses, and radiation as causes of cancer; cancer and diet; cancer epidemiology; cancer risk factors; proto-oncogenes, oncogenes, and cancer suppressor genes; and prevention of cancer. Prereq., MCDB 2150 or EBIO 2070, or instructor consent. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3280 (3) Molecular Cell Physiology

Analyzes cellular mechanisms from a molecular perspective. Examines molecules as machines that are the basis of cellular mechanisms. Uses animal systems' physiology as examples. Prereqs., MCDB 3120 and CHEM 1133.

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## MCDB-3330 (3) Evolution and Creationism

Intensive lecture/discussion course on the interrelationships among science, religion, and social policy. Includes historical and scientific development of evolution theory, social Darwinism/sociobiology, and the public perception of science. Prereq., MCDB 1111 or 1150 or instructor consent. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3350 (3) Fertility, Sterility, and Early Mammalian Development

Describes the production of germ cells, ovulation, fertilization, reproductive cycles, controls of reproduction, early development of the embryo, methods of contraception, and causes and treatments of sterility. Recommended for students planning careers in the health

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sciences. Prereq., MCDB 1150, EBIO 1210, or instructor consent.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-3650 (3) The Brain - From Molecules to Behavior

Examines the molecular basis of the brain's role in thought, action, and consciousness by exploring issues such as relationship of cognition and localized brain function, sensory systems and their role in cognition, learning and memory, and behavioral neurochemistry. Prereq., MCDB 1150 and 2150 or equivalent.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4110 (1-3) Special Topics

Presentations of special topics in molecular, and/or cellular, and/or developmental biology, usually given by visiting faculty, alone or in conjunction with MCDB faculty. Prereq., instructor consent.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4111 (3) Experimental Design and Research in Cell and Molecular Biology

Learning molecular and cell biology experimental design and approaches through independent research projects. Students, working in pairs, will explore the research process and gain extensive first-hand experience in: hypothesis formation; experimental design; solution preparation and experimental methodology; proposal presentation and defense (oral and written); formal presentation of results and conclusions (oral and written in a publication-style format); the publication process; critical reading and evaluation of primary scientific literature. Prereq., MCDB 1150 or equivalent and instructor consent. Recommended coreq., MCDB 3135 or 3500.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4201 (3) From Bench to Bedside: The Role of Science in Medicine

Demonstrates the breadth of research in the life sciences and how such research (not just in medical schools) can lead to medical applications. Lecturers from life sciences, the medical school and biotechnology, discuss drug development and the transfer of research into the clinical arena. Students also prepare a paper and presentation on the development of a commercial drug. Prereqs., MCDB 1150, 1151, or 1111, and MCDB 2150, 2151, 3140, and 3120 or 3145.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4202 (3) The Python Project

Studies how python hearts grow after they consume a meal. Understanding the molecular processes of growth and regression in the python heart could lead to development of therapeutics for heart disease. Students work in groups in the laboratory and generate novel data by using modern molecular biology and bioinformatic techniques to clone and sequence candidate molecules of the python genome. May be repeated once. Prereqs., MCDB 1150 and 2150. Recommended prereqs., MCDB 3120 and 3500, or MCDB 3135 and 3145, and CHEM 4711 and 4731.

College of Arts & Sciences Molecular, Cellular, & Development Biology

## MCDB-4234 (3) Research Methods

Presents a rigorous and pedagogically coherent introduction into the experimental process used to collect data, formulate hypotheses, and answer scientific questions in general, and biological questions in particular. Includes a detailed consideration of the elements of experimental design, data collection and analysis, and the interpretation of results in the context of effective science teaching. Part of the CU Teach course sequence for teacher certification in science and mathematics. Prereqs., completion of freshman/sophomore major requirements, MCDB 1150 or 1111, MCDB 2150, 3120/3140, or 3135/3145, or instructor consent. Restricted to students enrolled in School of Education. Prerequisites: Restricted to MCDB majors or School of Education undergraduate students only.

College of Arts & Sciences Molecular, Cellular, & Development Biology

## MCDB-4300 (3) Immunology

Emphasizes cellular and molecular mechanisms by which organisms protect themselves from pathogens and the experimental basis for our understanding of these processes. Discusses development, function, and malfunction of t-cells, b-cells and other components of the immune system, focusing on the human immune system. Prereqs., MCDB 3120 and 3500, or MCDB 3135 and 3145. Same as MCDB 5301.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## Courses

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MCDB

### MCDB-4310 (3) Microbial Genetics and Physiology

Examines the physiology and genetics of bacteria, Archaea and viruses. Particular emphasis will be on metabolism and cell division, adaptations to extreme environments, mechanisms of interactions with and manipulation of the environment, and evolution in response to environmental pressures. Prereqs., MCDB 2150 and 3135 or 3500. Recommended prereqs. or coreqs., MCDB 3120 or 3145, EBIO 3400, CHEM 4711, or instructor consent. Same as MCDB 5310.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-4314 (3) Algorithms for Molecular Biology

Surveys combinatorial algorithms used to understand DNA, RNA, and proteins. Introduces students to methods used to process genomic data. Topics covered include a review of algorithms and molecular biology, sequence analysis, RNA and protein structure analysis, and comparative genomics. Students will get hands-on experience processing recent genomic data. Prereqs., CSCI 2270 and CSCI 3104, or CHEM 4711, or MCDB 3135 or 3500, or IPHY 4200. Same as CSCI 4314 and MCDB 5314.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-4330 (3) Bacterial Disease Mechanisms

Explores molecular and cellular interactions between bacteria and their eukaryotic hosts that precipitate disease. Activities include critical reading of review and research articles, preparation of homework assignments based on readings, and student presentations of assigned papers. Prereqs., MCDB 2150, 3120 and 3500, or 3135 and 3145. Same as MCDB 5330.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

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## MCDB-4350 (3) Microbial Diversity and the Biosphere

Provides a molecular phylogeny-based perspective on microbial diversity and the interactions between organisms that result in the biosphere. Provides overview of recent methods and findings in microbial ecology, as well as computer-based workshop in molecular phylogeny. Prereqs., CHEM 1133 or 1371, general biology, or instructor consent. Recommended prereqs., EBIO 3400 and/or CHEM 3311. Same as MCDB 5350.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4361 (3) Evolution and Development

Relates how recent discoveries in the molecular mechanisms of development are shaping our understanding of animal evolution. The course will review basic principles of molecular developmental biology and apply these concepts to critically discuss current research in the field of Evo-Devo (evolution and development). Prereqs., MCDB 3120 and 3500, or MCDB 3135 and 3145. Same as MCDB 5361.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4410 (3) Human Molecular Genetics

Studies the human organism as a genetic system, including effect of mutation on protein structure and function, biochemical basis of human genetic disease, polymorphic gene loci, gene mapping and identification, gene cloning and characterization, and impact of human genetics on medicine and society. Prereq., MCDB 3500 or 3135.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4422 (3) Molecular Biology of Free Radicals: Role(s) in Oxidative Stress, Signaling, Disease, Aging

Examines how free radicals are formed in biological systems and their roles in oxidative stress, cell signalling, aging, and disease. Emphasis will be placed on the recent literature. Prereqs., MCDB 3135 and 3145. Recommended prereq., CHEM 3311.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4425 (3) Cellular Stress Responses: Molecular Mechanisms, Physiology, and Human Diseases

In this critical thinking course, students will apply their knowledge of basic biology to exploring several of the most exciting topics in biomedicine including protein folding and stress responses, nutrient sensing and balance, and signal transduction across membranes. Emphasis will be placed upon human physiology and associated human diseases including Alzheimer's disease, diabetes, and cardiovascular disease. Prereq., MCDB 3120 or 3135 or 3145 or 3500 or instructor consent. MCDB 4425 and 5425 are the same course.

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## MCDB-4426 (3) Cell Signaling and Developmental Regulation

Introduces several cell signaling processes and their biological functions. Students read and analyze original research articles to learn the thinking processes of scientific research. Writing assignments and oral presentations are required. Prereqs., MCDB 3120 and 3500 or MCDB 3135 and 3145, CHEM 4711, or instructor consent. Same as MCDB 5426.

## MCDB-4441 (4) Animal Developmental Diversity

Surveys development in a range of vertebrate and invertebrate systems to reconstruct the common bilaterian ancestor, and elucidate the developmental genetic changes underlying animal diversification. Lab focuses on vertebrate embryos and explores key methods in evolutionary developmental biology including in situ hybridization, embryo microinjection, and transgenesis. Prereqs., EBIO 1210, 1220 and 2070, or MCDB 1150 and 2150. EBIO 4440, EBIO 5440, MCDB 4441, and MCDB 5441 are all the same course.

## MCDB-4444 (3) Cellular Basis of Disease

Explores the cellular basis of disease. Discusses diseases arising from defects in intracellular targeting, cytoskeletal function, intracellular signaling, genomic instability, gene regulation, cell proliferation, and cell death. Involves student-organized presentations and classroom discussion. Prereq., MCDB 2150, MCDB 3120 and 3500 or MCDB 3135 and 3145.

## MCDB-4471 (3) Mechanisms of Gene Regulation in Eukaryotes

Focuses on manifestations of regulated gene expression. Studies gene regulation at multiple steps, including transcription, RNA processing, and translation. Is based on critical analysis of primary research papers. Written assignments and oral presentations are required. Prereq., MCDB 3500 or 3135 or instructor consent. Same as MCDB 5471. Credit not granted for this course and MCDB 4470/5470.

## MCDB-4501 (3) Structural Methods for Biological Macromolecules

This course teaches fundamental knowledge about protein structures, protein interactions and protein folding. It will discuss in detail the most common methods on how proteins and macromolecular complexes are studied, such as X-ray crystallography, NMR-spectroscopy, and electron microscopy. The course will offer about 50 percent direct teaching, 40 percent discussion of papers in a journal club style,

and 10 percent hands-on practicals on software packages relevant to structural biology. Prereqs., MCDB 3120 and 3500 or MCDB 3135 and 3145.

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## MCDB-4520 (3) Bioinformatics and Genomics

Computational and experimental methods in bioinformatics and genomics, and how these methods provide insights into protein structure and function, molecular evolution, biological diversity, cell biology, and human disease. Topics include database searching, multiple sequence alignment, molecular phylogeny, microarrays, proteomics, and pharmacogenomics. Prereqs., CHEM 4711, and CHEM 4731 or MCDB 3135 or 3500. Same as MCDB 5520.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4550 (3) Cells, Molecules and Tissues: A Biophysical Approach

Focuses on the biophysics governing the structure/function of enzymes, cells, extra-cellular matrix, and tissue. Synthesizes ideas from molecular biology, physics, and biochemistry, emphasizing how low Reynolds number physics, not Newtonian physics, is relevant to life inside a cell. Prereq., CHEM 1133 or 1371, PHYS 2010, 2020, MCDB 3135 or 3145 or instructors consent. Recommended Prereqs., MATH 1300 and/or CHEM 3311. Same as MCDB 5550.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-4600 (3) Molecular Approaches to Human Diseases

Studies basic research using molecular biology and its contribution to treatment of human diseases. Includes an overview of physiology, clinical presentation, basic research, and detailed analyses of molecular approaches taken to understand and treat human diseases. Prereqs., MCDB 2150, and MCDB 3120 and 3500, or MCDB 3135 and 3145. Recommended prereq., MCDB 4620.

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## MCDB-4615 (3) Biology of Stem Cells

Stem cells have received considerable notice in both the scientific and social arena. The course will examine the stem cell concept by a critical examination of the primary scientific literature. Topics will include pluripotency and plasticity, environment, technology, self-renewal, transdifferentiation, molecular signature, epigenetic programming and stem cell versus cancer cell. Prereqs., MCDB 2150, and MCDB 3120 and 3500, or MCDB 3135 and 3145, or instructor consent. Same as MCDB 5615.

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## MCDB-4621 (3) Genome Databases: Mining and Management

Develops essential skills for performing genomic analyses, with focus on developing practical research tools. Introduces human genome and microbiome projects, Python/Sql scripting, accessing and understanding genomic data, sequence alignment and search, evolutionary models, expression data, biological networks, and macromolecular structure. Prereqs., MCDB 3135 or 3500, CSCI 3104 or CHEM 4711; coreq., CSCI 2270. Same as MCDB 5621. Credit not granted for this course and CHEM 4621 or CSCI 4317.

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## MCDB-4650 (3) Developmental Biology

Analyzes development, emphasizing cellular, molecular, and genetic mechanisms. Topics include descriptive embryology, developmental control of gene expression in eukaryotic cells, mechanisms of differentiation and morphogenesis, and developmental genetics. Prereq., MCDB 3120 and 3500, or MCDB 3135 and 3145, or instructor consent. The related lab course, MCDB 4660, can be taken concurrently. Credit not granted for this course and MCDB 4620, EPOB 3650, or EPOB 4600.

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## MCDB-4680 (3) Mechanisms of Aging

Studies aging as a developmental process emphasizing genetic, cellular, and molecular mechanisms. Prereqs., MCDB 3120 and 3500, or MCDB 3135 and 3145. Same as MCDB 5680.

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## MCDB-4750 (3) Animal Virology

Encompasses the structure and replication of both lytic and transforming animal viruses. Emphasizes diversity of naturally occurring genomic structures and the resulting strategies of infection as well as the impact of viral epidemics on society. Includes critical analysis of primary research papers. Prereq., MCDB 3135 or 3500, or instructor consent.

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## MCDB-4777 (3) Molecular Neurobiology

Introduces the functional anatomy of the nervous system, and explores current knowledge regarding the molecular and genetic basis of the development and function of the nervous system. Studies recent insights into the molecular basis of neurodegenerative diseases, in the last portion of the course. Prereqs., MCDB 3120 and 3500, or MCDB 3135 and 3145, or equivalent.

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## MCDB-4790 (3) Experimental Embryology

Embryology is studied by considering experiments relevant to specific topics of early animal development. Emphasizes reading, interpretation, and discussion of research articles. Prereqs., MCDB 3120 or 3145, and EPOB 3650 or MCDB 3135 or 3500.

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## MCDB-4811 (3-4) Teaching and Learning Biology

Provides an introduction to recent research into student learning on the conceptual foundations of modern biology, together with pedagogical methods associated with effective instruction and its valuation. Students will be involved in active research into conceptual and practical issues involved in biology education, methods to discover student preconceptions, and the design, testing and evaluation of various instructional interventions. Prereqs., MCDB 1111 or 1150, 2150 and MCDB 3120 or 3145. Same as MCDB 5811 and EDUC 4811.

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## MCDB-4840 (1-6) Upper-Division Independent Study

May be repeated for credit, but only 8 hours of MCDB 2840 plus MCDB 4840 can be counted toward graduation. Prereqs., MCDB 2150, instructor consent, and independent study contract.

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# Courses

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MCDB

## MCDB-4980 (3) Honors Research

Provides faculty-supervised research for students who have been approved by the departmental honors committee. Normally taken during the semester before completion of the honors thesis. Prereqs., MCDB 4840 or comparable research experience, and a GPA of 3.20 or better.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

## MCDB-4990 (3) Honors Thesis

Involves the preparation and defense of an honors thesis, based on faculty-supervised original research, including final phases of the research project. Prereqs., MCDB 4840, 4980, or comparable research experience, a GPA of 3.30 or better, and approval by the MCDB honors committee.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

## MCDB-5210 (3) Cell Structure and Function (Lecture and Discussion)

Instructor consent required.

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## MCDB-5220 (3) Molecular Genetics (Methods and Logic)

Instructor consent required. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5230 (3) Gene Expression (Lecture and Discussion)

Instructor consent required. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5250 (3) Topics in Developmental Genetics (Methods and Logic)

Instructor consent required.

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## MCDB-5301 (3) Immunology

Same as MCDB 4300. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5310 (3) Microbial Genetics and Physiology

Same as MCDB 4310.

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## MCDB-5314 (3) Algorithms for Molecular Biology

Same as MCDB 4314 and CSCI 5314. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5330 (3) Bacterial Disease Mechanisms

Same as MCDB 4330.

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## MCDB-5350 (3) Microbial Diversity and the Biosphere

Same as MCDB 4350. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5361 (3) Evolution and Development

Same as MCDB 4361.

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## MCDB-5425 (3) Cellular Stress Responses: Molecular Mechanisms, Physiology, and Human Diseases

In this critical thinking course, students will apply their knowledge of basic biology to exploring several of the most exciting topics in biomedicine including protein folding and stress responses, nutrient sensing and balance, and signal transduction across membranes. Emphasis will be placed upon human physiology and associated human diseases including Alzheimer's disease, diabetes, and cardiovascular disease. Prereq., MCDB 3120 or 3135 or 3145 or 3500 or instructor consent. MCDB 4425 and 5425 are the same course. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5426 (3) Cell Signaling and Developmental Regulation

Same as MCDB 4426.

College of Arts & Sciences Molecular, Cellular, & Development Biology

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## MCDB-5441 (4) Animal Developmental Diversity

Surveys development in a range of vertebrate and invertebrate systems to reconstruct the common bilaterian ancestor, and elucidate the developmental genetic changes underlying animal diversification. Lab focuses on vertebrate embryos and explores key methods in evolutionary developmental biology including in situ hybridization, embryo microinjection, and transgenesis. Prereqs., EBIO 1210, 1220 and 2070, or MCDB 1150 and 2150. EBIO 4440, EBIO 5440, MCDB 4441, and MCDB 5441 are all the same course. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5471 (3) Mechanisms of Gene Regulation in Eukaryotes

Same as MCDB 4471.

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## MCDB-5520 (3) Bioinformatics and Genomics

Same as MCDB 4520. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5550 (3) Cells, Molecules and Tissues: A Biophysical Approach

Same as MCDB 4550.

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## MCDB-5615 (3) Biology of Stem Cells

Same as MCDB 4615. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5621 (3) Genome Databases: Mining and Management

Same as MCDB 4621. Credit not granted for this course and CSCI 5317 or CHEM 5621.

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## MCDB-5650 (1) Teaching and Learning in Undergraduate Science Courses

Discusses recent research on how students learn and applications to the teaching of undergraduate science courses. Conducted as an interactive workshop, in which active-engagement in learning approaches are modeled and experienced by participants. Open to undergraduate and graduate students. May be used to fulfill the pedagogical training requirement for undergraduate Learning Assistants in upper division science courses. Post-doctoral and faculty auditors are welcome to participate as regular auditors.

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## MCDB-5680 (3) Mechanisms of Aging

Same as MCDB 4680. Prerequisites: Restricted to Graduate Students only.

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## MCDB-5776 (1) Scientific Ethics

Prereq., CHEM 5771 or MCDB 5230 taken concurrently and instructor consent. Same as CHEM 5776.

## MCDB-5777 (3) Molecular Neurobiology

Same as MCDB 4777.

## MCDB-5811 (3-4) Teaching and Learning Biology

Same as MCDB 4811. Prerequisites: Restricted to Graduate Students only.



## Courses

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MCDB

### MCDB-6000 (3) Introduction to Laboratory Methods

Introduces methodology and techniques used in biological research. Designed as a tutorial between a few students and one faculty member. Students are expected to read original research papers, discuss findings, and to plan and execute experiments in selected areas. Open only to MCDB graduate students. May be repeated up to 9 total credit hours. Prerequisites: Restricted to MCDB graduate students only.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-6336 (1) Transcription and RNA Processing

Study of recent publications in transcription and RNA processing fields. Students present and discuss recent publications. Goals are that the student will improve critical analysis of data and will learn techniques relevant to the field. Students will keep up-to-date with current literature, will lead discussions of topic of interest, and will learn good presentation skills. Prereq., MCDB 5210, 5230 or instructor consent.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

### MCDB-6337 (1) Cell Cycle Research

Cell cycle regulation is a major biological issue relevant to a number of disease states, including cancer. Surveys the current literature in the cell cycle field. Students present current publications; class participation in discussion is expected. Prereqs., MCDB 5210 and 5230.

[College of Arts & Sciences](#) [Molecular, Cellular, & Development Biology](#)

## MCDB-6338 (1) Current Topics in Developmental Genetics and Signal Transduction

Students present and discuss current research papers in the areas of developmental biology and cell signaling. Goals are to improve skills in critical evaluation and presentation of research results as well as to keep up with current literature. Students must present and lead discussions of at least one paper; all students are expected to read papers in advance. Prereq., instructor consent.

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## MCDB-6339 (1) Microbiology Supergroup

Present and receive feedback on your in-progress microbiology research. Learn about and discuss research at CU that is microbiological but outside of your specialty. Participate in journal clubs on microbial physiology. May be repeated up to 3 total credit hours.

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## MCDB-6440 (1-3) Special Topics in MCD Biology

Acquaints students with various topics not normally covered in the curriculum. Offered intermittently or upon student demand, and often presented by visiting professors. May be repeated up to 4 total credit hours. Prerequisites: Restricted to Graduate Students only.

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## MCDB-6621 (1) Special Topics in RNA

Reviews and evaluates recent scientific literature in the field of RNA chemistry and biology, including topics in structure, catalysis, bioinformatic approaches, and control of gene expression. Primarily for graduate level presentation of special topics by students and research staff. May be repeated up to 5 total credit hours. Prereq., graduate standing or instructor consent. Same as CHEM 6621.

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## MCDB-6940 (1) Master's Degree Candidate

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## MCDB-6950 (1-6) Master's Thesis

Students seeking a master's degree should consult a departmental advisor. Plan I or Plan II is offered.

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## MCDB-7790 (1-3) Graduate Seminar

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## MCDB-7840 (1-6) Graduate Independent Study

Instructor consent and independent study contract required. May be repeated up to 7 total credit hours.

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## MCDB-7910 (1) Seminar Practicum

Designed for graduate students to give oral presentations on their thesis research, field questions, respond to critiques, and present background information. May be repeated up to 3 total credit hours. Prerequisites: Restricted to Graduate Students only.

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## MCDB-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.

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MCEN

## MCEN-1000 (1) Freshmen Seminar

Lect. and lab. Introduces facets of mechanical engineering including history of the profession, mechanical engineering curriculum, industries in which mechanical engineers practice, and expectations and tools for academic success. Students participate in hands-on experiences, visit industry, make oral presentations, meet faculty and practicing professionals, and develop goal statements. Restricted to students with 0-26 units (Freshmen) Mechanical Engineering majors only. Prerequisites: Restricted to students with 0-26 units (Freshmen) Mechanical Engineering majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Math](#)

## MCEN-1025 (4) Computer-Aided Design and Fabrication

Introduces engineering design graphics. Includes learning a contemporary computer-aided design (CAD) software application and relevant engineering graphics concepts, such as orthographic projection, sections, engineering drawing practices, geometric dimensioning and tolerancing, and an introduction to manufacturing methods. Entails a final design project using rapid prototyping. Restricted to MCEN majors. Prerequisites: Restricted to Mechanical Engineering or Engineering Physics majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Design](#)

## MCEN-1208 (1-4) Special Topics in Mechanical Engineering

Subject matter to be selected from topics of current interest. Credit to be arranged. Numbered MCEN 1208-1298. Prereq., instructor consent. Restricted to students with 0-26 units (Freshmen) Mechanical Engineering majors only. Prerequisites: Restricted to students with 0-26 units (Freshmen) Mechanical Engineering majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Special Topics](#)

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## MCEN-2023 (3) Statics and Structures

Covers statics of particles, equivalent force systems, rigid bodies, equilibrium of rigid bodies in two and three dimensions, analysis of truss and frame structures, uniaxially-loaded members, deformation and stress, distributed force systems, friction. Lectures and homework assignments involve computer work and hands-on laboratory work in the ITLL, documented by written reports. Prereq., APPM 1360. Prerequisites: Requires prerequisite course of APPM 1360 or MATH 2300. Restricted to students with 27-180 credits (Sophomores/Juniors/Seniors) MCEN or EVEN majors or Civil & Envrn Engr Concurrent Degree majors or Mechanical Engr Concurrent Degree majors.

College of Engineering & Applied Science   Mechanical Engineering   Solids

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## MCEN-2024 (3) Materials Science

Structure, properties, and processing of metallic, polymeric, ceramic, and composite materials. Perfect and imperfect solids; phase equilibria; transformation kinetics; mechanical behavior; material degradation. Approach incorporates both materials science and materials engineering components. Prereqs., CHEN 1211, CHEM 1221 and PHYS 1110. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors or Civil & Environmental Engineering Concurrent Degree or Mechanical Engineering Concurrent Degree majors

College of Engineering & Applied Science   Mechanical Engineering   Materials

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## MCEN-2043 (3) Dynamics

Covers dynamic behavior of particle systems and rigid bodies; 2-D and 3-D kinematics and kinetics; impulse, momentum, potential, and kinetic energy; and work, collision, and vibration. Lectures and homework assignments involve computer work and hands-on laboratory work in the ITLL, documented by written reports. Prereq., MCEN 2023. Formerly MCEN 3043. Prerequisites: Requires prerequisite courses of MCEN 2023 (or CVEN 2121 or GEEN 3851) & APPM 2350 or MATH 2400. Restricted to students with 27-180 credits (Sophomores/Juniors/Seniors) MCEN or EVEN majors or concurrent degree majors in CVEN&EVEN or MCEN.

College of Engineering & Applied Science   Mechanical Engineering   Solids

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## MCEN-2063 (3) Mechanics of Solids

Covers shear force and bending moment, torsion, stresses in beams, deflection of beams, matrix analysis of frame structures, analysis of stress and strain in 2-D and 3-D (field equations, transformations), energy methods, stress concentrations, and columns. Lectures and homework assignments involve computer work and hands-on laboratory work in the ITLL, documented by written reports. Credit not granted for this course and CVEN 3161. Prerequisites: Requires prerequisite courses of MCEN 2023 or CVEN 2121 or GEEN 3851. Restricted to students with 27-180 credits (Sophomores/Juniors/Seniors) MCEN or EVEN majors or concurrent degree majors in CVEN&EVEN or MCEN.

College of Engineering & Applied Science   Mechanical Engineering   Solids

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## MCEN-3012 (3) Thermodynamics

Explores fundamental concepts and basic theory, including first and second laws of thermodynamics, properties, states, thermodynamic functions and cycles. Prereq., APPM 2350. Same as GEEN 3852. Prerequisites: Requires prerequisite course of APPM 2350 or MATH 2400. Restricted to students with 57-180 credits (Junior/Senior) MCEN or EVEN majors or concurrent degree majors in CVEN/EVEN or MCEN.

## MCEN-3017 (3) Circuits and Electronics

Introductory course covers analysis of electric circuits by use of Ohm's law, network reduction, node and loop analysis, Thevenin's and Norton's theorems, DC and AC signals, transient response of simple circuits, transfer functions, basic diode and transistor circuits, and operational amplifiers. Prereqs., APPM 2360 and PHYS 1140. Same as ECEN 3010. Prerequisites: Restricted to students in the MSC/CU-Boulder Mechanical Engineering Partnership Program only.

## MCEN-3021 (3) Fluid Mechanics

Examines fundamentals of fluid flow with application to engineering problems. Explores fluid statics and kinematics; conservation equations for mass, momentum, and energy; Bernoulli and Euler equations; potential flow; laminar and turbulent viscous boundary layers; laminar and turbulent pipe flow; and compressible fluid flow. Prereqs., APPM 2360 and MCEN 2023. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Mechanical Engineering (MCEN or MCMR) or Environmental Engineering (EVEN) majors or Civil/Environmental Engineering or Mechanical Engineering Concurrent Degree majors only.

## MCEN-3022 (3) Heat Transfer

Studies fundamentals of heat transfer by conduction, convection, and radiation. Provides applications to heat exchangers, solar panels, and boiling and mass transfer. Also covers numerical methods for solving heat transfer problems and design of engineering equipment involving heat transfer processes. Prerequisites: Requires prereq courses of MCEN 3012 (or GEEN 3852, or CHEN 3320, or ASEN 2002, or AREN 2110) & MCEN 3021 (or GEEN 3853, or CHEN 3200, or CVEN 3313) & MCEN 3030. Restricted to students w/ 57-180 credits (Jr or Sr) MCEN or EVEN majors.

## MCEN-3025 (3) Component Design

Application of mechanics and materials science to the detailed design of various machine elements including shafts bearings, gears, brakes, springs, and fasteners. Emphasizes application and open-ended design problems. Prereq., MCEN 2063. Prerequisites: Requires pre-requisite course of MCEN 2063 (or CVEN 3161, or ASEN 3112).

## MCEN-3030 (3) Computational Methods

Studies fundamental numerical techniques for the solution of commonly encountered engineering problems. Includes methods for linear and nonlinear algebraic equations, data analysis, numerical differentiation and integration, ordinary and partial differential equations. Prereqs., GEEN 1300 and APPM 2360, or equivalent, including a working knowledge of Matlab. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering, Mechanical (MCEN or MCMR) or Environmental Engineering (EVEN) or

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Mechanical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Mechanical Engineering Math

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## MCEN-3032 (3) Thermodynamics 2

Offers advanced topics and applications, including thermodynamics of state, entropy and probability, thermodynamic cycles, and reacting and nonreacting mixtures. Provides application to engines and power generation by conventional and alternative energy technologies. Most assignments are design oriented. Prereqs., MCEN 3012 and 3021. Prerequisites: Requires prerequisite course of MCEN 3021 (or CHEN 3200 or CVEN 3313 or GEEN 3853) and MCEN 3012 (or AREN 2110 or GEEN 3852). Restricted to students with 57-180 credits (Junior/Senior) Mechanical Engineering or Environmental Engineering majors only.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-3037 (2) Data Analysis

Learn to plan and carry out experiments. Coverage includes measurement fundamentals, basic statistical concepts, and uncertainty analysis. Use of statistics for the purpose of analyzing data, including regression, correlation, hypothesis testing, classification, time series analysis, and design of experiments. Prereq., APPM 2360. Prerequisites: Restricted to graduate students in College of Engineering and Applied Science or to students with 57-180 credits (Junior or Senior) or Mechanical Engineering Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-3208 (1-3) Special Topics in Mechanical Engineering

Subject matter to be selected from topics of current interest. Credit to be arranged. Numbered MCEN 3208-3298. Instructor consent required. Prerequisites: Restricted to Mechanical (MCEN or MCMR) majors or students with a plan of Mechanical Engineering Concurrent Degree majors.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-4026 (3) Manufacturing Processes and Systems

Engineering-science design course that examines manufacturing processes for metals, polymers, and composites as well as manufacturing systems that integrate these processes. Lecture topics include: forming, machining, joining, assembling, process integration, computer-aided manufacturing, and manufacturing system engineering. Prereq., MCEN 2024. Prerequisites: Requires prerequisite course of MCEN 2024. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) majors or Mechanical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Mechanical Engineering Manufacturing and Systems

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## MCEN-4037 (2) Measurements Lab

Carry out several experiments designed to teach methods of experimentation and data analysis. Experiments taken from solid mechanics, fluid mechanics, thermal science, and materials science. Emphasizes planning an experiment, applying sound procedures, keeping

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proper records, and communicating results orally and in written reports. Gives students the opportunity to participate in projects that extend over two or more weeks. Prerequisites: Requires prerequisites of ECEN3010 (or ECEN2260) & MCEN2063 (or CVEN3161 or ASEN3112) & MCEN3037 (or APPM4520 or 4570 or CVEN3227 or CHEN3010) & WRTG3030 (or WTRG3035 or HUEN3100 or PHYS3050). Restricted to MCEN majors w/57-180 credits (juniors/seniors).

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-4043 (3) System Dynamics

Covers linear dynamic systems and mathematical tools for understanding them, input-output relationships, modeling templates, complex variables, Laplace transform, time-harmonic forcing and response, Fourier series and discrete Fourier transform, and coupled systems. Prereqs., ECEN 3010 and MCEN 2043 or 3043. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) majors or Mechanical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Mechanical Engineering Solids

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## MCEN-4045 (3) Mechanical Engineering Design Project 1

First part of a two-course capstone design experience in mechanical engineering. Covers problem definition, determining design requirements, alternative design concepts, engineering analysis, proof-of-concept prototype, and CAD drawings. Students make several oral design reviews, a final design presentation, and prepare a written report. Prereqs., MCEN 3025, 3032, 3022, and GEEN 1400. Coreq., MCEN 4026. Prerequisites: Requires prerequisite courses of MCEN 3025 & 3032 & 3022 (or CHEN 3210) and GEEN 1400 (or ECEN 1400 or GEEN 3400). Restricted to students with 87-180 credits (Senior) Mechanical Engineering majors or Mechanical Engineering Concurrent Degree majors only.

College of Engineering & Applied Science Mechanical Engineering Design

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## MCEN-4047 (2) Measurements 2

Four hours of lab per week. Student teams perform laboratory projects that extend over several weeks. Takes experiments from solid mechanics, acoustics, electronics, and other ME-related disciplines. Emphasizes planning an experiment, applying sound experimental procedures, using statistics, keeping proper records, and communicating results orally, on posters, and in written documents. Prerequisites: Requires prerequisite courses of MCEN 2024 and MCEN 4037. Restricted to College of Engineering and Applied Science graduate students or senior BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-4085 (4) Mechanical Engineering Design Project 2

Second part of a two-course capstone design experience in mechanical engineering. Includes refinement of prototype, design optimization, fabrication, testing, and evaluation. Students orally present the final design and prepare a written report and operation manual for the product. Prereq., MCEN 4026 and 4045. Prerequisites: Requires prerequisite courses of MCEN 4026 and MCEN 4045. Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) majors or Mechanical Engineering Concurrent Degree (C-MCEN) majors only.

College of Engineering & Applied Science Mechanical Engineering Design

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## MCEN-4115 (3) Mechantronics and Robotics I

Focuses on design and construction of microprocessor-controlled electro-mechanical systems. Lectures review critical circuit topics, introduce microprocessor architecture and programming, discuss sensor and actuator component selection, robotic systems, and design strategies for complex, multi-system devices. Lab work reinforces lectures and allows hands-on experience with robotic design. Students must design and build an autonomous robotic device. Project expenses may be incurred (\$50 maximum). Prereqs., ECEN 3010 or equivalent and GEEN 1300 or equivalent. Same as MCEN 5115. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) majors or Mechanical Engineering Concurrent Degree (C-MCEN) majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Design](#)

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## MCEN-4117 (3) Anatomy and Physiology for Engineers

Understanding human physiological function from an engineering, specifically mechanical engineering, viewpoint. Introduction to human anatomy and physiology with a focus on learning fundamental concepts and applying engineering (mass transfer, fluid dynamics, mechanics, modeling) analysis. Same as MCEN 5117. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) College of Engineering majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Miscellaneous](#)

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## MCEN-4120 (3) Engineering Statistics

Focuses on probability and statistics, emphasizing engineering applications. Studies frequency distributions; statistical hypotheses and estimation; nonparametric, linear regression, and correlation; nonlinear and multiple regression; analysis of variance; and quality control. Prereq., APPM 2360.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Math](#)

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## Courses

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Search by Course Number

**Subject**   **Number**

MCEN

### MCEN-4123 (3) Vibration Analysis

Highlights free and forced vibration of discrete and continuous systems. Examines Lagrange's equation, Fourier series, Laplace transforms, and matrix and computational methods. Applies knowledge to practical engineering problems. Prereq., MCEN 3030. MCEN 4123 and ASEN 4123 are the same course. Prerequisites: Restricted to College of Engineering majors only.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Solids](#)

### MCEN-4124 (3) Mechanical Behavior of Materials

Addresses the relationship between material structure and the fundamental processes of deformation, yield, and fracture. Examines elements of elasticity theory, introduction to plasticity, and formulation of failure criteria. Studies basic deformation processes in terms of dislocation mechanics and macroscopic mechanical behavior. Takes into consideration the influence of compositional and processing strengthening mechanisms on mechanical properties. Prereqs., MCEN 2024 and 2063.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Materials](#)

### MCEN-4128 (3) Special Topics

Prereq., MCEN 4025 or equivalent.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Special Topics](#)

### MCEN-4131 (3) Air Pollution Control Engineering

Introduces air quality regulations, meteorology, and modeling; methods for controlling major classes of air pollutants, including particulate

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matter and oxides of sulfur and nitrogen; and control technology for industrial sources and motor vehicles. Requires interdisciplinary design projects. Prereq., MCEN 3021 or equivalent. Same as MCEN 5131. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors only.

College of Engineering & Applied Science | Mechanical Engineering | Fluids

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## MCEN-4133 (3) Biomechanics of Solids

Considers the mechanical behavior of biological materials and emphasizes the relationship between structural characteristics and macroscopic behavior. Focuses first on the mechanical behavior of microscopic protein and polysaccharide elements and then on larger scale soft and hard tissue structures. Prereqs., MCEN 2024, 2063, and 3021 or equivalent. Prerequisites: Restricted to College of Engineering and Applied Science graduate students or senior BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Materials

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## MCEN-4135 (3) Wind Energy and Wind Turbine Design

Provides an excellent opportunity for students to learn about a current technology, wind energy, that is of high interest both technically and commercially. Students can then apply various technical courses they have had (e.g. fluid dynamics, dynamics and electric circuits, economics, etc.) to design a wind turbine and determine through economic analysis if their design is financially viable. Prereqs. for MCEN 4135 are two of MCEN 3021, 4043 or 3010 (min. grade C-) or equivalent. MCEN 5135 is restricted to MCEN, ASEN, or CVEN grad students only. MCEN 4135 and 5135 are the same course. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors only.

College of Engineering & Applied Science | Mechanical Engineering | Design

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## MCEN-4141 (3) Indoor Air Pollution

Air pollutants cause material damage and adversely affect human health. People spend over 80 per cent of their time indoors; often, air pollutant levels are higher indoors than outdoors. In this course we study air pollution in indoor environments and design appropriate control technologies. Prereqs., MCEN3021 and 3022. Same as MCEN 5141. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors only.

College of Engineering & Applied Science | Mechanical Engineering | Fluids

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## MCEN-4151 (3) Flow Visualization

Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and shadowgraphy and schlieren. Reviews optics and fluid physics, especially atmospheric clouds. Assignments are student-driven, to individuals and mixed teams of grad, undergrad, engineering majors and photography/video majors. Please see <http://flowvis.colorado.edu>. Prereq., MCEN 3021 or equivalent, or significant imaging experience (photography/video). FILM 4200 and ARTF 5200 are the same course. Same as MCEN 4151/5151.

College of Engineering & Applied Science | Mechanical Engineering | Graduate Film Courses

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## MCEN-4152 (3) Introduction to Combustion

Description of the mechanisms by which fuel and oxidizers are converted into combustion products. Application to practical combustion devices such as Otto, Diesel, gas turbine, and power plant combustion systems. Consideration of combustion-generated air pollution, fire safety, and combustion efficiency. Prereq., MCEN 3012. Recommended prereqs., MCEN 3021 and 3022. Same as MCEN 5152.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-4162 (3) Energy Conversion

Examines common energy-conversion methods and devices. Topics include power-cycle thermodynamics, turbocompressor and expander processes, combustion systems, and applications and limitations of direct energy-conversion systems. Prereq., MCEN 3012.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-4173 (3) Finite Element Analysis

Introductory course covering the theory behind and applications of the finite element method as a general and powerful tool to model a variety of phenomena in mechanical engineering. Applications include structural mechanics, mechanics of elastic continua, and heat conduction. Prereq., MCEN 2023 and 2063, or equivalents. Same as MCEN 5173. Prerequisites: Restricted to Mechanical (MCEN or MCMR) majors or students with a plan of Mechanical Engineering Concurrent Degree majors.

College of Engineering & Applied Science Mechanical Engineering Solids

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## MCEN-4174 (3) Failure of Engineering Materials

Examines the failure of materials used in engineering design through a series of real world case studies. Example failure modes considered include overload, fatigue, creep, and corrosion. Example case studies include failure of aircraft, mountaineering ropes, weight training frames, and toilets. Prereqs., MCEN 2024 and 2063. Same as MCEN 5174.

College of Engineering & Applied Science Mechanical Engineering Materials

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## MCEN-4183 (3) Mechanics of Composite Materials

Introduces various kinds of composite materials, composite fabrication techniques, the physical and mechanical behavior of composites, and analytical and experimental methodologies. Prereqs., MCEN 2024 and 2063, or equivalents. Same as MCEN 5183.

College of Engineering & Applied Science Mechanical Engineering Solids

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## MCEN-4208 (3) Special Topics in Mechanical Engineering

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Subject matter to be selected from topics of current interest. Credit to be arranged. Numbered MCEN 4208-4298. Prereq., instructor consent.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-4228 (1-4) Special Topics

May be repeated up to 15 credit hours. Prereqs., MCEN 2024 and 2063. Same as MCEN 5228. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN) or Environmental Engineering (EVEN) majors only.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-4278 (3) Special Topics

Same as MCEN 5268.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-4848 (1-6) Independent Study

Subjects arranged in consultation with undergraduate advisor to fit the needs of the particular student. Numbered MCEN 4848-4898. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Mechanical Engineering (MCEN or MCMR) majors or students with a plan of Mechanical Engineering Concurrent Degree.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-5020 (3) Methods of Engineering Analysis 1

Studies selected topics from linear algebra, ordinary differential equations, and Fourier series. Assigns computer exercises. Correlates with analysis topics in other mechanical engineering graduate courses, and emphasizes applications. Prereq., APPM 2360 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Math

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## MCEN-5021 (3) Introduction to Fluid Dynamics

Focuses on physical properties of gases and liquids, and kinematics of flow fields. Analyzes stress; viscous, heat-conducting Newtonian fluids; and capillary effects and surface-tension-driven flow. Other topics include vorticity and circulation, ideal fluid flow theory in two and three dimensions, Schwartz-Christoffel transformations, free streamline theory, and internal and free-surface waves. Coreq., MCEN 5020 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS

Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Fluids

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## MCEN-5022 (3) Classical Thermodynamics

First and second laws of thermodynamics. Entropy and availability. Cycle analysis. Thermodynamic properties of pure substances and mixtures. Property relations. Chemical reactions and chemical availability. Energy systems analysis. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-5023 (3) Solid Mechanics 1

Introduces stress, strain, and motion of a continuous system. Discusses material derivative; fundamental laws of mass, momentum, energy, and entropy; constitutive equations and applications to elastic and plastic materials. Prereq., MCEN 2063 or equivalent; coreq., MCEN 5020 or equivalent. Similar to ASEN 5012. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Solids

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## MCEN-5024 (3) Materials Chemistry and Structures

Provides graduate level students with a comprehensive overview of the chemistry and structure of material systems, with a focus on chemical bonding, the resulting material structures and their properties. This course is intended to become one of the four core courses offered in the new Materials Science curriculum. Course topics include: bonding in solids, crystalline and amorphous states, basic group theory, diffraction, metals and alloys, ceramics, and an intro to mat. characterization. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Materials

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## MCEN-5025 (3) Computer-Aided Design of Mechanical Systems

Instructs students in displacement, velocity, and accelerations matrix formulation of mechanisms. Emphasizes numerical methods to solve simultaneous nonlinear algebraic and differential equations modeling mechanical devices. Involves analysis and synthesis of mechanical components and systems, including planar and spatial linkages, cams, springs, shafts, and gear trains. Prereqs., MCEN 3030 or equivalent, and MCEN 3025. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Design

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## MCEN-5027 (1) Graduate Seminar

Offers weekly presentations by visiting speakers, faculty, and students. May be repeated up to 6 total credit hours. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Miscellaneous](#)

## MCEN-5034 (3) Thermodynamics of Materials

Provides a unified presentation of fundamental concepts applicable to the thermodynamics of engineering materials. Develops quantitative tools for understanding the physical principles that govern phase equilibrium and transformation. Generates binary and ternary phase diagrams and determine the resulting materials structures and corresponding physical and mechanical properties. Recommended prereqs., MCEN 2024 and 3012.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Materials](#)

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# Courses

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MCEN

## MCEN-5040 (3) Methods of Engineering Analysis 2

Studies selected topics from the theory of complex variables, integral transform methods, partial differential equations, and variational methods. Assigns computer exercises. Correlates with analysis topics in other mechanical engineering graduate courses, and emphasizes applications. Prereq., MCEN 5020 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Math](#)

## MCEN-5041 (3) Viscous Flow

Highlights exact solution of Navier-Stokes equations and fundamentals of rotating fluids. Considers Low Reynolds number flow; similarity solutions; viscous boundary layers, jets, and wakes; and unsteady viscous flow. Prereq., MCEN 5021 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Fluids](#)

## MCEN-5042 (3) Heat Transfer

Studies development of equations governing transport of heat by conduction, convection, and radiation, and their solution. Includes analytical and numerical solution of initial and boundary value problems representative of heat conduction in solids. Describes heat transfer in free and forced convection, including laminar and turbulent flow. Also involves radiation properties of solids, liquids, and gases and transport of heat by radiation. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Thermal](#)

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## MCEN-5044 (3) Mechanical Behavior of Materials

This introductory-level graduate course incorporates relevant aspects of materials science, solid mechanics, thermodynamics and mathematics, and applies them to achieve a fundamental understanding of the mechanical behavior of crystalline and non-crystalline engineering materials. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students. Prereq., MCEN 2024 and 2063 or equivalent. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Materials

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## MCEN-5045 (3) Design for Manufacturability

Topics include general design guidelines for manufacturability; aspects of manufacturing processes that affect design decisions; design rules to maximize manufacturability; statistical considerations; value engineering and design for assembly (manual, robotic, and automatic). Presents case studies of successful products exhibiting Dfm. Prereq., MCEN 4026 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Materials

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## MCEN-5066 (3) Principles and Practices of World Class Manufacturing

Introduces manufacturing principles and practices that are essential to competing successfully in a global environment. Topics include manufacturing as a competitive tool, total quality management, process control, benchmarking, total productive maintenance, just in time, design of experiments, flexible manufacturing, and case studies.

College of Engineering & Applied Science | Mechanical Engineering | Manufacturing and Systems

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## MCEN-5115 (3) Mechantronics and Robotics I

Same as MCEN 4115. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Design

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## MCEN-5117 (3) Anatomy and Physiology for Engineers

Same as MCEN 4117. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Miscellaneous

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## MCEN-5121 (3) Compressible Flow

Applies energy, continuity, and momentum principles to compressible flow. Topics include normal and oblique shocks; Prandtl-Meyer expansion; methods of characteristics; and one-, two-, and three-dimensional subsonic, supersonic, and hypersonic flows. Prereq., MCEN 5021 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Fluids

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## MCEN-5122 (3) Statistical Thermodynamics

Axiomatic formulation of macroscopic thermodynamics. Quantum mechanical description of atomic and molecular structure. Statistical mechanics description of thermodynamic properties of gases, liquids and solids. Elementary kinetic theory of gases and evaluation of transport properties. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prereq., undergraduate thermodynamics. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Thermal

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## MCEN-5123 (3) Theory of Vibration

Same as MCEN 4123. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Solids

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## MCEN-5125 (3) Optimal Design of Mechanical Components

Applies linear and nonlinear optimization methods to the design of mechanical components and systems. Examines unconstrained and constrained optimizations as well as formulation of objective functions, including cost, weight, response time, and deflection. Applies knowledge to gears, springs, cams, and linkages. Prereqs., MCEN 3025 and 3030 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Design

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## MCEN-5126 (3) Applied Statistics for the Manufacturing and Process Industries

Discusses the concepts and techniques of applied statistics essential to quality control and product/process improvement. Includes computer control (SQC/SPC), sampling methods and time series analysis, and methods of experimental design. Prereq., MCEN 4120. Same as CHEN 5127 and CVEN 5127. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS

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Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Manufacturing and Systems

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## MCEN-5131 (3) Air Pollution Control Engineering

Same as MCEN 4131. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Fluids

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## MCEN-5135 (3) Wind Energy and Wind Turbine Design

Provides an excellent opportunity for students to learn about a current technology, wind energy, that is of high interest both technically and commercially. Students can then apply various technical courses they have had (e.g. fluid dynamics, dynamics and electric circuits, economics, etc.) to design a wind turbine and determine through economic analysis if their design is financially viable. Prereqs. for MCEN 4135 are two of MCEN 3021, 4043 or 3010 (min. grade C-) or equivalent. MCEN 5135 is restricted to MCEN, ASEN, or CVEN grad students only. MCEN 4135 and 5135 are the same course. Prerequisites: Restricted to Mechanical Engineering, Civil Engineering or Aerospace Engineering graduate students only.

College of Engineering & Applied Science Mechanical Engineering Design

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## MCEN-5141 (3) Indoor Air Pollution

Same as MCEN 4141. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Fluids

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## MCEN-5142 (3) Computational Fluid Dynamics, Heat Transfer, and Combustion

Finite difference, finite volume, finite element, and spectral methods, consistency, stability and convergence of numerical schemes, governing equations for reacting flows, convection, diffusion, convection-diffusion problems, matrix solution methods-cyclic reduction, Fourier, Jacobin, Gauss Siedel, Sor, Adi, Chebschev acceleration, Lax-Wendroff scheme, McCormack scheme, transonic small disturbance equation solution, staggered grids, simple scheme, discrete Fourier transform. Students work on two substantial projects using commercial software. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-5146 (3) Applied Statistics in Research and Development

Same as CHEN 5128. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Manufacturing and Systems

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## MCEN-5151 (3) Flow Visualization

Explores techniques for the visualization of the physics of fluid flows including seeding with dyes, particles and bubbles, and shadowgraphy and schlieren. Reviews optics and fluid physics, especially atmospheric clouds. Assignments are student-driven, to individuals and mixed teams of grad, undergrad, engineering majors and photography/video majors. Please see <http://flowvis.colorado.edu>. Prereq., MCEN 3021 or equivalent, or significant imaging experience (photography/video). FILM 4200 and ARTF 5200 are the same course. Same as MCEN 4151/5151.

College of Engineering & Applied Science Mechanical Engineering Graduate Film Courses

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## MCEN-5152 (3) Introduction to Combustion

Same as MCEN 4152. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Thermal

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## MCEN-5161 (3) Aerosols

Introduces atmospheric aerosols and properties of their distributions, followed by fundamental descriptions of single particle dynamics, thermodynamics, nucleation, coagulation, mass transfer and populations dynamics. During the second half of the course, the focus will shift to sources and sinks of atmospheric aerosols, their impacts on atmospheric chemistry and radiation, and the impacts of these processes on air quality and climate. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Mechanical Engineering Fluids

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## MCEN-5164 (3) Fracture

Focuses on basic mechanisms controlling fracture in brittle materials, reduction of capacity for plastic deformation in engineering materials used at high-strength levels, and selection of materials in terms of toughness as well as strength. Prereq., MCEN 4124 and 5044, or equivalent.

College of Engineering & Applied Science Mechanical Engineering Materials

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## MCEN-5166 (3) Electronics Packaging and Manufacturing

To provide basic knowledge of the technologies and processes required for the packaging and manufacturing of electronic products. Topics covered include wafer fabrication, different levels of packaging, thermal management, life cycle engineering, printed wiring board assembly processes, and process control. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Manufacturing and Systems](#)

## MCEN-5173 (3) Finite Element Analysis

Same as MCEN 4173. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Solids](#)

## MCEN-5174 (3) Failure of Engineering Materials

Same as MCEN 4174. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Materials](#)

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# Courses

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MCEN

## MCEN-5183(3) Mechanics of Composite Materials

Same as MCEN 4183. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Solids](#)

## MCEN-5208 (1-4) Special Topics

Credit hours and subject matter to be arranged. Numbered MCEN 5208-5298. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Miscellaneous](#)

## MCEN-5228 (1-4) Special Topics

May repeated up to 15 total credit hours. Same as MCEN 4228. Prerequisites: Restricted to graduate students in College of Engineering and Applied Science or to students with 57-180 credits (Junior or Senior) or Mechanical Engineering Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Miscellaneous](#)

## MCEN-5248 (1-3) Special Topics

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Special Topics](#)

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## MCEN-5268 (3) Special Topics

Same as MCEN 4278.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-5636 (3) Micro-Electro-Mechanical Systems 1

Addresses issues of micro-electro-mechanical systems (MEMS) modeling, design, and fabrication. Emphasizes the design and fabrication of sensors and actuators due to significance of these devices in optics, medical instruments, navigation components, communications, and robotics. Prereq., instructor consent. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Manufacturing and Systems

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## MCEN-5848 (1-6) Independent Study

Available only through approval of graduate advisor. Subjects arranged to fit the needs of the particular student. Numbered MCEN 5848--5898. Prereq., graduate standing.

College of Engineering & Applied Science Mechanical Engineering Miscellaneous

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## MCEN-5898 (1-4) Independent Study

Available only through approval of graduate advisor. Subjects arranged to fit the needs of the particular student. Numbered MCEN 5848--5898. Prereq., graduate standing.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-6163 (3) Elastic Waves

Effect of transient localized sources or dislocations in an elastic medium is studied. . Modeling and application of waves in rods, beams, and plates is emphasized. In addition, ultrasonic, nondestructive evaluation and seismological problems are discussed. Prereq., MCEN 5023 or equivalent. Recommended MCEN 5040 or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Solids

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## MCEN-6184 (3) Structure and Properties of Polymers

Emphasizes the relationship between molecular structure and macroscopic properties. Structural aspects include chain conformation,

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configuration, and the crystalline and amorphous states. Discusses physical and mechanical properties with a focus on solution and phase behavior, transitions of bulk polymers, and rubber and viscoelastic behavior. Prereq., graduate standing and MCEN 5024 and 5044, or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Materials

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## MCEN-6228 (3) Special Topics

Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-6278 (3) Special Topics

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-6848 (1-6) Independent Study

Available only through approval of graduate advisor. Subjects arranged to fit the needs of the particular student. Numbered MCEN 6848-6898. Prereq., graduate standing.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-6898 (1-6) Independent Study

Available only through approval of graduate advisor. Subjects arranged to fit the needs of the particular student. Numbered MCEN 6848-6898. Prereq., graduate standing.

College of Engineering & Applied Science Mechanical Engineering Special Topics

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## MCEN-6949 (1) Master's Degree Candidacy

College of Engineering & Applied Science Mechanical Engineering Thesis

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## MCEN-6959 (1-6) Master's Thesis

College of Engineering & Applied Science | Mechanical Engineering | Thesis

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## MCEN-7120 (3) Perturbation Methods

Teaches regular and singular perturbation methods for solving ordinary and partial differential equations and for evaluating integrals. Emphasizes formulation of mathematical models in fluid mechanics, combustion, heat transfer, solid mechanics, dynamics, and wave propagation. Prereq., MCEN 5020 and 5040, or equivalent. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Math

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## MCEN-7122 (3) Combustion Phenomena

Applies multicomponent fluid equations of motion and chemical thermodynamics to a variety of combustion problems. Covers droplet combustion, premixed and diffusion flames, boundary layer combustion, detonation wave theory, topics related to internal combustion engines, and liquid and solid rockets. Prereq., MCEN 3012 and 3021. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Thermal

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## MCEN-7123 (3) Dynamics of Continuous Media

Reflects upon derivation of wave equations from the basic equations of dynamic elasticity. Topics include propagation of elastic waves in infinite and partially bounded media, Rayleigh waves and Love waves, Pochhammer solution for a rod, and waves in plates and in layered and anisotropic media. Prereq., MCEN 5020, 5040, and 5043, or equivalents. Same as PHYS 6680 and GEOL 6680. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

College of Engineering & Applied Science | Mechanical Engineering | Solids

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## MCEN-7208 (1-4) Special Topics

Credit and subject matter to be arranged. Numbered MCEN 7208-7298.

College of Engineering & Applied Science | Mechanical Engineering | Special Topics

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## MCEN-7221 (3) Turbulence

Hydrodynamic stability theory, equations for turbulent flows, free shear flows and boundary layers, homogeneous and isotropic

turbulence, overview of turbulent combustion, reaction kinetics, energy equation, Favre averaging, Pdfs, premixed and nonpremixed flame modeling, and recent developments. Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering Concurrent Degree students. Prerequisites: Restricted to College of Engineering and Applied Science Graduate Students or BS/MS Mechanical Engineering or Concurrent Degree students.

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Fluids](#)

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## MCEN-8999 (1-10) Doctoral Thesis

[College of Engineering & Applied Science](#) [Mechanical Engineering](#) [Special Topics](#)

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# Courses

Search by College, Department & Category

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MEMS

## MEMS-2020 (3) Introduction to Medieval and Renaissance Studies

Introduces students to the literature, history, culture and art of Europe and the Mediterranean basin from late antiquity through the renaissance. The course is interdisciplinary and focuses on topics which reveal the dynamism and diversity of pre-modern culture. Formerly MEDV 2020.

[College of Arts & Sciences](#) [Medieval and Early Modern Studies](#)

## MEMS-4020 (3) Medieval and Early Modern Studies: Texts and Contexts

Focuses on communities in the Mediterranean basin and Europe (i.e., cloister, court, and city), discussing major literary texts and visual monuments associated with them and their historical context. Emphasizes tensions between tradition and innovation, Latin and vernacular, East and West, Christian and non-Christian (Jewish and Islam), sacred and secular, authority and freedom, and male and female. Prereqs., CLAS 1110 and 1120, or ENGL 2222 and 2502, or HIST 1010 and 1020, or HUMN 1010 or 1020, or instructor consent. Same as MEMS 5020. Formerly MEDV 4020.

[College of Arts & Sciences](#) [Medieval and Early Modern Studies](#)

## MEMS-4030 (3) Medieval and Early Modern Studies: Special Topics

Different topics offered by the faculty of the Medieval and Early Modern Studies Program in alternate semesters. Topics may include the literature of pilgrimage and travel, women and minorities, theatre, music, epic, medieval and early modern views of the classics, the Bible, and medieval and early modern theories of education. Prereqs., CLAS 1110 and 1120, or ENGL 2222 and 2502, or HIST 1010 and 1020, or HUMN 1010 or HUMN 1020, or instructor consent. Same as MEMS 5030. Formerly MEDV 4030.

[College of Arts & Sciences](#) [Medieval and Early Modern Studies](#)

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## MEMS-5020 (3) Medieval and Early Modern Studies: Texts and Contexts

Prereq., graduate standing in comparative literature, theatre, classics, or instructor consent. Recommended prereq., ability to use literary texts in their original language. Same as MEMS 4020. Formerly MEDV 5020.

College of Arts & Sciences Medieval and Early Modern Studies

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## MEMS-5030 (3) Medieval and Early Modern Studies: Special Topics

Prereq., graduate standing in comparative literature, theatre, classics, or instructor consent. Recommended prereq., ability to use literary texts in their original language. Same as MEMS 4030. Formerly MEDV 5030.

College of Arts & Sciences Medieval and Early Modern Studies

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# Courses

Search by College, Department & Category

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MGMT

## MGMT-3030 (3) Critical Leadership Skills

Provides an opportunity to learn about and practice the skills required of all managers. These skills include leadership, negotiation, conducting performance appraisals, delegation, effective communication, interviewing and making hiring decisions, and managing employees with problem behaviors. Objectives include developing self-awareness of strengths and weaknesses as a manager, gaining familiarity with theory-based skills, and developing proficiency in the use of these skills. Prereq., BCOR 2300. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) [Management](#)

## MGMT-3100 (3) Management of Service Operations

Examines concepts, tools and techniques used in the management of service operations. Focuses on how firms add value and compete with high quality and efficient services. Emphasizes the use of models for designing new services and improving the effectiveness of service processes. Studies the application of technology in the context of productivity, growth and the globalization of services. Restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 3030, OPIM 3030. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

[Leeds School of Business](#) [Management](#)

## MGMT-3200 (3) Business Intelligence

Focuses on acquiring accurate and timely knowledge to make effective operational, tactical and strategic decisions. This course focuses on how to create and use such knowledge. Topics include problem definition; critical factor isolation; data collection, storage, and querying; transformation of data into knowledge through appropriate analyses and aggregation; and the presentation of the knowledge to decision makers in meaningful ways. Restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 3100, OPIM 3100. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

[Leeds School of Business](#) [Management](#)

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## MGMT-3210 (3) Business Application Programming

Uses computer programming to teach a complex problem solving skill. Its two main course objectives are: (1) learn to use a structured problem decomposition method, designed to help decompose a complex problem into manageable sub-problems. This method is best exemplified in programming but is applicable to any complex business problem. (2) understand the core concepts of programming--such as variable, object model, and control flow--that will help you not only appreciate the power of programming behind modern technologies but also better understand business process models. Formerly SYST 2010, OPIM 2010 and MGMT 2010.

Leeds School of Business | Management

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## MGMT-4010 (3) Redefining the Employee-Employer Relationship

Explores developments in such areas as employee relations law and procedures, employee and employer rights, worker involvement programs, environmental safety and health, and the effects of technology on emerging organization forms. Prereq., BCOR 2300. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Management

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## MGMT-4020 (3) Hiring and Retaining Critical Human Resources

Allows students the opportunity to practice conducting job analyses and then use this information to develop employee selection and performance appraisal systems. Provides thorough coverage of employers' equal employment opportunity and affirmative action obligations, as well as various approaches to gender, cultural, and ethnic diversity. Prereq., BCOR 2300. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Management

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## MGMT-4030 (3) Managing Employee Reward Systems

Examines theories of work motivation and relates them to the strategic use of compensation and other reward systems. Topics include procedures for managing base pay; linking pay incentives to productivity at the individual, group, and organizational levels; developing cost-effective programs of employee benefits; and the use of nonfinancial reward systems. Prereq., BCOR 2150 or BCOR 2300. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Management

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## MGMT-4040 (3) Individual, Team, and Organizational Development

Explores how to determine where an organization needs to focus its development efforts, how to develop and deliver an effective training program, and how to evaluate the impact of development programs on organizational effectiveness. Explores individual, team, and organization-wide development, including such topics as skills training, team building, and managing change. Prereq., BCOR 2150 or BCOR 2300. Restricted to students with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Management

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## MGMT-4090 (3) IT and Business Strategy

Although some companies are very successful in discovering and cultivating innovative technology-enabled business strategies, many fail in the process. Combines theories and frameworks with practical approaches to provide students with the skills required to help companies identify business opportunities, find appropriate information related technologies, and lead adoption efforts to success. Prereqs., BCOR 2200 or BCOR 2300. Restricted to business majors with 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Management

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## MGMT-4110 (3) Supply Chain Management

Explores the key issues related to the design and management of supply chains. Covers the efficient integration of suppliers, production facilities, warehouses, and stores so that the right products in the right quantity reach customers at the right time. Focuses on the minimization of the total supply chain cost subject to service requirements imposed by a variety of industries. Restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 4050, OPIM 4050. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

Leeds School of Business Management

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## MGMT-4120 (3) Managing Business Processes

Covers the concepts and tools to design and manage business processes. Emphasizes modeling an analysis, information technology support for process activities, and management of process flows. Graphical simulation software is used to create dynamic models of business processes and predict the effect of changes. Prepares students for a strong management or consulting career path in business processes. MGMT 4120 is restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. MGMT 4120 and 5120 are the same course. Formerly SYST 4060, OPIM 4060. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

Leeds School of Business Management

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## MGMT-4130 (3) Sustainable Operations

Operational sustainability is not just an obligation, as set of strategies or a niche market to explore, but a critical shift in mindset of how businesses function. Sustainable operations examines business strategies in response to environmental and social challenges. The course takes a pragmatic business perspective on improving operations across the supply chain. Grounded in resource efficiency, life-cycle thinking and a dose of investigative skepticism, the course assists students to thoroughly understand the scope of costs, benefits and risks associated with driving businesses toward sustainable operations. Prereqs., BCOR 2500, 3010 and 60 hours completed. MGMT 4130 and CESR 4130 are the same course. Prerequisites: Restricted to Business, AEBU, ARBU, CEBU, CVBU, CSBU, ECBU, MEBU, EVBU, ADBU, BNBU, NEBU or MUBU Majors with 52-180 units completed.

Leeds School of Business Management

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## MGMT-4140 (3) Project Management

Introduces multidisciplinary project management concepts, skills, and tools, including the relationship between project definition,

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organization, planning, scheduling, resource and risk management, control, costing, and performance. Presents both qualitative and quantitative tools for better project management. Prereq., BCOR 2500 and 52 hours completed. Formerly OPIM 4080 and MGMT 4085. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Management](#)

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## MGMT-4150 (3) International Operations Management

Compares systems of production/operations management in the United States with those in Japan, Europe, and Asia. Contrasts various regional and national approaches to business, quality management, labor practices, management styles, international competitiveness, productivity, distribution systems, trade practices, and strategies for penetrating foreign markets. Examines different sociocultural environments, government-business relationships, banking industries, operations strategies, and the potential for transferring industrial management practices and techniques between countries. Prereq., BCOR 2500. Restricted to students with 52 hours completed. Formerly OPIM 4065 and MGMT 4070. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Management](#)

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## MGMT-4210 (3) Systems Thinking

Analysis of systems thinking and understanding the complex interactions of collections of people, processes, organizations, and technologies. Students learn to be creative and critical thinkers who can conceptually model the very complex systems we encounter in our world today. Restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 3000, OPIM 3000. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

[Leeds School of Business](#) | [Management](#)

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## MGMT-4220 (3) Business Technologies

Covers the use and configuration of ERP (enterprise resource planning) technologies in businesses. Emphasizes the understanding of the usage of technology in facilitating business processes within firms. Covers many modules/functional areas, including sales, marketing, distribution, manufacturing, etc. Students learn the importance of technology to organizations through hands-on use of multiple ERP software, focusing on both business processes as well as technology. Restricted to students with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 3101, OPIM 3101. Prerequisites: Restricted to students with 52-180 units completed.

[Leeds School of Business](#) | [Management](#)

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## MGMT-4230 (3) Design of Usable Business Systems

Focuses on the usefulness and usability of systems in organizations. Examines the bottom line implications of information systems and how to create systems that are easy to use for all potential users. Creative and critical thinking to design and build systems are stressed through individual and team exercises. MGMT 4230 is restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. MGMT 4230 and 5230 are the same course. Formerly SYST 4510, OPIM 4510. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

[Leeds School of Business](#) | [Management](#)

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## MGMT-4820 (3) Topics in Business

Experimental course offered irregularly for purpose presenting new subject matter in organization management. Same as MGMT 5820.

Leeds School of Business Management

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## MGMT-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Management. Restricted to Business (BUSN) majors with 52-180 units completed. Prerequisites: Restricted to Business (BUSN) majors with 52-180 units completed.

Leeds School of Business Management

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## MGMT-4850 (3) Senior Seminar in Management

Covers the issues and challenges of running a firm in a competitive environment. It integrates and builds upon coursework in other functional areas. Discusses principles, frameworks, and techniques that helps understand how to analyze the competitive environment; firm sources of competitive advantage; competitive dynamics; and, specific types of strategies to promote firm performance. Focuses on specific company examples. Prereqs., BCOR 2300, 2500, MGMT 3030. Restricted to students with 102-180 units completed. Formerly MGMT 4000. Prerequisites: Restricted to students with 102-180 units completed.

Leeds School of Business Management

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## MGMT-4900 (1-3) Independent Study

Intended only for exceptionally well qualified business seniors. Departmental form required. Prereq., dean and instructor consent.

Leeds School of Business Management

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## MGMT-4910 (1-3) Academic Internship in Management

Offers students the opportunity to gain professional work experience in a management position while still in school. Provides academically relevant work experience that complements students' studies and enhances their career potential. Includes 100 hours per credit and a course paper. Instructor consent is required. Pass/Fail grading only. Restricted to students with 52-180 units completed. Prereq., BCOR 2500. Formerly SYST 4910, OPIM 4910. Prerequisites: Restricted to students with 52-180 units completed.

Leeds School of Business Management

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## MGMT-5120 (3) Managing Business Processes

Covers the concepts and tools to design and manage business processes. Emphasizes modeling an analysis, information technology support for process activities, and management of process flows. Graphical simulation software is used to create dynamic models of business processes and predict the effect of changes. Prepares students for a strong management or consulting career path in business

processes. MGMT 4120 is restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. MGMT 4120 and 5120 are the same course. Formerly SYST 4060, OPIM 4060. Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) | [Management](#)

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## MGMT-5230 (3) Design of Usable Business Systems

Focuses on the usefulness and usability of systems in organizations. Examines the bottom line implications of information systems and how to create systems that are easy to use for all potential users. Creative and critical thinking to design and build systems are stressed through individual and team exercises. MGMT 4230 is restricted to Business (BUSN) majors with 52-180 units completed. Prereq., BCOR 2500. MGMT 4230 and 5230 are the same course. Formerly SYST 4510, OPIM 4510. Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) | [Management](#)

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## MGMT-5820 (3) Topics in Business

Same as MGMT 4820.

[Leeds School of Business](#) | [Management](#)

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# Courses

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MGMT

## MGMT-8900 (1-3) Independent Study

Requires consent of instructor under whose direction study is taken. Departmental form required.

[Leeds School of Business](#) | [Management](#)

## MGMT-8990 (1-10) Doctoral Thesis

Work with a faculty advisor on a doctoral thesis. Student should have passed comprehensive exam before registering for doctoral thesis hours. Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) | [Management](#)



# Courses

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MILR

## MILR-1011 (2) Adventures in Leadership 1

Introduces fundamentals of leadership and the United States Army. Examines its organization, customs, and history as well as its current relevance and purpose. Students also investigate basic leadership and management skills necessary to be successful in both military and civilian settings. Includes fundamentals of Army leadership doctrine, team-building concepts, time and stress management, an introduction to cartography and land navigation, marksmanship, briefing techniques, and some basic military tactics.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

## MILR-1021 (2) Adventures in Leadership 2

Continues the investigation of leadership in small organizations. Covers selected topics such as basic troop leading procedures, military first aid and casualty evacuation concepts, creating ethical work climates, an introduction to Army organizations and installations, and a further examination of basic military tactics. Introduces students to effective military writing styles.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

## MILR-2031 (3) Methods of Leadership and Management 1

Comprehensively reviews advanced leadership and management concepts including motivation, attitudes, communication skills, problem solving, human needs and behavior, and leadership self development. Students continue to refine effective written and oral communications skills and to explore topics such as the basic branches of the Army, and officer and NCO duties. Students conduct classroom and practical exercises in small unit light infantry tactics and are prepared to perform as midlevel leaders in the cadet organization.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

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## MILR-2041 (3) Methods of Leadership and Management 2

Focuses on leadership and management functions in military and corporate environments. Studies various components of Army leadership doctrine to include the four elements of leadership, leadership principles, risk management and planning theory, the be-know-do framework, and the Army leadership evaluation program. Continue to refine communication skills.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

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## MILR-3052 (3) Military Operations and Training 1

Further explores the theory of managing and leading small military units with an emphasis on practical applications at the squad and platoon levels. Students examine various leadership styles and techniques as they relate to advanced small unit tactics. Familiarizes students with a variety of topics such as cartography, land navigation, field craft, and weapons systems. Involves multiple, evaluated leadership opportunities in field settings and hands-on experience with actual military equipment. Students are given maximum leadership opportunities in weekly labs.

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## MILR-3062 (3) Military Operations and Training 2

Studies theoretical and practical applications of small unit leadership principles. Focuses on managing personnel and resources, the military decision making process, the operations order, and oral communications. Exposes the student to tactical unit leadership in a variety of environments with a focus on preparation for the summer advance camp experience. Prereq., consent of the Professor of Military Science.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

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## MILR-4072 (3) Officer Leadership and Development 1

Examines management and leadership concepts and techniques associated with planning and executing military training and operations at company and higher echelons. Includes analyses of professional ethics and values, effective training principles and procedures, subordinate counseling, and effective staff officer briefing techniques. Also investigates other subjects such as counter terrorism, modern peacekeeping missions, and the impact of the information revolution on the art of land warfare. Conducted both in and out of classroom setting and with multiple practical leadership opportunities to organize cadet training and activities. Prereq., consent of the Professor of Military Science.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Military Science \(U.S. Army\)](#)

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## MILR-4082 (3) Officer Leadership and Development 2

Continues Milr 4072 study of management and leadership concepts and techniques, providing practical leadership experiences in the classroom and during multiple cadet-run activities. Also examines varied topics such as theory and practice of the military justice system,

law of war, military-media relations, support mechanisms for soldiers and their families, operational security considerations, and historical case studies in military leadership in the context of 21st century land warfare. Prereq., consent of the Professor of Military Science.

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## Courses

Search by College, Department & Category

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Search by Course Number

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MKTG

### MKTG-3150 (3) Sales Management

Explores the selling task and the essentials of managing the sales force. Includes recruiting, selecting and hiring, training, compensating, supervising, and controlling. Covers sales organization, sales planning, sales forecasting, assigning territories, quotas, and sales analysis. Prereq., BCOR 2400. Restricted to students with 52 hours completed. Formerly MKTG 4150. Prerequisites: Restricted to Business or Advertising majors and 52-180 hours completed.

[Leeds School of Business](#) [Marketing](#)

### MKTG-3250 (3) Buyer Behavior

Covers both consumer buying behavior and organizational buying behavior. Consumer behavior topics include needs and motives, personality, perception, learning, attitudes, cultural influence, and contributions of behavioral sciences that lead to understanding consumer decision making and behavior. Explores differences between business and consumer markets, business buying motives, the organizational buying center and roles, and the organizational buying process. Required for marketing majors. Prereq., BCOR 2400. Restricted to students with 52 hours completed. Prerequisites: Requires pre-requisite courses of BCOR 2050 or 2400. Restricted to Business or ADVT Majors and 52-180 hours completed.

[Leeds School of Business](#) [Marketing](#)

### MKTG-3350 (3) Marketing Research

Explores fundamental techniques of data collection and analysis used to solve marketing problems. Specific topics include problem definition, planning an investigation, developing questionnaires, sampling, tabulation, interpreting results, and preparing and presenting a final report. Required for marketing majors. Prereqs., BCOR 1020 and 2400. Restricted to students with 52 hours completed. Prerequisites: Requires pre-requisite courses of BCOR 1020 and 2050 or 2400. Restricted to Business Majors with 52-180 units completed.

[Leeds School of Business](#) [Marketing](#)

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## MKTG-3825 (3) Experimental Seminar

Offered irregularly. Provides opportunity for investigation into new frontiers in marketing. Prereq., BCOR 2400. Restricted to BUSN majors with minimum 52 units completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business Marketing

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## MKTG-4250 (3) Product Strategy

Covers major topics in managing long-term customer relationships that derive from products. Focuses on concepts, analyses, and strategies for existing and new products. Topics include concept development and testing, conjoint analysis, product positioning, brand image measurements and brand management, and product issues in public policy and ethics. Methods of instruction include lectures, case discussions, student group papers and projects, and examinations. Prereqs., MKTG 3250 and 3350. Prerequisites: Requires pre-requisite courses of MKTG 3250 and 3350. Restricted to Leeds School of Business (BUSN) majors with 52 minimum units required.

Leeds School of Business Marketing

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## MKTG-4300 (3) Pricing and Channels of Distribution

Offered regularly to examine pricing and channel management, the two key components of companys' marketing strategies. Help students to understand the common types of pricing and channel strategies, the rationales behind these strategies. Train students to think analytically in order to apply these strategies. Prereqs., MKTG 3250 and 3350. Restricted to BUSN students with minimum 52 units completed. Prerequisites: Requires pre-requisite courses MKTG 3250 and 3350. Restricted to Business majors with minimum 52 units completed.

Leeds School of Business Marketing

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## MKTG-4350 (3) Services Marketing Strategy

Designed for those students interested in working in the service industries. Addresses the distinct needs and problems of service organizations in the area of marketing and service quality. Service organizations (i.e., banks, transportation companies, hotels, hospitals, educational institutions, professional services, etc.) require a distinctive approach to marketing strategy---both in its development and execution. Builds and expands on marketing ideas and how to make them work in service settings. Prereqs., MKTG 3250 and 3350.

Leeds School of Business Marketing

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## MKTG-4500 (3) Advertising Management

Prereqs., MKTG 3250 and 3350. Restricted to students with 52 hours completed.

Leeds School of Business Marketing

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## MKTG-4550 (3) Advertising and Promotion Management

Analyzes advertising and promotion principles and practices from the marketing manager's point of view. Considers the decision to advertise, market analysis as a planning phase of the advertising program, media selection, public relations, sales promotion, promotion budgets, campaigns, evaluation of results, and agency relations. Prereqs., MKTG 3250 and 3350. Prerequisites: Requires prerequisite courses of MKTG 3250 and 3350. Restricted to Leeds School of Business (BUSN) majors with 52 minimum units required.

Leeds School of Business | Marketing

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## MKTG-4650 (3) Institutional Relationships and Strategy

Focuses on the management of a firm's relationships with other businesses. Addresses business-to-business marketing strategies, relationships with channel members, and strategic alliances/partnerships. Topics include relationship structures, power, conflict, negotiation, industry analysis, selection of business partners, and managing for long-term stability. Prereqs., MKTG 3250 and 3350.

Leeds School of Business | Marketing

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## MKTG-4810 (3) Honors Seminar

Social responsibilities of the business executive, business ethics, business-government relations, and business in literature. Open to seniors who have completed at least 30 semester hours of business courses with not less than a 3.30 GPA and have instructor consent. Prereq., BCOR 2400.

Leeds School of Business | Marketing

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## MKTG-4820 (3) Special Topics in Marketing

Offered irregularly. Provides opportunity for investigation into new frontiers in marketing.

Leeds School of Business | Marketing

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## MKTG-4825 (1-3) Pricing and Channels of Distribution

Offered irregularly to provide opportunity for investigation of new frontiers in Marketing. Requires prerequisite courses of MKTG 3250 and 3350. Restricted to students with 57-180 credits (Junior or Senior). Prerequisites: Requires prerequisite courses of MKTG 3250 and 3350. Restricted to students with 57-180 credits (Junior or Senior).

Leeds School of Business | Marketing

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## MKTG-4850 (3) Senior Seminar in Marketing

Capstone marketing course that integrates and further develops what students have learned in other courses. Provides students with the

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insight and skills necessary to formulate and implement sound socially responsible marketing strategies, product line management strategies, promotional and product/service communication strategies, pricing, and distribution strategies. Prereqs., MKTG 3250, 3350, two additional 4000-level MKTG courses from either MKTG 4250, 4300 or 4550 with the third serving as a co-requisite, and 102 hours completed. Restricted to graduating MKTG majors. Formerly BCOR 4004. Prerequisites: Requires pre-requisite courses of MKTG 3250 and 3350. Restricted to MKTG Majors with 102 to 180 units completed.

Leeds School of Business | Marketing

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## MKTG-4900 (1-6) Independent Study

Intended only for exceptionally well qualified business seniors. Instructor and division chair consent required.

Leeds School of Business | Marketing

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## MKTG-6900 (1-3) Independent Study

Requires consent of instructor under whose direction study is taken. Departmental form required.

Leeds School of Business | Marketing

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## MKTG-6940 (1) Master's Candidate

Departmental form required.

Leeds School of Business | Marketing

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## MKTG-6950 (1-6) Master's Thesis

Leeds School of Business | Marketing

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## MKTG-7000 (3) Seminar in Consumer Behavior

Studies the nature and determinants of consumer buying behavior. In-depth investigation of contributions of behavioral sciences (especially psychology, sociology, and cultural anthropology) toward understanding consumer behavior. Influence of demographic factors, motivation, personality, culture, and purchasing behavior. Prereq., instructor consent.

Leeds School of Business | Marketing

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## MKTG-7200 (3) Experimental Research Methods in Marketing

Provides a detailed exposure to the design of laboratory/field experiments and quasi-experiments for marketing and consumer research. Emphasizes the choice of design options, data collection methods, statistical analysis, and substantive interpretation of experimental results.

Leeds School of Business | Marketing

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## MKTG-7300 (3) Multivariable Methods in Marketing Research

Includes Manova designs, causal models, cluster analysis, discriminant function analysis, factor analysis, and latent structure analysis. Emphasizes computer applications. Prereqs., graduate courses in regression and Manova.

Leeds School of Business | Marketing

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## MKTG-7305 (3) Qualitative and Survey Research Methods in Business

Detailed exposure to qualitative and survey research methods in business. Qualitative methods include participant observation, depth interviews, focus-group interviews and ethnography. Survey methods include measurement theory, survey design and sampling, survey implementation, data analysis, and substantive interpretation.

Leeds School of Business | Marketing

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## MKTG-7310 (3) Design and Analysis of Experiments in Business

Detailed exposure to experimental research methods for business applications. Emphasizes the choice of design options, data collection methods, statistical analysis, and substantive interpretation of experimental results.

Leeds School of Business | Marketing

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## MKTG-7400 (2) Doctoral Seminar: Channels of Distribution

Study of marketing literature in channels of distribution. Includes topics of channel structure, channel power, channel conflict and leadership, physical distribution systems, and regulation.

Leeds School of Business | Marketing

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## MKTG-7500 (2) Doctoral Seminar: Promotion

Study of marketing literature dealing with advertising, selling, sales promotion, and sales management. Includes topics of advertising

decision models, advertising effects, sales-force performance models, and promotion management.

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# Courses

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MKTG

## MKTG-7600 (3) Doctoral Seminar: Services Marketing

Study of marketing literature dealing with services. Includes such topics as service management, theoretical issues in the study of services, and strategies in travel, tourism, recreation, and financial services industries.

[Leeds School of Business](#) | [Marketing](#)

## MKTG-7800 (3) Doctoral Proseminar: Marketing

Provides marketing doctoral students with an orientation to the marketing field and introduces contemporary research perspectives and priorities. Students discuss papers that illustrate academic researchers' use of various disciplinary perspectives to address marketing problems and the range of theoretical and empirical methods used.

[Leeds School of Business](#) | [Marketing](#)

## MKTG-7805 (3) Doctoral Seminar: Economic and Administrative Science Approaches to Research

Examines marketing management and consumer behavior issues from the vantage of economics and organizational theory. One segment of the course focuses on theoretical and empirical analysis of the means by which utility-maximizing consumers learn about consumption environment and respond to firms' marketing decisions. Another segment examines research on firms' competitive strategy and marketing mix decisions and explores how organizational sociological factors influence these decisions.

[Leeds School of Business](#) | [Marketing](#)

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## MKTG-7810 (3) Doctoral Seminar: Psychological Approaches to Research in Marketing

Examines the basic psychological processes that underlie common marketing phenomena. Topics include memory and judgment, persuasion, attitude-behavior consistency, information processing, automatic and controlled processes, learning, motivation and cognition, social judgment, and the role of affect and mood on judgment. Discusses topics in consumer behavior and marketing management contexts, in conjunction with related methodological issues. Prerequisites: Restricted to Graduate Students only.

Leeds School of Business | Marketing

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## MKTG-7815 (3) Doctoral Seminar: Consumer and Managerial Decision Making in Marketing

Examines judgment and decision making research pertinent to understanding how consumers and marketing managers make decisions. Uses economic models as a normative backdrop for examining research on decision heuristics, judgment and choice anomalies, and contingent decision behavior. Examines processes of causal judgment and inference and the influence of a variety of contextual factors (including time) on judgment and decision.

Leeds School of Business | Marketing

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## MKTG-7820 (3) Doctoral Seminar: Sociological and Anthropological Approaches to Research in Market

Inquires into substantive and methodological issues concerning postmodern consumer research. Attains depth in a few areas while also providing a framework in which to situate other substreams of research. Uses ethnography, semiotics, literary analysis, and other interpretive methods to examine topics such as brand and store loyalty, atmospheric and shopping dynamics, creation of brand meanings, and other marketplace behaviors.

Leeds School of Business | Marketing

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## MKTG-7825 (3) Doctoral Seminar: Empirical Models in Marketing

Presents state-of-the-art empirical modeling techniques (both reduced-form and structural) used by marketing scientists, as well as discuss the key findings generated from major empirical studies. Acquaint the class participants with the systematic process of conducting rigorous empirical marketing research, enable them to read and critically review empirical papers in leading marketing journals and, ultimately, start doing independent empirical research. Prereq., a graduate course in regression.

Leeds School of Business | Marketing

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## MKTG-7830 (3) Doctoral Seminar: Dissertation Research

Assists doctoral students in integrating courses and fields of study in order to be able to apply knowledge and skills to problems in marketing. Gives special attention to development of thesis topics.

## MKTG-8820 (1-6) Doctoral Seminar: Special Topics

Studies marketing literature on a topic or topics selected by instructor. Examples include marketing history, international marketing management, marketing environment, marketing of high technology products, and marketing models.

## MKTG-8900 (1-3) Independent Study

Requires consent of instructor under whose direction study is taken. Departmental form required.

## MKTG-8990 (1-10) Doctoral Thesis



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## Courses

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Search by Course Number

**Subject**   **Number**

MUEL

### MUEL-1081 (3) Basic Music Theory

Introduction to music notation, meter and rhythm, scales, intervals, triads, seventh chords, fundamentals of harmonic progression, voice leading, aural skills, and composition. For nonmusic majors who have little or no previous background in the subject. Formerly EMUS 1081. Prerequisites: Restricted to non-College of Music majors only.

[College of Music](#) | [Elective Music](#)

### MUEL-1115 (1) Piano Class 1

Introduces the keyboard and music reading for nonmusic majors with no prior keyboard experience. Studies very easy classical and pop repertoire. Prereq., no prior keyboard experience or instructor consent. Formerly EMUS 1115. Prerequisites: Restricted to non-College of Music majors only.

[College of Music](#) | [Elective Music](#)

### MUEL-1125 (1) Piano Class II

Continuation of MUEL 1115. Focuses on development of music reading. Studies technical patterns, easy classical and pop repertoire, and improvisation. Prereq., MUEL 1115. Restricted to non-College of Music majors only. Formerly EMUS 1125. Prerequisites: Restricted to non-College of Music majors only.

[College of Music](#) | [Elective Music](#)

### MUEL-1145 (2-4) Guitar Class

A systematic study of the beginning literature and technique of the classical guitar with an emphasis on reading music. Designed for nonmusic majors with no prior musical experience. Restricted to non-College of Music majors only. Formerly EMUS 1145. Prerequisites:

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Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-1155 (2) Intermediate Guitar

Studies the intermediate literature and technique of the classical and popular guitar. Emphasis on reading standard notation and chord charts. Designed for non-music majors. May be repeated up to 6 total credit hours. Prereq., MUEL 1145 or instructor consent. Restricted to non-College of Music majors only. Formerly EMUS 1155. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-1184 (1) Voice Class

Involves basic vocal technique and easy solo repertoire taught through a group medium, for beginner and intermediate level students. May be repeated up to 6 total credit hours. Recommended prereq., ability to read music. Formerly EMUS 1184. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-1416 (2) Introduction to Hand Percussion

Studies the literature and technique of hand percussion. Emphasizes African and Latin percussion techniques. Designed for non-music majors. May be repeated up to 6 total credit hours. Restricted to non-College of Music majors only. Formerly EMUS1416. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-1832 (3) Appreciation of Music

Provides a basic knowledge of primarily Western music literature and development of discriminating listening habits. Restricted to nonmusic majors. Formerly EMUS 1832. Approved for arts and sciences core curriculum: literature and the arts. Offered fall and spring. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2091 (2) Intro to Audio Recording

Introduces and explores basic concepts in audio recording from microphones to digital audio workstations. Also focuses on development of critical listening skills. Restricted to non-College of Music majors only. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2184 (1) Voice Class

Continuation of MUEL 1184, with more advanced repertoire and vocal techniques. May be repeated up to 6 total credit hours. Prereq., MUEL 1184. Restricted to non-College of Music majors only. Formerly EMUS 2184. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2752 (3) Music in American Culture

Offers a stylistic and historical examination of trends that have influenced present-day music in the U.S. Formerly EMUS 2752. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2772 (3) World Musics

Highlights music outside Western art tradition, using current ethnomusicological materials. Spring semester focuses on musical cultures of the Americas, Africa, and Europe; fall semester focuses on musical cultures of Asia and Oceania. May be repeated up to 6 total credit hours. Formerly EMUS 2772. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2842 (3) American Musical Theatre

Provides an overview of the role of musical theatre in U.S. culture, emphasizing the 20th century Broadway musical. Restricted to non-College of Music majors only. Formerly EMUS 2842. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2852 (3) Music of the Rock Era

Examines popular music, concentrating on the U.S. after 1950. Considers precursor styles (e.g., blues folk) and contributions to the new rock style; discusses the evolution of rock style from 1960 through the 1990s. Formerly EMUS 2852. Approved for the arts and sciences core curriculum: literature and the arts. Offered spring only. Prerequisites: Restricted to non-College of Music majors only.

College of Music | Elective Music

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## MUEL-2862 (3) American Film Musical, 1926-1954

Examines the development of filmed musicals from the beginning of sound movies through the Golden Age of Musicals. Emphasizes analysis and relationships of characters, songs, and incidental music. Restricted to non-College of Music majors only. Formerly EMUS 2862. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to non-College of Music majors only.

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## MUEL-2872 (3) Music in the Rock Era: Special Topics in Heavy Metal

Explores, discuss, debate and develop deeper understanding of Heavy Metal. Included are study of musical style characteristics and lyrical content, innovative performers, unifying elements of Heavy Metal culture and the diversity within it, and its role in the larger Rock and societal contexts. Issues of gender, religion, and sexuality in the Heavy Metal construct are also discussed. Restricted to non-College of Music majors only. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-3051 (2) Basic Composition

Introduces the processes, materials, and forms of composition through the writing and performance of short musical works. Open to any student who already has rudimentary musical knowledge. Restricted to non-College of Music majors only. Formerly EMUS 3051. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-3642 (3) History of Jazz

Studies the distinctly American art form of jazz music from its origins to the present, including the various traditions, practices, historical events, and people most important to its evolution. For nonmusic majors. Formerly EMUS 3642. Offered fall and spring. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-3772 (3) West African Music and Culture in Ghana

Provides hands-on and experiential enrichment for students to interact at several levels with a local community in Ghana. Classroom lectures will be combined with direct participation in drumming and dancing, field trips to participate in festivals and court ceremonies, field trips to kente weaving village, adinkra cloth making, wood carving villages, and museums. Prereq., MUSC 2782/MUEL 2772. Restricted to sophomore, non-College of Music majors only or instructor consent required. MUSC 3772 and MUEL 3772 are the same course.

## MUEL-3822 (3) Words and Music

Explores the interaction between words and music in song. Students will consider how such features as rhyme, rhythm, tone, and the connotations of particular words contribute to meaning in poetry; how rhythm, tempo, dynamics, mood, and instrumentation contribute to meaning in music; and how words and music coalesce in song to make a new meaning. Restricted to non-College of Music majors only. Formerly EMUS 3822. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-3832 (3) Music in Literature

Addresses literature that seeks either to explore the meaning of music or to make music out of words. Students will consider how musical concepts and techniques can be incorporated into poetry and prose, and will analyze the roles that writers have attributed to music in society, politics, and the life of the individual. Restricted to non-College of Music majors only. Formerly EMUS 3832. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-3872 (3) Music in the Rock Era: Special Topics in Heavy Metal

Explore, discuss, debate and develop deeper understanding of Heavy metal. Included are study of musical style characteristics and lyrical content, innovative performers, unifying elements of Heavy Metal culture and the diversity within it, and its role in the larger Rock and societal contexts. Issues of gender, religion, and sexuality in the Heavy Metal construct area also discussed.

## MUEL-4012 (3-6) African Music

Studies the musics, dances, and cultures of various peoples of Africa. Includes African diaspora music and Afro-pop. Restricted to non-College of Music majors only. Formerly EMUS 4012. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-4081 (3) Introduction to Music Technology

Surveys the various tools and techniques in the field of music technology. Topics include an introduction to basic synthesis, musical instrument digital interface (MIDI) sequencing, audio sequencing, digital signal processing, music notation, and a historical perspective on electronic music. For non-music majors only. Prerequisites: Restricted to non-College of Music majors only.

## MUEL-4121 (3) Topics in Music Technology

Exploration of issues, techniques and tools of music technology. Topics vary from term to term and may include: interactive system for performance, teaching, and learning; computer music instrument design; digital synthesis and signal processing; music in intermedia; sound design and analysis. Lectures and work sessions will support student projects. Prereqs., MUSC 4081 or MUEL 4081 or instructor consent required. For non-music majors only. Prerequisites: Restricted to non-College of Music majors only.



## Courses

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College/School

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Subject Number

MUSC

### MUSC-1081 (3) Intensive Music Theory

Introduces tools used in notating, performing, creating, and listening to music. Coreq., MUSC 1121. Open to music majors only. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

### MUSC-1101 (2) Semester 1 Theory

Introduces the fundamentals of diatonic harmony and voice leading, focusing on four-voice writing and analysis of excerpts from music literature. For music majors only. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

### MUSC-1111 (2) Semester 2 Theory

Continuation of MUSC 1101. Covers principles of harmony and voice leading, using all common diatonic triads and seventh chords. Introduces secondary dominants, modulation, contrapuntal chord functions, and elementary structural analysis of excerpts from music literature. Prereq., MUSC 1101. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

### MUSC-1121 (1) Aural Skills Lab, Semester 1

Focuses on sight singing, rhythm, and dictation of diatonic melodies in major and minor keys (treble, alto, and bass clefs). Covers identification of scale types, intervals, triads, and dominant seventh chords. Studies harmonic dictation using chords from MUSC 1101. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

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## MUSC-1131 (1) Aural Skills Lab, Semester 2

Acquaints students with sight singing in major and minor keys (treble, alto, tenor, and bass clefs). Includes dictation of one- and two-voice examples. Studies harmonic dictation using vocabulary from MUSC 1111. Considers detection of pitch and rhythm errors in performed examples. Prereq., MUSC 1121. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-1325 (1) Piano Sight Reading

Studies techniques for improving sight-reading skills at the keyboard, with practical work in solo, ensemble, and choral literature. Also covers score reading and transposition. Restricted to piano majors instructor consent. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Keyboard

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## MUSC-1326 (1) Guitar Musicianship

Activities in sight-reading, fretboard harmony and comprehension of harmony and texture. Some work will be tied to the repertoire being studied in studio lessons. Open only to students with an emphasis on guitar performance in their degree plan. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Choral and Instrumental Music

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## MUSC-1544 (1) Italian Diction

Designed for the understanding of lyric Italian diction, the international phonetic alphabet, and its application to classical singing. Required for freshmen BM voice majors. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Voice

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## MUSC-1554 (1) English Diction

Designed for the understanding of lyric English diction, the international phonetic alphabet, and its application to classical singing as well as various musical styles of English classical voice literature. Prereq., MUSC 1544. Restricted to College of Music majors only. Required for Freshmen BM voice majors. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Voice

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## MUSC-1802 (3) Introduction to Musical Styles and Ideas

Introduces the study of music including bibliographic, listening, score reading, critical reading, and writing skills; music terminology; a survey of selected music genres (symphonic and chamber music); and building of general music repertory. Offered fall only.

Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Musicology

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## MUSC-2071 (2) Instrumentation

Introduces and studies the instruments of the orchestra and problems of scoring for diverse choirs and full orchestra. Prereqs., MUSC 2101 and 2121. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-2081 (2) Prepared for the Soundcheck

Provides an overview of the recording process from the performer's perspective from soundcheck through final mastering. Uses recorded material from in-class sessions. Examines differing approaches to recording as well as current technologies. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-2091 (2) Recording Techniques

Provides hands-on training in various audio recording techniques, acoustics, and sound reinforcement, studio maintenance, and troubleshooting. Real-world experience is gained through individual recording projects and College of Music events. Prereq., MUSC 2081 or instructor consent. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-2101 (2) Semester 3 Theory

Continuation of MUSC 1111. Reviews secondary dominants, secondary leading-tone chords, and modulation. Covers dissonance and chromaticism, including modal mixture, seventh chords with added dissonance, Neapolitan sixth chord, and augmented sixth chords. Provides structural analysis of musical excerpts. Prereq., MUSC 1111. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Theory and Composition

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## MUSC-2103 (3) Introduction to Music Education

Provides an overview of basic principles and practices of the music education profession. Explores public school music teaching through class discussions, directed observations, and a supervised field experience. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

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## MUSC-2111 (2) Semester 4 Theory

Continuation of MUSC 2101. Focuses on advanced chromaticism including modal mixture, altered dominants, voice leading, and chromatic harmony in larger contexts. Examines impressionism and jazz. Also involves composition projects. Prereq., MUSC 2101. Restricted to College of Music majors only. Offered spring only. Prerequisites: Requires prerequisite course of MUSC 2101. Restricted to College of Music undergraduate students only.

## MUSC-2121 (1) Aural Skills Lab, Semester 3

Continuation of MUSC 1131. Studies sight singing of chromatic melodies in major and minor keys (in four clefs). Includes dictation of one- through three-voice examples. Studies harmonic dictation using vocabulary from MUSC 2101. Considers detection of pitch and rhythm performance errors. Prereq., MUSC 1131. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

## MUSC-2131 (1) Aural Skills Lab, Semester 4

Continuation of MUSC 2121. Studies sight singing of chromatic and atonal melodies. Includes dictation of one- through three-voice examples. Identifies sonorities studied in MUSC 2111. Considers detection of pitch and rhythm performance errors. Prereq., MUSC 2121. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

## MUSC-2325 (2) Applied Harmony for the Keyboard

Provides an intensive study and application of the harmonic structure of music in a variety of keyboard skills: figured bass realization, chord progressions, harmonization, improvisation, transposition, on-sight harmonic analysis, and playing by ear. Prereqs., MUSC 1111, 1131, and 1325. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

## MUSC-2365 (2) Introduction to Accompanying

An overall study in the art of working with instrumentalists and singers including repertoire and orchestral reductions. Requires performance with a student instrumentalist or singer to be critiqued and coached by class and instructor. Prereq., piano major or instructor consent. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

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## MUSC-2366 (2) Guitar Accompanying

Survey of accompanying repertoire for guitar with solo instruments (flute, violin, voice, etc.), including introductory work in basso continuo, playing/improvising from chord charts, and arranging accompaniments from musical scores. Prereq., MUSC 1326. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Choral and Instrumental Music](#)

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## MUSC-2608 (1) Alexander Technique

Investigates the discoveries and writings of F. M. Alexander regarding kinesthetic perception and coordination. Applies these contexts to specific musical activities. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Interdepartmental Courses](#)

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## MUSC-2772 (3) World Musics

Study of music outside western art tradition, using current ethnomusicological materials and methodologies. Spring semester focuses on musical cultures of Africa, the Americas, and Europe; fall semester focuses on musical cultures of Asia and Oceania. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Musicology](#)

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## MUSC-2782 (3) World Musics Survey--Africa, Europe, and the Americas

Use current ethnomusicological materials and methods in the study of music outside the Western art tradition. Usually taught in the spring, MUSC 2782 focuses on music cultures of Africa, Europe, and the Americas. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Musicology](#)

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## MUSC-2988 (1) Introduction to Music Research

Introduces music research and writing skills to provide tools necessary for successful composition of formal research papers. Applies interests and curricular goals to specific topics of student choice. May be repeated up to 12 total credit hours. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Interdepartmental Courses](#)

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

MUSC

### MUSC-2997(0) Sophomore Proficiency

To be completed by the second semester of the sophomore year. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Theses and Recitals](#)

### MUSC-3013 (1) String Class

For music education majors with choral/general emphasis. Develops basic performance skills on two or more string instruments. Addresses teaching strategies and other specialized topics related to string instruction. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Music Education](#)

### MUSC-3023 (1) Woodwind Class

For music education majors with choral or choral/general emphasis. Develops basic performance skills on two or more woodwind instruments. Addresses teaching strategies and other specialized topics related to beginning and intermediate woodwind instruction. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)

### MUSC-3033 (1) Brass Class

For music education majors with choral or choral/general emphasis. Develops basic performance skills on two or more brass instruments. Addresses teaching strategies and other specialized topics related to beginning and intermediate brass instruction. Restricted to College

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of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-3051 (2) Beginning Composition

For noncomposition majors. Introduction to the craft of musical composition with analysis and writing in various styles. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-3061 (2) Jazz Improvisation I

Develops skills in jazz improvisation through practical application of chord/scale relationship, transcription, repertoire, and analysis. Open to all instruments. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-3071 (2) Jazz Improvisation II

Continues and expands upon the material presented in MUSC 3061. Reinforcement of ability to create an improvised melody in a range of harmonic contexts including blues, bebop, modal jazz, free jazz, and other styles. Prereq., MUSC 3061 or instructor consent. Restricted to College of Music majors only. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-3081 (3) Jazz Theory and Aural Foundations

Presents the grammar and syntax of jazz. Acquaints the student with the language of jazz improvisation and various jazz styles. The musician's most valuable tool---the ear---is developed through an in-depth analytical study of jazz masters through harmonic dictation/identification. Prereq., MUSC 2101. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-3133 (2) Teaching General Music I

Provides an overview of general music teaching with emphasis on developmentally appropriate strategies and materials. Required for all music education majors as partial fulfillment of course work leading to K-12 music licensure. Prereq., MUSC 2103. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-3153 (2) Teaching Woodwind Instruments

For music education majors with instrumental or instrumental/general emphasis. Develops basic performance skills on three or more woodwind instruments. Addresses teaching strategies and other specialized topics related to beginning and intermediate woodwind instruction. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-3163 (2) Teaching String Instruments

For music education majors with instrumental or instrumental/general emphasis. Develops basic performance skills on three or more string instruments. Addresses teaching strategies and other specialized topics related to beginning and intermediate string instruction. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Music Education

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## MUSC-3176 (2) Conducting 1

Introduces conducting and rehearsal techniques. Coreq., performance participation in the appropriate ensemble (band, choir, or orchestra). Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Choral and Instrumental Music

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## MUSC-3186 (2) Conducting II

Introduces conducting and rehearsal techniques. Coreq., performance participation in the appropriate ensemble (band, choir, or orchestra). Prereq., MUSC 3176. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Choral and Instrumental Music

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## MUSC-3193 (2) Vocal Pedagogy and Literature for Young Voices

Provides an overview of vocal anatomy/function, care of the voice, vocal repertoire, teaching strategies, and other specialized topics related to singing instruction in both private studio and public school choral settings. Fall section for instrumentalists; spring section for vocalists. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Music Education

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## MUSC-3223 (2) Teaching Brass Instruments

For music education majors with instrumental or instrumental/general emphasis. Develops basic performance skills on three or more brass instruments. Addresses teaching strategies and other specialized topics related to beginning and intermediate brass instruction. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

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College of Music | Music | Music Education

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## MUSC-3253 (2) Jazz Techniques for the Music Educator

Prepares the music educator for successful experiences teaching jazz at the secondary level. Students gain insights into performance and rehearsal techniques for the instrumental jazz ensemble. Explores approaches for teaching jazz theory, improvisation, and selecting literature for young students. Own instrument required for certain classes. Recommended prereqs., MUSC 1111 and 2103. Restricted to College of Music majors only. Offered spring only.

College of Music | Music | Music Education

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## MUSC-3273 (2) String Pedagogy and Literature

Examines instructional methods/materials and pedagogical approaches appropriate for beginning to advanced string students in private studio, small ensemble, or large ensemble contexts. Topics may include group teaching strategies, as well as contemporary approaches including Rolland and Suzuki. Recommended prereqs., MUSC 2103 and 3163. Restricted to College of Music majors only. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-3345 (2) Piano Pedagogy 1

Discusses teaching philosophies, objectives, and procedures. Examines and evaluates methods and materials. Studies practical aspects with which the private teacher is concerned. May be repeated up to 12 total credit hours. Restricted to College of Music majors only. Offered fall of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Keyboard

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## MUSC-3355 (2) Piano Pedagogy 2

Materials and techniques for teaching piano with a focus on the intermediate level student. May be repeated up to 12 total credit hours. Restricted to College of Music majors only. Offered only in spring of odd-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Keyboard

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## MUSC-3363 (2) Marching Band Techniques

Helps develop the skills needed to administer and teach all aspects of a contemporary high school marching band. Includes drill conception and design, instruction, organization, and administration. Prereqs., MUSC 2103 and EMUS 1287. Offered fall only. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Music Education

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

MUSC

### MUSC-3802 (3) History of Music 1

Surveys Western art music with stylistic analysis of representative works from all major periods through the Baroque. See also MUSC 3812. Prereq., MUSC 2111. Prerequisites: Requires pre-requisite course of MUSC 2111. Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Musicology](#)

### MUSC-3812 (3) History of Music 2

Surveys Western art music with stylistic analysis of representative works from all major periods after the Baroque. See also MUSC 3802. Prereq., MUSC 2111. Restricted to College of Music majors only. Prerequisites: Requires prerequisite course of MUSC 2111. Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Musicology](#)

### MUSC-3997 (1) Junior Recital

Prereq., MUSC 2997. Prerequisites: Requires pre-requisite class of MUSC 2997. Restricted to Music majors or graduate students only.

[College of Music](#) [Music](#) [Theses and Recitals](#)

### MUSC-4001 (2) New Musical Styles and Practices

Studies the style of Palestrina and his contemporaries through analysis, species counterpoint exercises, and composing in the style. Prereq., MUSC 2111 and 2131. Restricted to College of Music majors only. Offered every other year. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

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## MUSC-4011 (2) 16th Century Counterpoint

Studies the style of Palestrina and his contemporaries through analysis, species counterpoint exercises, and composing in the style. Prereqs., Musc 2111 and 2131. Restricted to College of Music majors only. Offered fall of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-4012 (3) African Music

Studies the musics, dances, and cultures of various peoples of Africa. Includes African diaspora music and Afro-pop. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Musicology

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## MUSC-4021 (2) 18th Century Counterpoint

Provides a stylistic study of main contrapuntal genres of the period including invention, suite, and fugue. Provides a foundation in species counterpoint; stresses analysis and composing in the style. Prereqs., MUSC 2111 and 2131. Restricted to College of Music majors only. Offered spring of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-4031 (2) Jazz Arranging 1

Study of notation, score layout, transpositions, basic harmonic and melodic analysis, basic chord voicings, and composition for a small and large jazz ensemble. Use of notation software such as Finale or Sibelius. Prereqs., MUSC 2111 and 2131. Recommended prereq., MUSC 3081. Offered fall of odd-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-4041 (2) Orchestration

Studies advanced orchestration techniques through score analysis and student projects. Prereq., MUSC 2071 or instructor consent. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Theory and Composition

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## MUSC-4061 (2) Tonal Analysis

Surveys tonal analytical techniques and forms of tonal music, including binary forms, sonata forms, ternary forms, rondo (and others) through study of selected works from the 18th and 19th centuries. Prereqs., MUSC 2111 and 2131. Offered fall only. Prerequisites:

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Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4071 (2) Post-Tonal Theory and Analysis

Focus on theory and analysis of post-tonal literature pre-1945. Prereqs., MUSC 2111 and 2131. Offered every other fall. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4078 (1) Piano Technician for Pianists

Familiarizes pianists with the development of the modern grand piano, its construction, and the proper terminology of parts and specifications. Trains pianists in minor repairs and adjustments of the grand piano action, and in minor tuning tasks. Recommended restriction, piano majors. Restricted to College of Music majors only. Same as MUSC 5078. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Interdepartmental Courses

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## MUSC-4081 (3) Introduction to Music Technology

Topics include basic synthesis, musical instrument digital interface (MIDI) sequencing, and music notation by computer. Offered fall and spring. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4091 (2) Jazz Arranging 2

Continuation and expansion of studies in MUSC 4031. Survey and analysis of major composers and arrangers of the idiom. Course focuses on creating several arranging projects for a large jazz ensemble. Prereq., MUSC 4031. Recommended prereq., MUSC 3081. Restricted to College of Music majors only. Offered fall of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4101 (1-3) Theory and Aural Skills Review

Reviews tonal harmony, voice leading, and essential aural skills. Includes diatonic triads and seventh chords, modulation, chromaticism, and structural analysis of representative compositions. Prepares graduate students for more advanced work in music theory. Students may register for aural skills only (1 credit), theory only (2 credits), or both theory and aural skills (3 credits). May not be taken pass/fail. For graduate students only. Offered summer and fall. Prerequisites: Restricted to College of Music graduate students only.

College of Music Music Theory and Composition

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## MUSC-4103 (1) Introduction to Student Teaching

Represents the first half of the professional internship year. Familiarizes students with the schools and music programs in which they plan to student teach. Music placements may consist of elementary and high school, elementary and middle school, or middle school and high school. Prereqs., MUSC 4113, 4313, or 4443; and EDUC 3023. Prerequisites: Requires prerequisite courses of MUSC 4113, 4313, or 4443 and EDUC 3023 or 4023. Restricted to College of Music undergraduate students only.

College of Music Music Music Education

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## MUSC-4106 (2) Guitar Literature

An analytical and historical survey of the repertory of the guitar and its antecedents from the renaissance to the present day. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Choral and Instrumental Music

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## MUSC-4111 (2) Composing at the Computer

Discover strategies and techniques for generating and manipulating sound at the computer. Student projects will include compositions, soundscapes, ambient environments, and soundtracks for multimedia. Available to students without prior experience with computer music or composition. Prereq., MUSC 4081. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4112 (3) Ethnomusicology

Examines the definition, scope, and methods of ethnomusicology, the discipline that focuses on approaches to the study of music theory, history, and performance practices of world cultures. Prereq., MUSC 2772. Restricted to junior or senior College of Music majors only. Prerequisites: Requires pre-requisite class of MUSC 2772. Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music Music Musicology

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## MUSC-4113 (3) Teaching General Music 2

Provides an in-depth examination of teaching and learning processes in the elementary general music classroom, based on the integration of child development and musical development theories with content and delivery skills appropriate for K-5 general music classrooms. Students implement and evaluate music instruction, design curricular projects, and build a repertoire of vocal, instrumental, and speech-based arrangements. Prereqs., MUSC 2103 and 3133. Restricted to College of Music majors only. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Music Education

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## MUSC-4121 (3) Topics in Music Technology

Exploration of issues, techniques, and tools of music technology. Topics vary from term to term and may include: interactive systems for performance; teaching and learning; computer music instrument design; digital synthesis and signal processing; music in intermedia; sound design and analysis. Lectures on work sessions will support student projects. May be repeated up to 9 total credit hours. Prereq., MUSC 4081. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

## MUSC-4123 (3) Student Teaching Practicum

Offers practice teaching under the guidance of a master music teacher. Elementary level. Prereq., MUSC 4103. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-4133 (3) Student Teaching Practicum

Offers practice teaching under the guidance of a master music teacher. Secondary level. Prereq., MUSC 4103. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-4142 (3) American Indian Music

Examines Native North American musical cultures, with an emphasis on music as an integral part of religious expression and community life. Restricted to junior or senior College of Music majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

[College of Music](#) [Music](#) [Musicology](#)

## MUSC-4143 (2) Developing Children's Choirs

Examines the musical skills, teaching techniques, and administrative procedures necessary for developing a children's choir. Prereq., MUSC 2103. Restricted to College of Music majors only. Same as MUSC 5143. Offered fall of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

MUSC

## MUSC-4152 (3) East Asian Music

Surveys the development of music in Japan, China and Korea through the in-depth study of particular styles of traditional music. The course emphasizes the study of music and culture, particularly music's relationship to religion, politics, language, literature, dance and theatre. Recommended prereq., MUSC 2772. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Musicology](#)

## MUSC-4153 (1) Percussion Class and Pedagogy

Required of all music education majors. Presents knowledge and skills necessary for music educators to teach young students, including a general understanding of the techniques used in playing and teaching percussion instruments in the school music program. Offered fall only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-4163 (2) Choral Literature for School Ensembles

Examination of literature, materials, and methods appropriate for teaching choral music in secondary schools. Prereq., MUSC 2103. Restricted to College of Music majors only. Offered fall of odd-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-4191 (2) Advanced Recording

Study of advanced recording techniques and concepts beyond those covered in MUSC 2091 involving multiple microphones for ensemble

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concerts and recording sessions within and outside of the College of Music. Prereq., MUSC 2091. Restricted to College of Music majors only. Offered spring of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Theory and Composition

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## MUSC-4193 (1) Student Teaching Seminar

Required for all music student teachers. Addresses topics of concern to beginning teachers including classroom management, interpersonal skills, legal issues, job search strategies, and teaching portfolio development. Prereq., MUSC 4103. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Music Education

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## MUSC-4203 (1) Music Methods Practicum

Taken concurrently with either MUSC 4113, 4313, or 4443. Provides students with opportunities to observe and practice the use of various teaching techniques and relate them to concepts presented in the methods course. Students consult with the instructor to determine appropriate placements in schools. Prereq., MUSC 2103. Coreq., MUSC 4113, 4313, or 4443. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Music Education

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## MUSC-4255 (2) Service Playing Techniques

Study of church music for liturgical and non-liturgical denominations; includes hymn playing, anthem accompaniments, basics of conducting from the organ console and improvisation, and selection of organ music appropriate to the requirements of the church year and other special services. Same as MUSC 5255.

College of Music Music Keyboard

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## MUSC-4285 (3) Organ Survey

Survey of organ repertoire and the history of organ building from the sixteenth century to the present. See also MUSC 4295. Same as MUSC 5285.

College of Music Music Keyboard

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## MUSC-4288 (2-3) Macintosh-based Web Server Fundamentals for Musicians and Educators

Designed for music students. Teaches concepts and skills necessary to develop, host, and maintain Macintosh-based web servers and to create and serve multimedia files including video, MP3, MIDI, and PDF.

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College of Music Music Interdepartmental Courses

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## MUSC-4295 (3) Organ Survey

Survey of organ repertoire and the history of organ building from the sixteenth century to the present. See also MUSC 4285. Same as MUSC 5295.

College of Music Music Keyboard

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## MUSC-4313 (3) Teaching Choral Music

Examines choral music curricula, instructional materials, and teaching techniques appropriate for secondary choral settings. Also addresses administrative strategies for choral music programs. Prereq., MUSC 2103. Restricted to College of Music majors only. Same as MUSC 5313. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Music Education

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## MUSC-4325 (2) Keyboard Literature 1

Surveys keyboard music from 1600 to 1830. Restricted to College of Music majors only. Offered fall semester of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Keyboard

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## MUSC-4335 (2) Keyboard Literature 2

Surveys keyboard music from 1830 to the present. Restricted to College of Music majors only. Offered spring semester of even-numbered years. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Keyboard

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## MUSC-4405 (2) Basso-Continuo Accompaniment

Studies the history, theory, and practice of Basso-continuo accompaniment. Provides practical instruction in realizing harmony from a given bass line (figured or unfigured), projecting affect, and creating dynamics at the harpsichord. Emphasizes individual cognition and creativity. Recommended prereqs., MUSC 2325 and PMUS 1586. Same as MUSC 5405. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Keyboard

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## MUSC-4443 (3) Teaching Instrumental Music

Examines instrumental music curricula, instructional materials, and teaching techniques appropriate for rehearsal, class, and lesson settings. Also addresses administration strategies for instrumental music programs. Prereq., MUSC 2103. Restricted to College of Music majors only. Same as MUSC 5442. Offered spring only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-4583 (2) Inclusive Music Classroom

Surveys strategies necessary for teaching music to all students, including those with special needs. Offered fall of even-numbered years. Prereqs., MUSC 2103 and 3133. Recommended prereq., MUSC 4113. Restricted to College of Music majors only. Same as MUSC 5583. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Music Education

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## MUSC-4608 (1) Advanced Studies in the Alexander Technique

Continue of MUSC 2608 with greater concentration on utilizing Alexander principles in specialized activity. Prereq., MUSC 2608 or instructor consent. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Interdepartmental Courses

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## MUSC-4712 (3) Renaissance Music

Provides repertory and analysis of polyphonic music 1400-1600. Prereq., MUSC 3802. Restricted to College of Music majors only. Same as MUSC 5712. Prerequisites: Requires pre-requisite class of MUSC 3802. Restricted to College of Music undergraduate students only.

College of Music | Music | Musicology

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## MUSC-4752 (3) Women in Music

Examines the role of women as creators and performers of Western Music. Explores related issues in musicology, including canon formation, reception history, and feminist aesthetics. Restricted to junior or senior College of Music majors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music | Music | Musicology

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## MUSC-4772 (3) History of Opera

Examines representative operas from the 17th century. Emphasizes historical and stylistic analysis and surveys related musicological literature. Prereq., MUSC 3812. Restricted to College of Music majors only. Same as MUSC 5772. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Musicology

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## MUSC-4802 (3) Studies in 20th Century Music

Offers intensified work in history of music in the 20th century. Topics vary from year to year. Prereq., MUSC 3812. Restricted to junior or senior College of Music majors only. Same as MUSC 5802. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music Music Musicology

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## MUSC-4852 (3) 17th and Early 18th Century Music

Examines music and writings about music from the Baroque era. Emphasizes historical and stylistic analysis and current musicological literature. Prereq., MUSC 3812 or instructor consent. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Musicology

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## MUSC-4872 (3) Late 18th and 19th Century Music

Examines music and writings about music during the Classic and Romantic eras of the Western tradition, 1750-1900. Emphasizes historical and stylistic analysis and current musicological research. Recommended prereq. or coreq., MUSC 3812. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Musicology

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## MUSC-4892 (3) Latin American Music

Explores music of cultures south of the United States, emphasizing the relationships of music and culture in folk, popular, and art styles. Same as MUSC 5892. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Music majors only.

College of Music Music Musicology

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## MUSC-4908 (1-3) Internship in Music Business

Engage with music/music business organizations in the community (for profit or non-profit) to pursue specific tasks or projects relevant to the student's career goals. A minimum of 48 hours is required per semester for one credit. May be repeated up to 3 total credit hours. Recommended prereq., Masters standing. MUSC 4908 and 5908 are the same course. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Music Entrepreneurship

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## Courses

Search by College, Department & Category

College/School

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MUSC

### MUSC-4918 (2) Building Your Music Career

Students acquire the practical skills they need to build their career as professional musicians, as well as explore the many options for putting their music education to work in the marketplace. Students will also explore the state of live music-making today and explore ways to maintain relevance for themselves and their art in an ever-changing world. Restricted to College of Music majors only.

Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Music Entrepreneurship](#)

### MUSC-4957 (1-4) Senior Thesis

Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Theses and Recitals](#)

### MUSC-4958 (2) Community Performances

Designed for the aspiring professional performer. Through classroom theory and off-campus application, acquire skills in programming for and communicating with diverse audiences, marketing & PR, and new paradigms of concert presentation. Will result in an actual musical presentation in the community. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Music Entrepreneurship](#)

### MUSC-4997 (1) Senior Recital

Prereq., MUSC 3997. Prerequisites: Requires pre-requisite class of MUSC 3997. Restricted to College of Music undergraduate students only.

## MUSC-5002 (3) Proseminar in Historical Musicology

Prepares students to pursue independent research in the history of music. Meeting as a seminar, the course focuses on the nature of evidence, methods and tools of research, and theoretical or historiographic issues. Prerequisites: Restricted to Graduate Students only.

## MUSC-5012 (3) West African Music and Dance

Studies musical and dance traditions and current practices. Prereq., MUSC 4012 or instructor consent. Same as DNCE 5054. Prerequisites: Restricted to Graduate Students only.

## MUSC-5026 (2) Percussion Literature

In-depth investigation of major original solo works for percussion, significant ensemble literature including chamber and large ensembles, and selected transcriptions. Prereqs., graduate standing in music and instructor consent.

## MUSC-5036 (2) Brass Literature

Investigates major original solo works for trumpet, horn, trombone, euphonium, and tuba, and ensemble literature including chamber and large settings. Offered every other spring semester.

## MUSC-5041 (2) Advanced Orchestration

Provides an advanced study of orchestration techniques through score analysis and student projects. Offered fall only.

## MUSC-5061 (3) Advanced Tonal Analysis

Surveys tonal analytical techniques. Prereq., passed general written theory and aural skills prelim exam, or completed remediation. Offered fall only. Prerequisites: Restricted to Graduate Students only.

College of Music Music Theory and Composition

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## MUSC-5071 (3) Post-tonal Theory and Analysis I

Focuses on theory and analysis of post-tonal literature pre-1945. Prereq., passed general written theory and aural skills prelim exam, or completed remediation. Offered fall and every other spring. Prerequisites: Restricted to Graduate Students only.

College of Music Music Theory and Composition

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## MUSC-5078 (1) Piano Technician for Pianists

Same as MUSC 4078. Prerequisites: Restricted to Graduate Students only.

College of Music Music Interdepartmental Courses

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## MUSC-5081 (3) Applications in Music Technology

Presents advanced strategies for applying computer technology in several musical disciplines. Emphasizes the use of technology in composition, music theory, and music education. Offered fall only. Prerequisites: Restricted to Graduate Students only.

College of Music Music Theory and Composition

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## MUSC-5091 (3) Contemporary Jazz Theory

Studies contemporary approaches to jazz improvisation and composition. Analysis of innovative composition and improvisation and strategies for integration of the material into a personal vocabulary are explored. Prereq., MUSC 3081. Offered spring only.

College of Music Music Theory and Composition

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## MUSC-5103 (3) Teaching General Music

Provides an in-depth examination of teaching and learning processes in the elementary general music classroom, based on the integration of child development and musical development theories with content and delivery skills appropriate for K-5 general music classrooms. Students implement and evaluate music instruction, design curricular projects, and build a repertoire of vocal, instrumental, and speech-based arrangements. Restricted to graduate students in music education. Offered fall only. Prerequisites: Restricted to Music or Music Education graduate students only.

College of Music Music Music Education

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## MUSC-5106 (2) Guitar Literature

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An analytical and historical survey of the repertory of the guitar and its antecedents from the renaissance to the present day. For graduate students. Same as MUSC 4106.

College of Music Music Choral and Instrumental Music

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## MUSC-5112 (3) Proseminar in Ethnomusicology

Examines the definition, scope, and methods of ethnomusicology, the discipline that focuses on approaches to the study of music theory, history, and performance practices of world cultures. Restricted to graduate students who have passed or remediated the World Music portion of their Musicology preliminary exams. Prerequisites: Restricted to College of Music graduate students only.

College of Music Music Musicology

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## MUSC-5121 (3) Advanced Topics in Music Technology

Conducts advanced research in techniques and tools of music technology. Topics vary from term to term and may include: user interfaces for computer music; advanced sound design; digital modeling of acoustic sounds; computer-aided analysis of sound; modeling music intelligence in real time. Lectures and work sessions will support student projects. May be repeated up to 9 total credit hours. Prereq., MUSC 5081 or instructor consent required.

College of Music Music Theory and Composition

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## MUSC-5136 (2) Advanced Conducting

Offers advanced work in conducting. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music Music Choral and Instrumental Music

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## MUSC-5142 (3) American Indian Music

Examines Native North American musical cultures, emphasizing music as an integral part of religious expression and community life. Restricted to graduate music majors. Prerequisites: Restricted to Graduate Students only.

College of Music Music Musicology

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## MUSC-5143 (2) Developing Children's Choirs

Restricted to College of Music graduate students only. Same as MUSC 4143. Prerequisites: Restricted to College of Music graduate students only.

College of Music Music Music Education

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## MUSC-5151 (3) Topics in Music Analysis

Analytical study of a specific topic to be determined by the instructor (e.g., German Lieder, Bartok quartets, tonal rhythm, Schenker, etc). Study published analyses representing a variety of methodologies, and produce original analyses. Prereq., passed general written theory and aural skills prelim exam, or completed remediation. Recommended prereqs., MUSC 5061, 5071, as appropriate to topic or instructor consent. Prerequisites: Restricted to College of Music graduate students only.

[College of Music](#) [Music](#) [Theory and Composition](#)

## MUSC-5156 (2) Symposium in Choral Musi.

Provides an advanced study of choral repertoire by style period. Required of all choral graduate students for a minimum of two semesters. Prerequisites: Restricted to College of Music graduate students only.

[College of Music](#) [Music](#) [Choral and Instrumental Music](#)

## MUSC-5183 (2) Research in Music Teaching

Introduces basic descriptive, experimental, and qualitative research methods, including sampling, design, data collection, and analysis. Students review published music research and conduct one original research study. Restricted to graduate students in music education. Offered fall only. Prerequisites: Restricted to Music or Music Education graduate students only.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-5215 (1-2) Studies in Piano Teaching

Studies the practical aspects and techniques for teaching piano at the intermediate and advanced levels in pre-college and college settings, as well as teaching group piano at the college level. May be repeated up to 2 total credit hours. Recommended prereqs., MUSC 5305 and 5315. Restricted to graduate piano majors. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Music](#) [Keyboard](#)

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## Courses

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MUSC

### MUSC-5246 (3) Jazz Improvisation and Analysis

A study of improvisation through melodic and harmonic analysis of jazz compositions, transcriptions, and the study of historic jazz solos as played by jazz masters. Recommended prereq., MUSC 3071. Offered fall only. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Music](#) [Choral and Instrumental Music](#)

### MUSC-5255 (2) Service Playing Techniques

Same as MUSC 4255.

[College of Music](#) [Music](#) [Keyboard](#)

### MUSC-5256 (3) Jazz Studies Administration and Pedagogy

Studies the organization and administration of collegiate jazz programs. Topics include curriculum, program philosophy, teaching techniques, funding, teacher training, and evaluation. Recommended prereq., MUSC 3253. Offered fall only. Prerequisites: Restricted to College of Music graduate students only.

[College of Music](#) [Music](#) [Choral and Instrumental Music](#)

### MUSC-5273 (2) Comprehensive String Pedagogy

Comparative study and application of the principles of string teaching. In-depth analysis of individual instrument pedagogy and application to advanced studio and class teaching. Historical survey of major violin, viola, cello, and double bass pedagogues. Includes apprenticeship teaching. Restricted to graduate students. Offered fall of odd-numbered years. Prerequisites: Restricted to Graduate Students only.

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College of Music Music Music Education

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## MUSC-5285 (3) Organ Survey

Same as MUSC 4285.

College of Music Music Keyboard

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## MUSC-5295 (3) Organ Survey

Same as MUSC 4295.

College of Music Music Keyboard

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## MUSC-5305 (2) Piano Pedagogy Group Techniques

Discusses materials and techniques for teaching beginning piano students of various ages in studio and class settings. Special attention given to adult classes. Includes an introduction to educational technology used in group instruction. Offered fall of odd-numbered years.

College of Music Music Keyboard

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## MUSC-5313 (3) Teaching Choral Music

Restricted to graduate students in music education. Same as MUSC 4313. Offered spring only.

College of Music Music Music Education

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## MUSC-5315 (2) Piano Pedagogy: Intermediate Literature

Surveys repertoire at the intermediate level and discusses teaching techniques. Explores issues related to intermediate and advanced piano performance, such as performance anxiety, physical and psychological well-being of the performer, and the development of technique. Introduces educational technology relevant to intermediate teaching. Offered spring of even-numbered years.

College of Music Music Keyboard

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## MUSC-5325 (2) Keyboard Literature 1

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Examines areas of style, genre, and performance practice in selected keyboard music from 1600 to 1830. Emphasizes student presentation of specific topic areas. Offered fall semester of even-numbered years. Prerequisites: Restricted to Graduate Students only.

College of Music | Music | Keyboard

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## MUSC-5335 (2) Keyboard Literature 2

Examines areas of style, genre, and performance practice in selected areas of keyboard music from 1830 to the present. Emphasizes student presentation of specific topic areas. Offered spring semester of odd-numbered years.

College of Music | Music | Keyboard

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## MUSC-5336 (2) Brass Pedagogy

Analyzes pedagogical techniques and philosophies of teaching brass instruments, and examines materials. Offered every other spring semester.

College of Music | Music | Choral and Instrumental Music

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## MUSC-5345 (2) Research: Piano Literature and Pedagogy

Looks at individual or group research related to piano pedagogy or literature for piano. May be repeated upto 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music | Music | Keyboard

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## MUSC-5346 (3) Woodwind Pedagogy

Provides the knowledge and skills to teach woodwind instruments in both private studio and collegiate class settings. Considers pedagogical techniques addressing all levels of instruction. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music | Choral and Instrumental Music

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## MUSC-5356 (2) Jazz Studies Practicum

Studies strategies for developing and implementing academic programs in jazz studies. Includes demonstration teaching by class members. Recommended prereq., MUSC 5256. Offered Spring only. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music | Choral and Instrumental Music

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## MUSC-5365 (2) Advanced Accompanying

An in-depth study of both vocal and instrumental collaborative repertoire in individually assigned projects, coached by collaborative faculty and others. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music | Music | Keyboard

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## MUSC-5375 (2) Opera Coaching for Pianists

Teaches skills for opera coaches and rehearsal pianists. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music | Music | Keyboard

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## MUSC-5405 (2) Basso-Continuo Accompaniment

Same as MUSC 4405. Prerequisites: Restricted to College of Music graduate students only.

College of Music | Music | Keyboard

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## MUSC-5425 (2) Collaborative Literature for Piano with Winds, Brass, and Percussion

Study of all forms of wind, brass and percussion repertoire involving collaboration with piano including sonatas, duos, short pieces and concerti. Focus will be on standard literature and reading and listening assignments will be supplemented by in-class performances and presentations. Prereq., instructor consent. Offered fall only.

College of Music | Music | Keyboard

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## MUSC-5435 (2) Collaborative Literature for Piano with Strings

Study of all forms string repertoire involving collaboration with piano including sonatas, duos, short pieces and concerti. Focus will be on standard literature and reading and listening assignments will be supplemented by in-class performances and presentations. Prereq., instructor consent. Offered spring only.

College of Music | Music | Keyboard

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## MUSC-5443 (3) Teaching Instrumental Music

For graduate music education majors. Same as MUSC 4443. Offered spring only.

College of Music | Music | Music Education

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## MUSC-5444 (2) Vocal Pedagogy

In depth study of the physiology, acoustics, and health aspects of the singing voice. Recommended for all graduate students in voice. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Music](#) [Voice](#)

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## MUSC-5454 (2) Repertory for Young Voices

Survey of the solo repertoire for young voices, the physiological aspects of mutational voices, techniques of vocalizing young voices, and class voice procedure. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Music](#) [Voice](#)

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## MUSC-5464 (2) French Song Literature

Provides an extensive analytical and historical discussion of French song literature styles, from the 12th century to the present.

[College of Music](#) [Music](#) [Voice](#)

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## MUSC-5484 (2) Graduate Seminar in Vocal Pedagogy

A thorough investigation of the challenges of studio voice pedagogy, including corrective techniques, psychological philosophies, and video analysis of student teaching. Examination and evaluation of comparative methodologies of vocal technique. Prereq., MUSC 5444 or instructor consent required.

[College of Music](#) [Music](#) [Voice](#)

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## Courses

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MUSC

### MUSC-5564 (2) German Song Literature

Provides an extensive analytical and historical discussion of German song literature styles, from the 18th century to the present.

[College of Music](#) [Music](#) [Voice](#)

### MUSC-5583 (2) The Inclusive Music Classroom

For graduate music education majors. Same as MUSC 4583. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Music](#) [Music Education](#)

### MUSC-5608 (1) Graduate Studies in the Alexander Technique

Study of the relationship of kinesthetic perception and postural reflexes to physical coordination in performance. Analysis and research regarding Alexander's principles. Prerequisites: Restricted to College of Music graduate students only.

[College of Music](#) [Music](#) [Interdepartmental Courses](#)

### MUSC-5642 (3) Jazz History and Literature

Studies musical trends and cultural forces influencing jazz, with analysis of scales, improvisational styles, melodic and motivic variations, transcriptions, and orchestrations from significant periods in its history. Prereq., MUSC 3642 or instructor consent. Offered spring only.

[College of Music](#) [Music](#) [Musicology](#)

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## MUSC-5666 (2) Chamber Music Literature: Woodwinds

Provides a stylistic-historical survey in various genres from Baroque era to present. May be repeated up to 12 total credit hours. Offered every other spring.

College of Music Music Choral and Instrumental Music

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## MUSC-5708 (2) Introduction to Music Bibliography and Research

Explores basic informational sources about music and musicians; a study of bibliographic forms, research, and writing techniques employed in music research papers, theses, and dissertations. Required in all master's degree programs. Prerequisites: Restricted to Graduate Students only.

College of Music Music Interdepartmental Courses

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## MUSC-5712 (3) Renaissance Music

Provides a repertory and analysis of polyphonic music 1400-1600. Same as MUSC 4712.

College of Music Music Musicology

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## MUSC-5722 (1) Sight-Reading Medieval and Renaissance Music Literature

Provides an opportunity to read through, sing, play, study, and discuss ancient repertoires more intensively than is normally possible in either music history lecture classes, seminars, or chamber music ensembles. Evaluation is based on active participation, out-of-class research, and final in-class group-performance projects. Recommended for graduate students in historical musicology and choral conducting. May be repeated up to 6 total credit hours.

College of Music Music Musicology

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## MUSC-5742 (3) Performance Practice of Early Music

Examines instrumental and vocal performance practices through the 18th century. Topics may vary from year to year. Prerequisites: Restricted to College of Music graduate students only.

College of Music Music Musicology

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## MUSC-5752 (3) Women in Music

Examines the role of women as creators and performers of Western Music. Explores related issues in musicology, including canon

formation, reception history, and feminist aesthetics.

College of Music Music Musicology

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## MUSC-5762 (3-4) History of Choral Literature

Provides a seminar in analysis of musical style and history of choral repertory . Those wishing review of literature and repertory may enroll for 4 credit hours.

College of Music Music Musicology

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## MUSC-5772 (3) History of Opera

Examines representative operas from the 17th century. Emphasizes historical and stylistic analysis and surveys related musicological literature. Restricted to graduate students. Same as MUSC 4772.

College of Music Music Musicology

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## MUSC-5802 (3) Studies in 20th Century Music

Same as MUSC 4802. Prereq., graduate standing.

College of Music Music Musicology

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## MUSC-5808 (1) Advanced Alexander Technique for Graduate Students

Continues investigation of the benefits of Alexander's principles regarding mind-body awareness begun in MUSC 5608. Increased emphasis on utilizing principles in specialized activity. Analysis and research regarding musical activities. May be repeated up to 3 total credit hours. Prereq., MUSC 5608 or instructor consent.

College of Music Music Interdepartmental Courses

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## MUSC-5812 (3) Symphonic Literature

Studies literature for orchestra, band, and other symphonic ensembles including pre-Classic, Classic, Romantic, and 20th century.

College of Music Music Musicology

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## MUSC-5822 (3) Ancient and Medieval Music

Surveys sources from the ancient Greeks to the early Christian era and music from the 8th to the 15th century.

College of Music Music Musicology

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## MUSC-5832 (3) Studies in American Music

Offers intensified work in folk, popular, and art music of the United States.

College of Music Music Musicology

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## MUSC-5842 (3) Aesthetics of Music

Surveys various philosophies of music in writings of philosophers, psychologists, sociologists, composers, critics, and historians. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music Music Musicology

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## MUSC-5852 (3) 17th and Early 18th Century Music

Examines music and writings about music from the Baroque era. Emphasizes historical and stylistic analysis and current musicological literature.

College of Music Music Musicology

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## MUSC-5872 (3) Late 18th and 19th Century Music

May be repeated up to 12 total credit hours. Same as MUSC 4872.

College of Music Music Musicology

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## MUSC-5882 (3) Studies in 18th and 19th Century Music

Meets as a seminar and examines selected topics in Classic and Romantic music, 1750-1900. Topics vary from year to year.

College of Music Music Musicology

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## MUSC-5892 (3) Latin American Music

Restricted to graduate students. Same as MUSC 4892.

[College of Music](#) | [Music](#) | [Musicology](#)

## MUSC-5908 (1-3) Internship in Music Business

Engage with music/music business organizations in the community (for profit or non-profit) to pursue specific tasks or projects relevant to the student's career goals. A minimum of 48 hours is required per semester for one credit. May be repeated up to 3 total credit hours. Recommended prereq., Masters standing. MUSC 4908 and 5908 are the same course. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Music Entrepreneurship](#)

## MUSC-5968 (2) Entrepreneurial Ventures in the Arts

Previously Topics in Arts Entrepreneurship, this course prepares students to evaluate opportunities in their specific arts field by analyzing existing arts organizations and then applying entrepreneurial concepts to create new enterprises. Topics for research and discussion include current issues in the arts, introduction to entrepreneurship, preparing a business feasibility study, market information for new ventures, and funding sources. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) | [Music](#) | [Music Entrepreneurship](#)

## MUSC-6041 (3) Orchestration since 1940

Studies significant and distinctive orchestration techniques of the 20th century, concentrating on works written since 1940. Restricted to doctoral students.

[College of Music](#) | [Music](#) | [Theory and Composition](#)

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# Courses

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MUSC

## MUSC-6051 (3) Pedagogy of Music Theory

Studies methods and materials for teaching undergraduate music theory, aural skills, and analysis. Prereq., passed general written theory and aural skills prelim exam, or completed remediation.

[College of Music](#) [Music](#) [Theory and Composition](#)

## MUSC-6113 (2) Foundations of Music Education

Surveys historical and philosophical bases of contemporary music education. Restricted to graduate students in music education. Offered fall only. Prerequisites: Restricted to Music or Music Education graduate students only.

[College of Music](#) [Music](#) [Music Education](#)

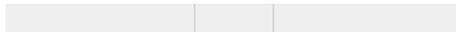
## MUSC-6133 (2) Comprehensive Musicianship through Performance

Explores curricular models for music education. Emphasizes comprehensive musicianship and standards-based frameworks for curriculum and development. Restricted to graduate students in music education. Offered spring of even-numbered years.

[College of Music](#) [Music](#) [Music Education](#)

## MUSC-6193 (1-3) Selected Studies in Music Education

May be repeated up to 12 total credit hours. Prereq., consent of instructor and music education chair. Prerequisites: Restricted to Music or Music Education graduate students only.



## MUSC-6203 (2) Psychology of Music Learning

Provides an overview of psychological concepts relevant to music teaching and learning. Topics include learning theories, selected individual difference variables (motivation, anxiety, creativity, and personality), physiological structures related to hearing, psychoacoustics, and approaches to examining musical ability (e.g. brain research, music aptitude, and skill acquisition). Restricted to graduate students. Offered spring only.

## MUSC-6213 (2) Assessment of Music Learning

Provides an overview of traditional and contemporary approaches to music assessment. Topics include psychometrics, standardized tests, test construction, grade reports, and student portfolios. Restricted to graduate students in music education. Offered spring of even-numbered years.

## MUSC-6223 (2) Sociology of Music Education

Studies sociological perspectives related to music education. Topics include functions and uses of music; teacher and student role/identity development; social aspects of music performance, and cultural perspectives on music learning. Recommended prereq., MUSC 6113. Restricted to graduate students in music education. Offered fall of even-numbered years. Prerequisites: Restricted to Graduate Students only.

## MUSC-6233 (2) Pedagogy of Music Teaching and Learning

Explores four topics (reflective/critical thinking, teacher effectiveness, cultural/program contexts, teachers' lives/career development) relevant to long-term teacher development. Includes individualized feedback on teaching. Open to graduate students in music education and performance-pedagogy. Offered spring of odd-numbered years. Restricted to MME+ students in their second or third year of the program. Recommended prereq., MUSC 6113 and/or significant teaching experience.

## MUSC-6325 (2) Seminar in Piano Literature

Provides an intensive study of a selected area of repertoire or history. May be repeated up to 6 total credit hours. Restricted to doctoral students or instructor consent required. Offered fall only. Prerequisites: Restricted to Graduate Students only.

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## MUSC-6801 (3) Advanced Topics in Music Theory

Intensive study of a specialized topic in theory and analysis. Students will be guided in critical reading and analysis, class presentations, and independent research. Prereqs., graduate preliminary exams passed, and 6 credit hours of graduate-level theory. Restricted to MUSD and MUAD students. Prerequisites: Restricted to Music (MUSD or MUAD) majors only.

## MUSC-6822 (3) Advanced Studies in Musicology

Intensive study of a specialized topic in musicology. Students will be guided in critical reading, historical or ethnographic issues, analysis, oral presentations, and independent research. May be repeated up to 6 total credit hours. prereq., MUSC 5708. Restricted to MUAD or MUSD majors. Prerequisites: Restricted to Music (MUAD or MUSD) graduate students only.

## MUSC-7046 (3) Seminar in Jazz Literature

Provides advanced study in jazz literature and styles. Students present results of research on individually chosen topics or aspects of a topic central to the class. Requires class presentations and a major paper or project. May be repeated up to 6 total credit hours. Recommended prereqs., MUSC 5091 and 5642. Restricted to doctoral students. Offered every other year.

## MUSC-7103 (3) Historical Research in Music Education

Topics include oral history, archival collections, data verification, and critiquing/publishing research. Students conduct one original research study. May be repeated up to 12 total credit hours. Restricted to doctoral students in music education. Offered spring of even-numbered years.

## MUSC-7113 (3) Quantitative Research in Music Education

Topics include sampling, questionnaire development, research design, intermediate and advanced statistics, presenting/publishing research, and research ethics. Students conduct an original research study. Restricted to doctoral students in music education. Offered fall of even-numbered years. Prerequisites: Restricted to Graduate Students only.

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## MUSC-7138 (3) Contemporary Issues in College Teaching

Examines music teaching within colleges and universities, including the evolution of university music programs, undergraduate and graduate music curricula, music professors and their work, and sociopolitical issues. Offered spring of odd-numbered years.

College of Music | Music | Interdepartmental Courses

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## MUSC-7143 (3) Qualitative Research in Music Education

Topics include qualitative research traditions, site and participant selection, data collection and analysis methods, quality standards, and research ethics. Students conduct an original research study. Restricted to doctoral students in music education. Offered fall of odd-numbered years. Prerequisites: Restricted to Music (MMED or MUSD) graduate students only.

College of Music | Music | Music Education

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## MUSC-7203 (3) Doctoral Seminar in Music Education

Provides an advanced study of topics central to the music education profession. Requires class presentations and a major paper or project. Restricted to doctoral students in music education. Offered fall of even-numbered years. Prerequisites: Restricted to Music (MMED or MUSD) graduate students only.

College of Music | Music | Music Education

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## MUSC-7801 (3) Doctoral Seminar in Music Theory

Provides advanced study in theory. Students present results of research on individually chosen topics or aspects of a topic central to the class. Requires a major paper or project. Restricted to Music (MUSD) graduate students only. Prereq., passed general written theory and aural skills prelim exam, or completed remediation. Prerequisites: Restricted to Music (MUSD) graduate students only.

College of Music | Music | Theory and Composition

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## MUSC-7822 (3) Seminar in Musicology

Required of all musicology majors before completion of comprehensive examinations. A different research area is designated each semester. Restricted to MUSC majors. See also MUSC 7832. Offered fall only. Prerequisites: Restricted to Music (MUSD) graduate students only.

College of Music | Music | Musicology

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## MUSC-7832 (3) Seminar in Musicology

Required of all musicology majors before completion of comprehensive examinations. A different research area is designated each semester. See also MUSC 7822. Offered spring only.



## Courses

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MUSM

### MUSM-4010 (3) Museums and Society

Investigates the museum as an institution in society; history of museums and changing roles and methods in society; administrative structure; museum profession; methodology of museum collections, exhibitions, and education. Designed for students interested in museums or museum careers.

[College of Arts & Sciences](#) [Museum](#) [Museum Studies](#)

### MUSM-4462 (2-6) Museum Field Methods in Anthropology

Archaeological field techniques including excavation, mapping, recording, photography, interpretation, and field laboratory. May be repeated up to 6 total credit hours. Same as MUSM 5462.

[College of Arts & Sciences](#) [Museum](#) [Anthropology](#)

### MUSM-4473 (3) Museum Field Methods in Botany

Emphasizes field techniques for observation, analysis, and identification of vascular plants, collection, preservation, and date recording for museum specimens. Prereq., instructor consent.

[College of Arts & Sciences](#) [Museum](#) [Botany](#)

### MUSM-4494 (3) Field Research: Basic Methods and New Technologies

Students are exposed to a wide variety of field methods in disciplines specific to natural history museums, with field exercises in zoology,

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archaeology, paleontology, geology, botany, and entomology. Emphasizes the collection and analysis of spatial and geographic data. Prereq., instructor consent. Same as MUSM 5494.

College of Arts & Sciences Museum Museum Studies

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## MUSM-4795 (3) Field Methods in Zoology and Botany

Class covers research and field methods for biological disciplines associated with natural history museums: vertebrates, invertebrates, and plants. Emphasis is on field research techniques: observations, sampling, collection and preservation methods, and comparisons among elevation zones. Includes 5 field labs, 2 weekend trips, 5 lab practica, experience with several taxonomic experts, and individual research projects. Same as MUSM 5795, ENVS 4795, and EBIO 4795.

College of Arts & Sciences Museum Zoology

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## MUSM-4900 (1-6) Independent Study

May be repeated up to 6 total credit hours. Same as MUSM 5900.

College of Arts & Sciences Museum Independent Study

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## MUSM-4912 (3) Museum Practicum in Anthropology

Students take part in curatorial procedures of the anthropology section of the museum: conservation, cataloguing, collection management, and administration. Prereq., MUSM 5011 or equivalent. Enrollment is limited; students should make arrangements during previous semester. Same as MUSM 5912.

College of Arts & Sciences Museum Anthropology

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## MUSM-4913 (3) Museum Practicum in Botany

Students take part in curatorial procedures of the botany section of the museum: specimen preparation, labeling, identification, cataloguing, conservation, and collection management. Prereq., MUSM 5011 or equivalent. Enrollment is limited; students should make arrangements during previous semester. Same as MUSM 5913.

College of Arts & Sciences Museum Botany

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## MUSM-4914 (3) Museum Practicum in Geology

Students take part in curatorial procedures of the geology section of the museum: field collection, specimen preparation, cataloguing, collection management, and a survey of current laws as they apply to specimens. Prereq., MUSM 5011 or equivalent. Enrollment is

limited; students should make arrangements during previous semester. Same as Musm 5914.

College of Arts & Sciences Museum Geology

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## MUSM-4915 (1-3) Museum Practicum in Zoology

Students take part in basic curatorial procedures of the zoology section of the museum: relaxing, fixing, positioning, preserving, cataloguing, storing, and shipping. Also introduces students to the animal kingdom. Prereq., instructor consent. Same as MUSM 5915.

College of Arts & Sciences Museum Zoology

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## MUSM-4916 (1-3) Museum Practicum in Entomology

Students take part in curatorial procedures of the entomology section of the museum: field collection, specimen preparation, labeling, identification, rearing techniques, and exhibit preparation. Prereq., 5011, or equivalent. Enrollment is limited; students should make arrangements during previous semester. Same as MUSM 5916.

College of Arts & Sciences Museum Entomology

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## MUSM-4917 (1-3) Museum Practicum in Techniques

Students participate in museum public education functions that may include researching, planning, developing, and producing exhibits, traveling trunks, booklets, and other materials. May involve writing labels, molding and casting, conservation, and restoration. May be repeated up to 6 total credit hours. Same as MUSM 5917.

College of Arts & Sciences Museum Museology

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## MUSM-5011 (4) Introduction to Museum Studies

Provides background in history and literature of museums, their objectives and methods, laboratory exercises in curatorship, exhibition theory, and administration. Prereq., instructor consent.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5021 (2-3) Selected Museum Topics

College of Arts & Sciences Museum Museum Studies

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## MUSM-5030 (3) Museum Education

Surveys and discusses the educational role of museums and informal learning centers. Issues include current trends, learning theories and styles, learning from objects, education programs, diverse audiences, museum/school partnerships, and the role of education in exhibit development.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5031 (3) Museums and the Public: Exhibit Development

Covers elements of exhibition development and design, up to production and evaluation of exhibit prototypes. The team approach is emphasized. Prereqs., graduate standing and instructor consent.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5041 (3) Museum Administration

Covers theory of organizations and how it applies to museums, application of small business management and nonprofit organizations to museums, marketing and development, and grant writing and funding strategies. Prereq., graduate standing or instructor consent.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5045 (3) Introduction to Museum Anthropology

This course traces the development of Anthropology and museums in America from late 19th century to present day. Students are encouraged to: explore museum theory and practice; think critically about the history of relations among Native Americans, Anthropology, and museums; consider the legacy of collecting and challenges of representing others; and, examine the interplay of Anthropology, material culture, and colonialism. ANTH 4045, ANTH 5045, and MUSM 5045 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Museum Anthropology

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## MUSM-5051 (3) Museum Collections Management

Deals specifically with curation and data management. Topics include acquisition practices and problems; organization, management, use and preventive conservation of collections; and computer data management of collections. Prereq., instructor consent.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5061 (3) Introduction to Scientific Illustration

Intended for students with little to no art background. Focus is on the accurate rendering of scientific subjects for publication and for public display. Course begins with basic drawing skills and sharpening of visual perception. Students progress to be able to produce realistic renderings of subjects. Students are exposed to a variety of black and white and color techniques and the standards for presenting illustrations for a variety of audiences. Course concludes with computer illustration tools and techniques.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5474 (4) Vertebrate Paleontology

Discusses the history and evolution of the vertebrates, including the phylogenetic relationships and evolutionary patterns of the major groups. Lab focuses on comparative vertebrate osteology and fossil representation of major groups. Same as GEOL 5474.

College of Arts & Sciences Museum Geology

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## MUSM-5494 (3) Field Research: Basic Methods and New Technologies

Same as MUSM 4494.

College of Arts & Sciences Museum Museum Studies

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## MUSM-5795 (3) Field Methods in Zoology and Botany

Same as MUSM 4795 and EBIO 5795. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Museum Zoology

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## MUSM-5900 (1-6) Graduate Independent Study

Same as MUSM 4900.

College of Arts & Sciences Museum Independent Study

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## MUSM-5912 (1-3) Museum Practicum in Anthropology

Same as MUSM 4912.

College of Arts & Sciences Museum Anthropology

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MUSM

## MUSM-5913 (3) Museum Practicum in Botany

Same as MUSM 4913.

[College of Arts & Sciences](#) [Museum](#) [Botany](#)

## MUSM-5914 (3) Museum Practicum in Geology

Same as MUSM 4914.

[College of Arts & Sciences](#) [Museum](#) [Geology](#)

## MUSM-5915 (1-3) Museum Practicum in Zoology

Same as MUSM 4915.

[College of Arts & Sciences](#) [Museum](#) [Zoology](#)

## MUSM-5916 (1-3) Museum Practicum in Entomology

Same as MUSM 4916.

[College of Arts & Sciences](#) [Museum](#) [Entomology](#)

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## MUSM-5917 (1-3) Museum Practicum in Techniques

Same as MUSM 4917.

College of Arts & Sciences Museum Museology

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## MUSM-6110 (1-3) Seminar in Museum Issues

Offers a weekly seminar for museum and field study students that addresses one new topic each semester relevant to museum operations such as archival administration, museums, multiculturalism, repatriation, and others. Prereqs., MUSM 5011, graduate standing, and instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Museum Museum Studies

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## MUSM-6140 (1-3) Advanced Topics and Trends

Discusses current topics and/or trends in the museum profession. Topics change annually to reflect current topics and trends and the most current museum issues. Prereq., graduate standing and instructor consent. Recommended prereq., MUSM 5011 and 5051.

College of Arts & Sciences Museum Museum Studies

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## MUSM-6150 (3) Critical and Theoretical Issues in Museums

Investigates key problems facing museum institutions and studies the staging and representation of historical knowledge, the ethics of collecting and display, the changing nature and uses of historical evidence, and relations between curatorial practice, collecting, and field work. Critically examines different approaches to museums and museology in various disciplines, both past and present. Prereq., MUSM 5011 or instructor consent. Same as ARTH 6150, HIST 6150, and ANTH 6150.

College of Arts & Sciences Museum Museum Studies

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## MUSM-6930 (2-4) Museum Internship.

Provides experience in museums of different sizes, audiences, and subjects, including history, natural history, art, and children's museums. Each student is supervised individually by a faculty member as well as the appropriate person in the cooperating museum. Prereq., instructor consent.

College of Arts & Sciences Museum Museum Studies

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## MUSM-6940 (1) Master's Degree Candidate

[College of Arts & Sciences](#) [Museum](#) [Museum Studies](#)

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## MUSM-6950 (1-6) Master's Thesis in Museum and Field Studies

A thesis, which may be of a research, expository, critical or creative type, is required of every master's degree candidate under the thesis option. Prereqs., MUSM 5011 and 5051, and one of the following: MUSM 5030, 5031, or 5041.

[College of Arts & Sciences](#) [Museum](#) [Museum Studies](#)

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## MUSM-6960 (1-4) Master's Project or Paper in Museum and Field Studies

A project or paper in the student's discipline and related to some aspect of museum studies is required of every master's degree candidate under the non-thesis-option plan. Prereqs., MUSM 5011 and 5051. Students in collections/field track also need MUSM 5030, 5031, or 5041.

[College of Arts & Sciences](#) [Museum](#) [Museum Studies](#)

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## Courses

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NAVR

### NAVR-1010 (2) Introduction to Naval Science

Introduces the structure, missions, and functions of the United States Navy and Marine Corps. Also covers military law, leadership, naval history, and concepts of sea power.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Naval Science](#)

### NAVR-2020 (3) Seapower and Maritime Affairs

Studies the importance of seapower in history including naval, maritime, and other commercial uses of the sea. Emphasizes significant milestones in the history of the U.S. Navy and Marine Corps and their role in the national strategies and policies of the United States.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Naval Science](#)

### NAVR-3020 (3) Naval Operations and Seamanship

Examines the Inland and International Rules of the Nautical Road, including court interpretations, principles of relative motion and vector analysis with the maneuvering board, ship handling procedures, weather, communications, tactical operations, and maritime law.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Naval Science](#)

### NAVR-3030 (3) Naval Engineering Systems

Studies in detail ship propulsion and related auxiliary systems. Emphasizes fossil fuel and nuclear steam and gas turbine systems. Stresses design constraints imposed by unique marine environment.

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Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-3040 (3) Weapons and Systems Analysis

Introduces theoretical concepts upon which modern naval weapons systems are designed and constructed. Specific areas of study include physics of underwater sound propagation, pulse radar theory, automatic tracking principles, and fundamentals of missile guidance.

Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-3101 (3) Evolution of Warfare

Traces the development of warfare, focusing on the impact of military theorists and technical developments. Assists students to acquire a sense of strategy, develop an understanding of military alternatives, and see the impact of historical precedent on military actions.

Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-4010 (3) Leadership and Management 1

Comprehensively studies organizational leadership. Emphasizes motivation, communication, empowerment, and needs of subordinates. Studies the role of professional and personal ethics in organizational leadership.

Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-4020 (3) Leadership and Ethics

Studies the ethics and laws of armed conflict, analyzing the leadership responsibilities of officers in conflict. Studies the military justice system and Naval legal administrative procedures, comparing military law with civilian criminal and civil law. Defines the responsibilities of junior officers within the military justice system.

Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-4030 (3) Navigation

Offers theory and practical application in the art of navigation: charts, publications, piloting, dead reckoning, navigation aids and instruments, time, sextant use, electronic fixing, global positioning system, and voyage planning.

Cross College Programs Reserve Office Training Corp Naval Science

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## NAVR-4101 (3) Amphibious Warfare

Surveys the development of amphibious doctrine. Emphasizes the evolution of amphibious warfare in the 20th century. Explores present-day potential and limitations on amphibious operations, including the rapid force deployment concept.

[Cross College Programs](#) | [Reserve Office Training Corp](#) | [Naval Science](#)

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# Courses

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NORW

## NORW-1010 (4) Beginning Norwegian 1

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

## NORW-1020 (4) Beginning Norwegian 2

Prereq., NORW 1010 with a grade of C- or better.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

## NORW-1900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

## NORW-2110 (4) Second-Year Norwegian Reading and Conversation 1

Prereq., NORW 1020 with a grade of C- or better. Fulfills the arts and sciences language requirement for the BA and BFA degrees. Meets MAPS requirement for foreign language.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

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## NORW-2120 (4) Second-Year Norwegian Reading and Conversation 2

Continuation of NORW 2110, with focus on Norwegian culture and society. Small group work and class discussions. Prereq., NORW 2110 with a grade of C- or better.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

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## NORW-3900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

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NRLN

## NRLN-2000 (3) Ways of Knowing: Constructions of Knowledge in the Academy and Beyond

Explores different ways of knowing from interdisciplinary, cross-cultural perspectives. Course begins with personal interrogations of students' primary learning modes. It goes on to examine cultural assumptions about schooling, learning and knowledge, juxtaposing western and eastern philosophies of knowing and looking at how gender, race, class, and other categories of identity shape and interpret concepts of knowledge. Same as ARSC 2000. Approved for arts and sciences CORE curriculum: ideals and values.

[College of Arts & Sciences](#) [Norlin Scholars](#)

## NRLN-3000 (1-3) Norlin Scholars Special Topics

Provides students a small, interdisciplinary seminar experience focusing on critical reading and writing, discussion, and experiential and practical learning. Students will apply their disciplinary knowledge and personal experiences to course content. May be repeated up to 6 total credit hours provided the topics are different. Restricted to Norlin Scholars.

[College of Arts & Sciences](#) [Norlin Scholars](#)

## NRLN-3020 (3) Topics in Writing: Norlin Scholars

Focuses on reading, analysis, and writing about major ideas and events. Emphasizes close, careful reading, thoughtful analysis, and student writing. Provides a high-level academic course that enhances reading, writing, and thinking skills. May be repeated up to 6 total credit hours. Same as WRTG 3020. Approved for arts and sciences core curriculum: written communication.

[College of Arts & Sciences](#) [Norlin Scholars](#)

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## NRLN-3500 (3) Constructions of Knowledge in the Fields

Required for Norlin Scholars, this is an upper division course exploring the relationship between the scholar citizen and the chosen field. Investigates the concept of vocation and the epistemologies, pedagogies, rhetorics, technologies, ethics, cultures and prevailing narratives of students' major fields and career paths. A range of co-curricular activities augment the classroom learning. Prereq., NRLN 2000.

[College of Arts & Sciences](#) [Norlin Scholars](#)

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## Courses

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NRSC

### NRSC-2100 (4) Introduction to Neuroscience 1

Provides an introduction to fundamental concepts in neuroscience. The goal of this first course is to provide a strong foundation in neurobiology--cell biology, physiology of the neuronal membrane, interneuronal communication, neurotransmission, gross anatomy, and how the brain develops. Students will also learn principles of sensory systems functions. The recitation will introduce students to neuronal computational modeling. Restricted to students with 27-86 credits (Sophomores or Juniors). Prereqs., MCDB 1150 and 1151, or EBIO 1210 and 1230, and MCDB 2150 and 2151. Fulfills PSYC 2012 requirement for Psychology majors. Prerequisites: Restricted to students with 27-86 credits (Sophomores or Juniors).

[College of Arts & Sciences](#) [Psychology](#)

### NRSC-2101 (1-4) Topics in Neuroscience

Provides students with the opportunity to focus on a specific area of Neuroscience in depth. May be repeated up to 6 total credit hours. Prereq., instructor consent.

[College of Arts & Sciences](#) [Psychology](#)

### NRSC-2110 (3) Introduction to Neuroscience 2

Provides an introduction to fundamental concepts in neuroscience. It will also provide a basic understanding of the control of voluntary movement, the neurochemical bases of brain diseases and systems controlling motivation, emotion, learning, memory and sleep. Prereq., NRSC 2100.

[College of Arts & Sciences](#) [Psychology](#)

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## NRSC-4011 (1-6) Senior Thesis and Research and Ethics

Perform neuroscience related empirical research and analysis. Training emphasizes the development of critical thinking skills specific to dealing with ethical dilemmas and the responsible conduct of research. Issues related to animal and human research are covered.

Prereq., instructor consent.

College of Arts & Sciences Psychology

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## NRSC-4015 (3) Affective Neuroscience

Experiencing and learning from affect--emotional value--is a fundamental part of the human experience. When people started thinking of brains as computers, research on emotion fell by the wayside. Recently however, this has changed, and there is an explosion of work on the brain mechanisms of affective value. We will cover recent advances in understanding the emotional brain. Prereqs. for NRSC 4015 are PSYC 2012 or NRSC 2100 or instructor permission, and junior or senior standing. NRSC 4015 and 5015 are the same course.

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Psychology

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## NRSC-4032 (3) Neurobiology of Learning and Memory

Provides a comprehensive treatment of how the brain acquires, stores, and retrieves memories. To do this we will consider (a) the methods used to address these issues, (b) what we know about how brain systems are organized to support memories of different types, and (c) the synaptic mechanisms that are involved. Prereqs., PSCY 2012 or 4052, or LPHY 3730, or NRSC 2100 or 4052, or instructor consent. Restricted to juniors and seniors. Same as NRSC 5032. Formerly PSYC 4032 Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Psychology

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## NRSC-4052 (4) Behavioral Neuroscience

Intensive survey of the morphological, neurochemical, and physiological aspects of behavior. Prereqs., PSYC 2012-2022 or EBIO 1210-1220, or CHEM 1111-1131, or PHYS 1010-1020, or PHYS 2010-2020. NRSC 4052 and PSYC 4052 are the same course. Same as NRSC/PSYC 5052.

College of Arts & Sciences Psychology

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## NRSC-4072 (3) Clinical Neuroscience: A Clinical and Pathological Perspective

Provides basic science background for understanding the mechanism of behavioral disturbances resulting from brain damage. Emphasizes pathological neuroanatomy, neurophysiology, and neuropharmacology, which is essential for understanding problems related to health and disease. Prereqs., PSYC 2012 and one of the following sequences of courses: EBIO 1210 and 1220, MCDB 1150 and 2150, or MCDB 1150 and EBIO 1220. Same as NRSC 5072. Formerly PSYC 4072.

College of Arts & Sciences Psychology

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## NRSC-4092 (3) Behavioral Neuroendocrinology

Provides an introduction to neuroendocrinology with a focus on the interaction between hormones and brain function. Prereqs., PSYC 2012 or NRSC 2100 or instructor consent. Same as NRSC 5092. Formerly PSCY 4092. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology

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## NRSC-4132 (3) Neuropharmacology

Neuropharmacology is the study of drug action within the central nervous system. This course is designed to provide a fundamental understanding of the biochemical basis of drug action at the cellular level. Topics covered include the following: 1) principles of pharmacology; 2) brain neurotransmitter systems; 3) addiction and the mechanisms of psychoactive action; 4) biochemical basis of psychiatric disorders and their pharmacological treatment. Prereqs., PSYC 2012 or NRSC 2110 and CHEM 1133. Formerly PSYC 4132. Same as NRSC 5132.

College of Arts & Sciences Psychology

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## NRSC-4155 (4) Cognitive Neuroscience/Neuropsychology

An introduction to cognitive neuroscience and neuropsychology. Provides a survey of the neuropsychological underpinnings for a wide range of cognitive functions: motor control, object recognition, spatial processing, attention, language, memory and emotion. One lab, three lectures per week. Prereqs., PSYC 1001, 2012 or NRSC 2100, PSYC 3101 or MATH 2510 or MATH 2520 or IPHY 2800 or APPM 1710 or APPM 2750 or CHEN 3010 or CHEN 3130 or ECON 3818. Same as PSYC 4155.

College of Arts & Sciences Psychology

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## NRSC-4545 (3) Neurobiology of Addiction

Covers an intensive survey and synthesis of recent findings contributing to our understanding of the neurobiological basis of addiction. Analysis of both drug and behavioral addictions will be made at the molecular, cellular and neurocircuitry levels and synthesized into models utilizing common themes between various addictions and contributing pathologies. Prereq., PSYC 4132 or NRSC 4132. NRSC 4545 and 5545 are the same course.

College of Arts & Sciences Psychology

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## NRSC-4841 (1-3) Independent Study in Neuroscience

May be repeated up to 8 total credit hours. Restricted to students with 57-180 credits (Junior or Senior) Neuroscience (NRSC) majors only. Pass/Fail only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Neuroscience (NRSC) majors only.

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## NRSC-4911 (3) Teaching of Neuroscience

This course offers a rich experience for students to develop and organize curriculum to complement the Neuroscience core courses. This course offers a valuable teaching experience utilizing computational modeling to simulate experimental results. Any Neuroscience curriculum course, such as Intro to Neuroscience I or II, Neuropharmacology, Neurobiology of Learning and Memory or Behavioral Neuroscience may be appropriate with instructor consent. NRSC 4911 and 5911 are the same course.

## NRSC-5015 (3) Affective Neuroscience

Experiencing and learning from affect--emotional value--is a fundamental part of the human experience. When people started thinking of brains as computers, research on emotion fell by the wayside. Recently however, this has changed, and there is an explosion of work on the brain mechanisms of affective value. We will cover recent advances in understanding the emotional brain. Prereqs. for NRSC 4015 are PSYC 2012 or NRSC 2100 or instructor permission, and junior or senior standing. NRSC 4015 and 5015 are the same course. Prerequisites: Restricted to Graduate Students only.

## NRSC-5032 (3) Neurobiology of Learning and Memory

Same as NRSC 4032. Formerly PSYC 5032 Prerequisites: Restricted to Graduate Students only.

## NRSC-5052 (4) Behavioral Neuroscience

PSYC 5052 and NRSC 5052 are the same course. Same as PSYC/NRSC 4052. Prerequisites: Restricted to Graduate Students only.

## NRSC-5072 (3) Clinical Neuroscience

Same as NRSC 4072. Formerly PSYC 5072. Prerequisites: Restricted to Graduate Students only.

## NRSC-5092 (4) Behavioral Neuroendocrinology

Same as NRSC 4092. Formerly PSCY 5092. Prerequisites: Restricted to Graduate Students only.

## NRSC-5100 (2-5) Introduction to Neuroscience I

Provides an intensive introduction to the principles of neuroscience, initially covering the detailed neuroanatomy of human forebrain, hindbrain, and spinal cord. This is followed by neurophysiology with a concentration on the electrophysiology of neural systems. The basics of neuroanatomy and neurophysiology with a concentration on the electrophysiology are then applied to an examination of the structure and function of visual, auditory, and sensorimotor systems in animal and man. Prerequisites: Restricted to Graduate Students only.

## NRSC-5110 (3) Introduction to Neuroscience II

Provides an intensive interdisciplinary introduction to the principles of neuroscience. It is a sequel to NRSC 5100. Provides a detailed overview of neurochemistry, neurodevelopment, neuromotor control, neurogenetics, and cognitive neuroscience. Prereq., NRSC 5100.

## NRSC-5132 (3) Neuropharmacology

May be repeated up to 6 total credit hours. Formerly PSYC 5132. Same as NRSC 4132. Prerequisites: Restricted to Graduate Students only.

## NRSC-5545 (3) Neurobiology of Addiction

Covers an intensive survey and synthesis of recent findings contributing to our understanding of the neurobiological basis of addiction. Analysis of both drug and behavioral addictions will be made at the molecular, cellular and neurocircuitry levels and synthesized into models utilizing common themes between various addictions and contributing pathologies. Prereq., PSYC 4132 or NRSC 4132. NRSC 4545 and 5545 are the same course. Prerequisites: Restricted to Graduate Students only.

## NRSC-5911 (3) Teaching of Neuroscience

This course offers a rich experience for students to develop and organize curriculum to complement the Neuroscience core courses. This course offers a valuable teaching experience utilizing computational modeling to simulate experimental results. Any Neuroscience curriculum course, such as Intro to Neuroscience I or II, Neuropharmacology, Neurobiology of Learning and Memory or Behavioral Neuroscience may be appropriate with instructor consent. NRSC 4911 and 5911 are the same course. Prerequisites: Restricted to Graduate Students only.

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## NRSC-6100 (2) Advances in Neuroscience Seminar

Designed for beginning graduate students interested in neuroscience. Students read, discuss, and evaluate the primary literature on a number of current topics in neuroscience as well as attend the seminar program in neuroscience. May be repeated up to 8 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Psychology](#)

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NRSC

### NRSC-7102 (2-3) Topics in Neuroscience

Advanced seminar dealing with different specialized topics in neuroscience. Restricted to Graduate Students only. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Psychology](#)

### NRSC-7112 (3) Special Topics in Neuroscience I

Advanced seminar dealing with several different specialized topics in Neuroscience. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours.

[College of Arts & Sciences](#) [Psychology](#)

### NRSC-7122 (3) Special Topics in Neuroscience II

Advanced seminar dealing with several different specialized topics in Neuroscience. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours.

[College of Arts & Sciences](#) [Psychology](#)

### NRSC-7132 (3) Special Topics in Neuroscience III

Advanced seminar dealing with several different specialized topics in Neuroscience. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours.

## NRSC-7142 (3) Special Topics in Neuroscience IV

Advanced seminar dealing with several different specialized topics in Neuroscience. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours.

## NRSC-7152 (3) Special Topics in Neuroscience V

Advanced seminar dealing with several different specialized topics in Neuroscience. Prereq., NRSC 5110 or instructor consent required. May be repeated up to 9 total credit hours.



# Courses

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OPIM

## OPIM-6070 (3) Survey of Operations Research

Applications oriented survey of operations research topics including linear and integer programming, network analysis, dynamic programming, nonlinear programming, decision analysis, Markov chain and Markovian decision models, queuing theory, and simulation. Same as EMEN 5600. Formerly SYST 6070.

[Leeds School of Business](#) [Operations and Information Management](#)

## OPIM-6080 (3) Operations Management

Covers demand forecasting, capacity management, scheduling, inventory planning and management, production planning and control, materials requirements planning, just-in-time production systems, product design and process selection, elements of statistical process control, service operations, and quantitative techniques for operations decision making. Similar to EMEN 5500. Formerly SYST 6080.

[Leeds School of Business](#) [Operations and Information Management](#)

## OPIM-6820 (3) Special Topics in Systems

Offered irregularly to provide opportunity for investigation into new frontiers in systems. May be repeated up to 6 total credit hours. Formerly SYST 6820.

[Leeds School of Business](#) [Operations and Information Management](#)

## OPIM-6900 (1-3) Independent Study

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Requires prior consent of dean and instructor under whose direction study is taken. Intended only for exceptionally well-qualified business seniors who desire to study an advanced topic. Departmental form required. Formerly SYST 6900.

Leeds School of Business | Operations and Information Management

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## OPIM-6930 (3) Assessing Sustainable Energy Technologies

Focuses on the commercialization prospects of emerging energy technologies, including solar, wind, biomass, oceanic, geothermal, hydropower, fuel cell (hydrogen), nuclear, and other more exotic energy sources. Investigates the technology feasibility, economic viability and progress of each technology, as well as its economic opportunities and challenges.

Leeds School of Business | Operations and Information Management

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## OPIM-6940 (1) Masters Candidate

Leeds School of Business | Operations and Information Management

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## OPIM-6950 (1-6) Master's Thesis

Leeds School of Business | Operations and Information Management

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## OPIM-7110 (3) Simulation Modeling and Analysis

Introduces the concepts of simulation modeling. Provides practical experience with real examples using popular commercial simulation packages such as Arena or Extend. Emphasizes discrete-event simulation but also covers topics in Monte Carlo simulation and system dynamics. Practical examples from operations management, manufacturing, and services are used to give students an appreciation for the wide scope of application and the robust nature of simulation modeling in the context of decision making. Formerly SYST 7110.

Leeds School of Business | Operations and Information Management

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## OPIM-7120 (3) Discrete Optimization

Covers the modeling and solution of discrete problems that arise in business and engineering. Classical techniques such as cutting planes and branch and bound are covered. Emphasizes the application of metaheuristic procedures, such as tabu search and evolutionary approaches, to the solution of practical combinatorial optimization problems. Formerly SYST 7120.

Leeds School of Business | Operations and Information Management

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## OPIM-7330 (3) Advanced Operations Management Modeling

Covers concepts, models, and solution techniques relevant to the management of the processes required to provide goods or services to consumers. Emphasizes supply chain systems topics such as production, inventory, distribution, and scheduling. Management science and operations research methodology is also applied to problems such as facility capacity planning, facility design, and location analysis. Formerly SYST 7330.

Leeds School of Business | Operations and Information Management

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## OPIM-7400 (3) Stochastic Dynamic Programming with Applications

Covers the basic models and solution techniques for stochastic dynamic programs with finite or infinite number of stages. Application domains include, among other, revenue management and pricing, manufacturing, supply chains, service systems, and economics. Approximate solution techniques for problems involving large state/decision spaces and/or complex dynamics over time will also be discussed. Recommended prereq., an introductory course in Optimization and Probability. Restricted to Ph.D students Prerequisites: Restricted to Graduate Students only.

Leeds School of Business | Operations and Information Management

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## OPIM-7800 (3) Doctoral Proseminar in Systems

Provides systems doctoral students with an orientation to current research and the academic discipline in operations and information systems. Familiarizes students with key schools of thought in the field, provides background on reference disciplines, examines significant research streams, and helps students begin developing their own area of interest. Formerly SYST 7800.

Leeds School of Business | Operations and Information Management

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## OPIM-7805 (3) Foundations of Research in Information Systems

Examines foundations of information systems research, including classic readings in information systems and its reference disciplines, different research approaches, processes of research, and classic and contemporary readings in major topics in information systems. Prereq., PhD standing or instructor consent. Formerly SYST 7805.

Leeds School of Business | Operations and Information Management

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## OPIM-7810 (3) Technical Topics in Information Systems Research

Examines in depth a selection of topics in technical areas of information systems. Includes theoretical perspectives for technical topics, critical perspectives on past and current research, appropriate methods for examining technical topics, and development of students' ability to identify and develop research topics in technical areas. Prereq., PhD standing or instructor consent. Formerly SYST 7810.

Leeds School of Business | Operations and Information Management

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## OPIM-7815 (3) Behavioral Topics in Information Systems Research

Covers both basic and advanced topics. Develops skill in designing, evaluating, and understanding both quantitative and qualitative research methods. Includes the development of research proposals, making and justifying methodological choices, writing research reports, and understanding how to publish in information systems. Prereq., PhD standing or instructor consent. Formerly SYST 7815. Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) [Operations and Information Management](#)

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## OPIM-7820 (3) Advanced Research in Information Systems

Examines advanced topics in information systems research, focusing on the electronic era and ebusiness. Examines foundations of ebusiness, including basic technical, organizational, and behavioral foundations. Covers leading edge research from both topical and methodological perspectives. Focuses on methods appropriate for studying ebusiness and examines future research directions. Prereq., PhD standing or instructor consent. Formerly SYST 7820.

[Leeds School of Business](#) [Operations and Information Management](#)

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OPMG

## OPMG-6900 (1-3) Independent Study

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Operations & Prod Mgmt](#)

## OPMG-6940 (1) Master's Candidate

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Operations & Prod Mgmt](#)

## OPMG-6950 (1-6) Master's Thesis

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Operations & Prod Mgmt](#)

## OPMG-8990 (1-10) Doctoral Thesis

[Leeds School of Business](#) | [Master of Business Administration](#) | [MBA: Operations & Prod Mgmt](#)



## Courses

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ORMG

### ORMG-7310 (3) Seminar on Organizational Behavior

Doctoral level seminar covering such issues as leadership, job attitudes, motivation, absenteeism, turnover, goal setting, and group dynamics. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) [Organization Management](#)

### ORMG-7320 (3) Seminar in Organization Theory

Critically investigates major issues in organization theory and provides students with experience in comprehensively surveying literature in subject areas such as organization design, power, culture, innovation, technology, environment, size, and strategy. Instructor consent required. Prerequisites: Restricted to Business Administration graduate students only.

[Leeds School of Business](#) [Organization Management](#)

### ORMG-7330 (3) Seminar and Practicum in Organization Development

Provides a doctoral level seminar emphasizing intervention theory and method in effectuating organizational change in a client system. Deals with group development, educational processes, conflict resolution, organizational interventions, change strategies, and ethical and skill requirements of the consultative role. Prereq., instructor consent.

[Leeds School of Business](#) [Organization Management](#)

### ORMG-7800 (3) Doctoral Proseminar: Management

Provides an orientation to doctoral level study for all students in management. Through critical analysis of articles and student and faculty presentations, students learn about reading and writing research articles and gain an overview of the management discipline.

Prerequisites: Restricted to Graduate Students only.

[Leeds School of Business](#) | [Organization Management](#)

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## ORMG-7830 (3) Research Design and Methods in Management

Introduction to research design and commonly used methods in management and organizational research. Covers the fundamental building blocks of research, provides the basics of a number of analytical techniques, and presents considerations important in analyzing multivariate data in organizational research. Restricted to Ph.D. students only.

[Leeds School of Business](#) | [Organization Management](#)

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## ORMG-8820 (1-4) Graduate Seminar

Provides opportunity for investigating new frontiers in organization management through an experimental seminar (offered irregularly).

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## ORMG-8900 (1-3) Independent Study

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## ORMG-8990 (1-10) Doctoral Thesis

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# Courses

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PACS

## PACS-2500 (3) Introduction to Peace and Conflict Studies

Introduces the field of peace and conflict studies. Examines causes and dynamics of conflict and violence (interpersonal to global), peace institutions and research, peace movements, nonviolence, and careers in conflict resolution and peacemaking.

[College of Arts & Sciences](#) [INVST Community Studies](#)

## PACS-3800 (3) Topics in Peace and Conflict Studies

Content varies depending on instructor. May provide an overview of the field, cover scientific, philosophical, or historical approaches, or analyze a specific substantive topic. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [INVST Community Studies](#)

## PACS-4500 (3) Senior Seminar in Peace and Conflict Studies

Examines specific theoretical perspectives in peace and conflict studies and conducts in-depth research projects using a case-study approach. Emphasizes using critical thinking skills in writing and class discussion. Case study examples include: U.S. violence, peacemaking/keeping in ethnonationalist conflicts, environmental conflict resolution. Prereq., PACS 2500 or instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [INVST Community Studies](#)



# Courses

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PHIL

## PHIL-1000 (3) Introduction to Philosophy

Introduces fundamental topics of philosophy, e.g., knowledge, truth, universals, self, the mind-body problem, time, God, and value. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-1010 (3) Introduction to Western Philosophy: Ancient

Develops three related themes: the emergence in antiquity of a peculiarly scientific mode of thinking; the place of religious belief within this developing scientific world view; and the force of ethical speculation within the culture and political climates of ancient Greece and Rome. PHIL 1010 and 1020 may be taken in either order. Same as CLAS 1030. Approved for arts and sciences core curriculum: historical context.

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-1020 (3) Introduction to Western Philosophy: Modern

Introduces several philosophical texts and doctrines of 17th and 18th century Europe. Gives special attention to the connection between philosophical ideas and the wider historical milieu--social, political, and literary. PHIL 1010 and 1020 may be taken in either order. Approved for arts and sciences core curriculum: historical context.

[College of Arts & Sciences](#) [Philosophy](#)

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## PHIL-1100 (3) Ethics

Introductory study of major philosophies on the nature of the good for humanity, principles of evaluation, and moral choice as they apply to contemporary moral problems. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Philosophy

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## PHIL-1200 (3) Philosophy and Society

Introduces philosophical thought through critical analysis of our own society, its institutions, and principles. Meets MAPS requirement for social science: general. Approved for arts and sciences core curriculum: United States context or ideals and values.

College of Arts & Sciences Philosophy

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## PHIL-1400 (3) Philosophy and the Sciences

Considers philosophical topics and concepts related to the natural sciences, such as science and pseudo-science; scientific method; the nature of explanation, theory, confirmation, and falsification; the effect of science on basic concepts like mind, freedom, time, and causality; ethics of experimentation; and the relation of science to society. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Philosophy

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## PHIL-1440 (3) Introductory Logic

Introductory study of definition, informal fallacies, and the principles and standards of correct reasoning. Provides practice in analyzing, evaluating, and constructing frequently encountered types of arguments. Does not fulfill major requirement in logic.

College of Arts & Sciences Philosophy

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## PHIL-1500 (3) Reading, Writing and Reasoning

Teaches students how to write argumentative papers. Each seminar will focus narrowly on some controversial topic. For example, one seminar might focus on the existence of God, whereas another might question whether we have free will. In all cases, a significant portion of the course will be devoted to learning how to write cogent argumentative papers about controversial topics. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Philosophy

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## PHIL-1600 (3) Philosophy and Religion

Philosophical introduction to some of the central concepts and beliefs of religious traditions, focusing particularly on the question of the existence of God and on the relation between religious beliefs and moral beliefs. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Philosophy

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## PHIL-1700 (3) Philosophy and the Arts

Considers philosophic questions involved in the analysis and assessment of artistic experiences and of the objects with which the arts, including the literary arts, are concerned.

College of Arts & Sciences Philosophy

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## PHIL-1750 (3) Philosophy through Literature

Introduces philosophy through literature. Selected novels, plays, and short stories that exemplify traditional problems in philosophy are read and discussed.

College of Arts & Sciences Philosophy

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## PHIL-1800 (3) Open Topics/Philosophy

May be repeated up to 6 total credit hours.

College of Arts & Sciences Philosophy

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## PHIL-2140 (3) Environmental Justice

Traditional and contemporary theories of justice are employed in order to critically analyze social and political issues that have important environmental dimensions. Assesses the relationship of justice and equity to the presuppositions of national and global environmental issues and policies.

College of Arts & Sciences Philosophy

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## PHIL-2200 (3) Major Social Theories

Introductory study of major philosophies of the past in relation to political, economic, and social issues. Approved for arts and sciences core curriculum: ideals and values.

## PHIL-2220 (3) Philosophy and Law

Considers philosophical issues related to law in general and the U.S. system in particular. Topics to be covered may address such questions as the following: What is the nature of law? What kinds of acts should the law prohibit (e.g., abortion, drug use, pornography, cloning)? Is there a moral obligation to obey the law? Can civil disobedience be justified? Is there a justification for punishing people for breaking the law? Is capital punishment, in particular, morally justified? Approved for arts and sciences core curriculum: United States context.

## PHIL-2270 (3) Philosophy and Race

Explores the historical relationship between western philosophy and race and investigates the ways in which philosophy can be used to address contemporary racial issues. Approved for arts and sciences core curriculum: human diversity.

## PHIL-2290 (3) Philosophy and Women

Explores different approaches to the study of women. Same as WMST 2290. Approved for arts and sciences core curriculum: cultural and gender diversity.

## PHIL-2390 (3) Philosophy and Psychology

Interdisciplinary course on issues where philosophy and psychology meet; for example, topics such as selfhood, motivation, psychotherapy, freedom, and human behavior are examined. Selected readings in philosophy and psychology are required.

## PHIL-2440 (3) Symbolic Logic

First course in mathematical logic. Topics include sentential logic, the logic of quantification, and some of the basic concepts and results of metalogic (interpretations, validity, and soundness).

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## PHIL-2610 (3) From Paganism to Christianity

Offers a cultural history of Greek and Roman religion. Students read ancient text in translation and use evidence from archaeology to reconstruct the shift from paganism to Christianity in antiquity. Same as CLAS 2610. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Philosophy

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## PHIL-2750 (3) Philosophy and Science Fiction

Explores philosophical issues in science fiction literature and film. Topics may include time travel, artificial intelligence, free will, personal identity, and how scientific advances will change human life and society. Students may read science fiction stories and philosophical articles, and watch several movies.

College of Arts & Sciences Philosophy

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## PHIL-2800 (3) Open Topics/Philosophy

May be repeated up to 6 total credit hours.

College of Arts & Sciences Philosophy

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## PHIL-2840 (1-3) Independent Study

May be repeated up to 8 total credit hours. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## PHIL-3000 (3) History of Ancient Philosophy

A survey of selected figures in ancient Greek and Roman philosophy and in medieval philosophy. Philosophers studied may include the pre-Socratics, Plato, Aristotle, the Hellenistic philosophers, and such figures as Aquinas and Occam. Explores the larger cultural context that influenced these philosophers and were, in turn, influenced by them. Prereqs., 6 hours of philosophy coursework. Approved for arts and sciences core curriculum: historical context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3010 (3) History of Modern Philosophy

Introduces modern philosophy, focusing on the period from Descartes through Kant. In addition to careful analysis of philosophical arguments, attention is paid to the ways in which philosophers responded to and participated in major developments in the 17th and 18th century, such as the scientific revolution. Prereq., 6 hours of philosophy course work. Approved for arts and sciences core curriculum: historical context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Philosophy](#)

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PHIL

## PHIL-3100 (3) Ethical Theory

Studies major issues and theories in ethics. Prereq., 6 hours of philosophy course work. Prereq. or coreq., PHIL 3480. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-3110 (3) Feminist Practical Ethics

Explores a variety of personal and public policy issues in the light of the basic feminist commitment to opposing women's subordination. Provides a sense of how a principled commitment to feminism may influence or be influenced by prevailing interpretation of contemporary ideals and values, and gives an opportunity for developing skills of critical analysis. Prereq., WMST 2000 or 2290. Restricted to juniors/seniors. Same as WMST 3100. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-3140 (3) Environmental Ethics

Examines major traditions in moral philosophy to see what light they shed on value issues in environmental policy and the value presuppositions of the economic, ecological, and juridical approaches to the environment. Prereq., PHIL 1100, 1200, 2200, 3100, or 3200. Same as ENVS 3140. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-3160 (3) Bioethics

Analysis of ethical problems involved in such issues as abortion, euthanasia, organ transplants, eugenics, treatment of the patient as a person, and the institutional nature of the health care delivery system. Prereq., 6 hours of philosophy course work. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3180 (3) Critical Thinking: Contemporary Topics

Looks at a selected topic such as nuclear disarmament, racial and sexual discrimination, animal rights, or abortion and euthanasia by examining issues through the lens of critical philosophical analysis. Reviews the reasoning behind espoused positions and the logical connections and argument forms they contain. Prereq., 6 hours of philosophy course work. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3190 (3-4) War and Morality

Focuses on moral issues raised by war as a human institution. What are the justifications, limits, and alternatives? Does the advent of nuclear weapons change the nature of war? Prereq., 6 hours of philosophy course work. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3200 (3) Social and Political Philosophy

Systematic discussion and analysis of such philosophic ideas as community, freedom, political power, and violence. Prereq., 6 hours of philosophy course work. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3260 (3) Philosophy and the International Order

Considers philosophical topics concerning the international economic, political, and legal systems. Topics that may be considered include the nature of international law, war and peace, humanitarian intervention, international justice, world hunger, and human rights. Prereq., 6 hours PHIL course work. Restricted to sophomores/juniors/seniors. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Philosophy

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## PHIL-3310 (3) Cognitive Science

An interdisciplinary introduction to cognitive science, drawing from psychology, philosophy, artificial intelligence, neuroscience, and linguistics. Prereq., two of the following four courses: PSYC 2145, LING 2000, CSCI 1300, PHIL 2440. Same as PSYC/LING 3005 and

College of Arts & Sciences Philosophy

## PHIL-3410 (3) History of Science: Ancients to Newton

Surveys the history of science up to Newton, including the emergence of scientific modes of thinking from religious and philosophical roots in the Near East and Greece to the development of these modes in the Middle Ages and Renaissance. Culminates with Isaac Newton and the 17th century scientific revolution. Prereq., 6 hours of philosophy course work. Approved for arts and sciences core curriculum: historical context or natural science. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## PHIL-3430 (3) History of Science: Newton to Einstein

The history of physical and biological science, from the epoch-making achievements of Charles Darwin in biology to the dawn of the 20th century revolutions in physics, chemistry, and genetics. Deals with the success of the mechanical philosophy of nature and its problems. Prereq., 6 hours of philosophy course work. Restricted to sophomores/juniors/seniors. Approved for arts and sciences core curriculum: historical context or natural science.

College of Arts & Sciences Philosophy

## PHIL-3480 (3) Critical Thinking/Writing in Philosophy

Focuses upon the fundamental skills, methods, concepts, and distinctions that are essential for the study of philosophy. The basic skills covered include the writing of philosophy papers, the reading of articles, and the extraction and evaluation of arguments. Prereq., 6 hours of philosophy course work. Prereq. or coreq., PHIL 2440. Approved for art and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Philosophy (PHIL) majors only.

College of Arts & Sciences Philosophy

## PHIL-3600 (3) Philosophy of Religion

Philosophical discussion of fundamental issues in religion, such as existence of God, religious experience, faith and reason, evil, immortality, and religious language. Prereq., 6 hours of philosophy course work. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

## PHIL-3700 (3) Aesthetic Theory

Introduces major theories of aesthetics and contemporary discussions of problems, e.g., the nature of art and the problem of evaluations

in art. Prereq., 6 hours of philosophy course work. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3800 (3) Open Topics in Philosophy

Variety of new courses at the 3000 level. See current departmental announcements for specific content. Maybe repeated up to 6 total credit hours. Prereq., 6 hours of philosophy course work. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Philosophy

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## PHIL-3840 (1-3) Independent Study

May be repeated up to 8 total credit hours. Prereq., 6 hours of philosophy course work. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-3930 (1-3) Internship in Social Policy

Under the guidance of an official in a governmental or non-governmental organization, students are assigned to projects selected for their academic suitability as well as for value to the sponsoring organization. Prior approval of department required. Prereq., 9 hours in moral or political philosophy course work. Recommended prereqs., PHIL 1200, 2200, and 3200.

College of Arts & Sciences Philosophy

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## PHIL-4010 (3) Single Philosopher

Intensively studies the work of one historical figure in philosophy, with the aim of reaching a broad understanding of the philosopher's whole body of thought. Philosophers covered include, from year to year, Plato, Aristotle, Augustine, Aquinas, Descartes, Spinoza, Locke, Leibniz, Hume, and Kant. Includes at least one course per year on an ancient author and one course per year on a modern author. May be repeated up to 12 total credit hours. Restricted to students with 57-180 credits (Junior or Senior). Prereq., 12 hours philosophy course work. Same as PHIL 5010. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4020 (3) Topics in the History of Philosophy

Examines a specific philosophical problem over an extended historical period. May be repeated up to 9 total credit hours. Restricted to students with 57-180 credits (Junior or Senior). Prereq., 12 hours of philosophy course work, including PHIL 3000 and 3010. Same as PHIL 5020. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4030 (3) Medieval Philosophy

Introduces philosophy from the late Roman era to the 14th century. Philosophers studied may include Augustine, Boethius, Aquinas, and Ockham. Topics range over religion, ethics, mind, and metaphysics. Restricted to students with 57-180 credits (Junior or Senior). Prereq., 12 hours of philosophy course work. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4040 (3) Studies in 20th Century Philosophy

Studies two or three major philosophies prominent during the last century. Prereq., 12 hours of philosophy course work. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4070 (3) Existentialist Philosophy

Examines central figures and texts in the existential tradition, from Kierkegaard and Nietzsche to Heidegger and Sartre. Prereq., 12 hours of philosophy course work. Restricted to juniors/seniors.

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## PHIL-4110 (3) Contemporary Moral Theory

Provides an in-depth look at some recent work in moral theory. Topics covered, varying from year to year, include: consequentialism and its critics; virtue theory; moral psychology; impartiality and the personal point of view. Prereqs., 12 hours philosophy course work, including PHIL 3100; and junior standing. Same as PHIL 5110.

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## PHIL-4120 (3) Philosophy and Animals

Examines the moral status of nonhuman animals, and its implications for the common use of animals as food and experimental subjects for humans. Restricted to students with 57-180 credits (Junior or Senior). Prereq., 12 hours of PHIL coursework completed.

Recommended prereq., PHIL 3100. PHIL 4120 and 5120 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4200 (3) Contemporary Political Philosophy

Provides a survey of recent approaches to political philosophy: liberalism (Rawls, Disorkin); libertarianism (Nozick); communitarianism (Sandel, Macintyre); and feminism (Jaggar). Topics and readings vary with the instructor. May be repeated up to 6 total credit hours. Prereqs., PHIL 2200, 3200, and 12 hours of philosophy course work. Restricted to juniors and seniors. Same as PHIL 5200. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Philosophy](#)

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## Courses

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PHIL

### PHIL-4210 (3) Ancient Political Thought

Prereq., CLAS/HIST 1051, CLAS/HIST 1061, HIST 1010, PSCI 2004, or PHIL 3000. Restricted to juniors/seniors. Same as CLAS 4041 and HIST 4041.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-4250 (3) Marxism

Historical and systematic study of principal themes of Marxist thought, from its Hegelian origins to its contemporary varieties, emphasizing the works of Marx and Engels. Prereq., 12 hours of GRMN or PHIL course work or instructor consent. Restricted to juniors/seniors. Same as GRMN 4251. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-4260 (3) Philosophy of Law

Considers philosophical topics concerning law and the U.S. legal system. Topics that may be considered include the nature of law, relations between law and morality, justifications of punishment, the moral duty to obey the law, and law and liberty. Prereq., junior or senior standing and 12 hours in philosophy. Same as PHIL 5260. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-4300 (3) Philosophy of Mind

Discusses problems in the philosophy of mind, including the mind-body problem, and such concepts as consciousness, mental

representation, and intentionality. Restricted to students with 57-180 credits (Junior or Senior). Restricted to students with 57-180 credits (Junior or Senior). Prereqs., PHIL 2440, 3010, 3480, and 4340. Same as PHIL 5300. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4340 (3) Epistemology

Studies some of the main topics of theory of knowledge, such as evidence, justification, prediction, explanation, skepticism, and concept acquisition. Prereq., 12 credit hours of philosophy, including PHIL 2440 and 3010. Recommended prereq., PHIL 3480. PHIL 4340 and 5340 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Philosophy (PHIL) majors only.

College of Arts & Sciences Philosophy

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## PHIL-4360 (3) Metaphysics

Traditional and contemporary theories of the basic categories of reality and the human relationship to it, including universals, substance, identity, change, mind and body, free will, and modality. Restricted to students with 57-180 credits (Junior or Senior). Prereqs., PHIL 2440, 3010, 3340, and 3480. Same as PHIL 5360. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4400 (3) Philosophy of Science

Prereqs., 12 hours PHIL course work including PHIL 2440 or equivalent, and junior standing. Same as PHIL 5400. . Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4440 (3) Topics in Logic

Provides for offering courses in a variety of topics in logic, including, but not limited to, mathematical logic, philosophical issues in logic, probability theory, decision theory, and inductive logic. Prereq., 12 hours PHIL course work, including PHIL 2440 or equivalent. Restricted to juniors/seniors. May be repeated up to 6 total credit hours. Same as PHIL 5440. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4450 (3) History and Philosophy of Physics

Investigates the role of experiment in physics. Uses case studies in the history and philosophy of physics and in scientific methodology. Prereqs., PHYS 1020 or 1120 or 2020 or instructor consent, 12 hours PHIL course work, and junior standing. Same as PHIL 5450 and PHYS 4450. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4460 (3) Modal Logic

Introduces the most philosophically relevant kind of logic that builds on PHIL 2440. Modal logic is the logic of the concepts of necessity, possibility, and contingency. A variety of systems of sentential modal logic will be covered, along with the standard system of first-order modal logic. Restricted to students with 57-180 credits (Junior or Senior). Recommended prereq., PHIL 2440. Same as PHIL 5460.

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4470 (3) Probability and Rational Choice

Examines issues in four related areas: probability theory (e.g. the interpretation of probability, the raven paradox, and the principle of indifference), decision theory (e.g., the Newcomb problem, the toxin puzzle, and Pascal's wager), game theory (e.g., Prisoner's dilemma, tragedy of the commons, and Schelling points), and social choice theory (e.g., Arrow's theorem). Familiarity with symbolic logic is strongly recommended. Prereq., 12 hours of PHIL coursework completed. Recommended prereq., PHIL 2440. PHIL 4470 and 5470 are the same course.

College of Arts & Sciences Philosophy

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## PHIL-4490 (3) Philosophy of Language

Examines theories and problems regarding the nature of language and its relation to reality. Concepts discussed include sense, reference, conventions, intentions, and their relation to science and social life. Relevant literature includes readings in Frege, Russell, Quine, Putnam, Kripke, and Chomsky. Prereq., PHIL 2440, 12 credit hours of philosophy, and junior standing. Same as PHIL 5490.

Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4600 (1) Theology Forum Seminar

Discusses a variety of theological and philosophical topics. Some reading, much discussion, occasional guest speakers. May be repeated up to 3 total credit hours with permission of instructor. Prereq., 12 hours of PHIL course work. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4800 (3) Open Topics in Philosophy

A variety of new courses at the 4000 level. See current departmental announcements for specific content. May be repeated up to 6 total credit hours. Prereqs., 12 credit hours of philosophy and junior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-4830 (3) Senior Seminar in Philosophy

Critical in-depth examination of a selected philosophical topic. May be repeated up to 6 total credit hours. Prereq., 15 hours of philosophy. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Philosophy (PHIL) majors only.

College of Arts & Sciences Philosophy

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## PHIL-4840 (1-3) Independent Study

May be repeated up to 8 total credit hours. Prereq. 12 hours of philosophy course work. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

College of Arts & Sciences Philosophy

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## PHIL-4950 (3) Honors Thesis

May be repeated up to 6 total credit hours. Prereq., 12 hours of philosophy course work. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Philosophy

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## PHIL-5010 (3) Single Philosopher

May be repeated up to 12 total credit hours. Prereq., graduate standing or instructor consent. Same as PHIL 4010. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5020 (3) Topics in the History of Philosophy

May be repeated up to 9 total credit hours. Same as PHIL 4020. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5030 (1) Greek Philosophical Texts

Selected readings in classical philosophy, with a focus on achieving fluency in reading philosophical Greek.

College of Arts & Sciences Philosophy

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## PHIL-5040 (1) Latin Philosophical Texts

Selected readings in classical and medieval authors, in the original language. The focus is on achieving fluency in reading philosophical Latin. May be repeated up to 7 total credit hours.

College of Arts & Sciences Philosophy

## PHIL-5100 (3) Ethics

Presents representative positions in normative ethics and metaethics. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

## PHIL-5110 (3) Contemporary Moral Theory

Same as PHIL 4110.

College of Arts & Sciences Philosophy

## PHIL-5120 (3) Philosophy and Animals

Examines the moral status of nonhuman animals, and its implications for the common use of animals as food and experimental subjects for humans. Restricted to students with 57-180 credits (Junior or Senior). Prereq., 12 hours of PHIL coursework completed.

Recommended prereq., PHIL 3100. PHIL 4120 and 5120 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

## PHIL-5200 (3) Contemporary Political Philosophy

Same as PHIL 4200. Prerequisites: Restricted to Philosophy graduate students only.

College of Arts & Sciences Philosophy

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## Courses

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PHIL

### PHIL-5210 (3) Philosophy and Social Policy

Studies philosophical approaches to social and political issues such as abortion, bioethics, environmental preservation, human rights, and reverse discrimination. Gives attention to strengths and weaknesses of philosophical treatments of these issues. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Philosophy graduate students only.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-5230 (3) Bioethics and Public Policy

Examines public policy implications of contemporary biological, genetic, biomedical, and behavioral science in light of ethics and human values. Considers theoretical and practical grounds for moral assessment of scientific research and possible applications of technology. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-5240 (3) Seminar in Environmental Philosophy

Philosophical examination of several different approaches to environmental problems: economic, juridical, political, and ecological. Discusses specific environmental problems, focusing on their moral dimensions, e.g., wilderness preservation, animal rights, and land use and urban planning. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-5260 (3) Philosophy of Law

Same as PHIL 4260. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5290 (1-3) Topics in Values and Social Policy

Deals with topics in the area of philosophy and public policy and is often interdisciplinary in focus. Topics vary from one semester to another. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5300 (3) Philosophy of Mind

Same as PHIL 4300. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5340 (3) Epistemology

Covers a selection of the following problems: the analysis of knowledge, theories of justification, skepticism, perceptual knowledge, theories of sense experience, other minds, knowledge of the past, the problem of induction, theories of justification, and a priori knowledge.

College of Arts & Sciences Philosophy

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## PHIL-5360 (3) Metaphysics

Same as PHIL 4360. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5400 (3) Philosophy of Science

Same as PHIL 4400. Prerequisites: Restricted to Philosophy graduate students only.

College of Arts & Sciences Philosophy

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## PHIL-5440 (3) Topics in Logic

Same as PHIL 4440. Prerequisites: Restricted to Philosophy graduate students only.

College of Arts & Sciences Philosophy

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## PHIL-5450 (3) History and Philosophy of Physics

Same as PHIL 4450 and PHYS 5450. Prerequisites: Restricted to Philosophy graduate students only.

College of Arts & Sciences Philosophy

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## PHIL-5460 (3) Modal Logic

Same as PHIL 4460. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5470 (3) Probability and Rational Choice

Examines issues in four related areas: probability theory (e.g. the interpretation of probability, the raven paradox, and the principle of indifference), decision theory (e.g., the Newcomb problem, the toxin puzzle, and Pascal's wager), game theory (e.g., Prisoner's dilemma, tragedy of the commons, and Schelling points), and social choice theory (e.g., Arrow's theorem). Familiarity with symbolic logic is strongly recommended. Prereq., 12 hours of PHIL coursework completed. Recommended prereq., PHIL 2440. PHIL 4470 and 5470 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Philosophy

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## PHIL-5490 (3) Philosophy of Language

Same as PHIL 4490. Prerequisites: Restricted to Philosophy graduate students only.

College of Arts & Sciences Philosophy

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## PHIL-5500 (3) Advanced Formal Semantics

Considers topics in the semantics of natural language not normally covered in first courses in philosophy of language. These include: natural deduction and sequent calculi for conditional logic; interpretation as logical inference; Lambek calculus and applicative categorial grammar; applications such as generalized coordination, plurals, higher-order intensional logic, generics, focus, and event-based semantics. Recommended prereq., PHIL 5490.

College of Arts & Sciences Philosophy

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## PHIL-5550 (3) Metaphysics and Epistemology Proseminar

Covers seminal classic texts and/or fundamental topics in analytic metaphysics and epistemology. Prerequisites: Restricted to Graduate Students only.

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## PHIL-5600 (3) Philosophy of Religion

Studies topics falling under philosophy of religion, such as proofs for God's existence, religious language, mysticism, psychology of religion, modern theological movements, miracles, and study of individual theologians. May be repeated up to 6 total credit hours.

## PHIL-5700 (3) Aesthetics

Analyzes the principal topics of aesthetics, including such issues as formal structure of aesthetics, the nature of critical judgments, and the status of the work of art. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

## PHIL-5800 (3) Open Topics in Philosophy

Variety of new courses at the 5000 level. See current departmental announcements for specific content. Maybe repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

## PHIL-5810 (1-3) Special Topics in Philosophy

Instructor meets regularly with three or more students to discuss special topics in philosophy. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

## PHIL-5840 (1-3) Graduate Independent Study

May be repeated up to 6 total credit hours.

## PHIL-6000 (3-4) Seminar in the History of Philosophy

Studies advanced topics in the history of philosophy. Content varies by semester, but may extend to any period in the history of philosophy, from the Presocratics into the modern era. May be repeated up to 12 total credit hours. Prereq., graduate standing or instructor consent. Prerequisites: Restricted to Graduate Students only.

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## PHIL-6100 (3) Seminar in Ethics

Intensive study of selected topics in ethical theory.

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## PHIL-6200 (3) Seminar in Social and Political Philosophy

Provides an in-depth look at some particular topic in social and political philosophy, such as rights, political freedom, political obligation, or democracy. Prerequisites: Restricted to Graduate Students only.

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## PHIL-6300 (3) Seminar in Philosophy of Mind

Studies selected topics in philosophy of mind. Prerequisites: Restricted to Philosophy graduate students only.



## Courses

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PHIL

### PHIL-6310 (3) Issues and Methods in Cognitive Science

Prereqs., graduate standing, or at least one course at the 3000 level or higher in computer science, linguistics, philosophy, or psychology. No background in computer science is presumed. Same as CSCI 6402, EDUC 6504, LING 6200, and PSYC 6200. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-6340 (3) Seminar in Epistemology

Studies some of the main topics of epistemology, such as skepticism, foundations of knowledge, perception, introspection, belief, certainty, and analytic-synthetic distinctions. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-6380 (3) Seminar in Metaphysics

Traditional and contemporary theories of the basic categories used to describe nature and the human relationship to it, including such concepts as substance, identity, space and time, causality, determination, and systematic ontology. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Philosophy](#)

### PHIL-6400 (3) Seminar in Philosophy of Science

Topics connected with development of nature of science; structure of scientific theories; testing of hypotheses. Theory of decisions in science and ethics. Basic conceptions and models of abstraction in the history of science. Prerequisites: Restricted to Philosophy graduate students only.

## PHIL-6490 (3) Seminar in Philosophy of Language

Studies some of the main topics in the philosophy of language, such as meaning and theories of meaning, translation, speech acts, rules of language, reference, relevance of psycholinguistics, language and thought, and language and ontology. Prerequisites: Restricted to Graduate Students only.

## PHIL-6940 (1) Master's Candidate for Degree

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

## PHIL-6950 (1-6) Master's Thesis

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Philosophy graduate students only.

## PHIL-7415 (2) Cognitive Science Research Practicum.

Independent, interdisciplinary research project in cognitive science for graduate students pursuing a joint PhD in an approved core discipline and cognitive science. Projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students should obtain commitments from two mentors for their project. Prereqs., CSCI 6402 or EDUC 6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereqs., CSCI 7762 or EDUC 6505 or LING 7762 or PSYC 7765. Same as LING 7415, PSYC 7415, CSCI 7412, and EDUC 6506.

## PHIL-7425 (2) Cognitive Science Research Practicum 2.

Prereq., CSCI 6402 or EDUC 6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereq., CSCI 7762 or EDUC 6505 or LING 7762 or PHIL 6310 or PSYC 7762. Same as CSCI 7422, EDUC 6516, LING 7425, PSYC 7425.

## PHIL-7810 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the ICS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in ICS Cognitive Science Academic Programs. Same as LING 7775, CSCI 7772, EDUC 7775, PSYC 7775 and SLHS 7775. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Philosophy](#)

## PHIL-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.

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# Courses

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PHYS

## PHYS-1000 (3) Preparatory Physics

Introduces basic physics, emphasizing an analytical approach to prepare for PHYS 1110/1120, the engineering majors sequence. This course does not satisfy any MAPS deficiency in either the sciences or math. Prereq., 1 year high school algebra or equivalent.

[College of Arts & Sciences](#) [Physics](#)

## PHYS-1010 (3) Physics of Everyday Life 1

Intended primarily for nonscientists, this course covers physics encountered in everyday life. Topics include balls, scales, balloons, stoves, insulation, light bulbs, clocks, nuclear weapons, basics of flashlights, and microwave ovens. Prereq., high school algebra or equivalent. Meets MAPS requirements for natural sciences: chemistry or physics. However, this course should not be taken if the student has a MAPS deficiency in math. Approved for arts and sciences core curriculum: natural science or quantitative reasoning and mathematical skills.

[College of Arts & Sciences](#) [Physics](#)

## PHYS-1020 (4) Physics of Everyday Life 2

Intended primarily for nonscientists, this course is a continuation of PHYS 1010. Includes electrical power generation and distribution, electrical motors, radio, television, computers, copiers, lasers, fluorescent lights, cameras, and medical imaging. Prereqs., PHYS 1010 and high school algebra. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills or natural science.

[College of Arts & Sciences](#) [Physics](#)

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## PHYS-1110 (4) General Physics 1

Three lect., one rec. per week, plus three evening exams in the semester. First semester of three-semester sequence for science and engineering students. Covers kinematics, dynamics, momentum of particles and rigid bodies, work and energy, gravitation, simple harmonic motion, and introduction to thermodynamics. Coreq., APPM 1350 or MATH 1300. Credit not granted for this course and PHYS 1170. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Physics

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## PHYS-1120 (4) General Physics 2

Three lect., one rec. per week, plus three evening exams in the semester. Second semester of three-semester introductory sequence for science and engineering students. Covers electricity and magnetism, wave motion, and optics. Normally is taken concurrently with PHYS 1140. Prereq., PHYS 1110 (min grade C-). Coreq., MATH 2300 or APPM 1360. Credit not granted for this course and PHYS 1180. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Physics

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## PHYS-1140 (1) Experimental Physics 1

Introduction to experimental physics through laboratory observations of a wide range of phenomena. Course covers experiments on physical measurements, linear and rotational mechanics, harmonic motion, wave motion, sound and heat, electricity and magnetism, optics, and electromagnetic waves with the mathematical analysis of physical errors associated with the experimental process. One lect., one 2-hour lab per week. Prereq., PHYS 1110; prereq. orcoreq., PHYS 1120. Approved for arts and science core curriculum: natural science.

College of Arts & Sciences Physics

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## PHYS-1150 (1) Experimental Physics 2

For students in Physics Plan 3 teaching track only. Students complete another full set of PHYS 1140 experiments (seven different labs from those previously completed). Registration by special arrangements with the Department of Physics. Prereqs., PHYS 1110 and 1120. Same as PHYS 1140.

College of Arts & Sciences Physics

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## PHYS-1220 (3) Physics for Future Presidents

Intended primarily for nonscientists, this course covers topics relevant to leaders, policy makers, and citizens confronted with science and technology issues. Topics include energy consumption and its impact on the environment; atoms and heat; radioactivity and nuclear reactions; nuclear bombs; light and radio waves for technological applications; climate change; quantum physics. Recommended prereq., high school algebra. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

## PHYS-1230 (3) Light and Color for Nonscientists

Discusses light, color, vision, and perception. Covers reflection, refraction, lenses, and applications to photography and other methods of light sensing. Other topics include lasers and holography. Course is geared toward nonscience majors. Meets MAPS requirements for natural science: chemistry or physics. Should not be taken by students with a math MAPS deficiency. Approved for arts and science core curriculum: natural science.

## PHYS-1240 (3) Sound and Music

Explores the physical processes that underlie the diversity of sound and musical phenomena. Topics covered include the physical nature of sound, the perception of sound, the perception of pitch and harmony, musical instruments, synthesizers and samplers, and room acoustics. Nonmathematical; geared toward nonscience majors. Meets MAPS requirement for natural science: chemistry or physics. Should not be taken by students with a math MAPS deficiency. Approved for arts and sciences core curriculum: natural science.

## PHYS-1300 (3) Experiment in Physics

Examines the roles of experiment in physics, using historical examples. Experiments provide a basis for scientific knowledge, test theories, call for new theories, give hints toward the mathematical form of theories, and provide evidence for the existence of entities involved in theories. Approved for arts and sciences core curriculum: natural science.

## PHYS-2010 (5) General Physics 1

Three demonstration lect., one two-hour lab/rec. week, plus three evening exams in the semester. Covers mechanics, heat, and sound. Elementary but thorough presentation of fundamental facts and principles of physics. Natural science majors with a knowledge of calculus and others taking calculus are urged to consider taking the calculus-based courses PHYS 1110, 1120, 1140, and 2130, rather than HYS 2010 and PHYS 2020. This course is designed for premed students in the biological sciences. Prereq., ability to use high school algebra and trigonometry. Meets MAPS requirements for natural science. Approved for arts and sciences core curriculum: natural science.

## PHYS-2020 (5) General Physics 2

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Three demonstration lect., one two-hour lab/rec. per week, plus three evening exams in the semester. Covers electricity and magnetism, light, and modern physics. Natural science majors with a knowledge of calculus and others taking calculus are urged to take the calculus-based courses PHYS 1110, 1120, 1140, and 2130, rather than PHYS 2010 and PHYS 2020. This course is designed for premed students and students in the biological sciences. Prereq., PHYS 2010. Approved for arts and sciences core curriculum: natural science.

College of Arts & Sciences Physics

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## PHYS-2130 (3) General Physics 3

Third semester of introductory sequence for science and engineering students except physics majors and those studying computer applications in physics (for these, see PHYS 2170). Covers special relativity, quantum theory, atomic physics, solid state, and nuclear physics. Physics majors should take PHYS 2170 instead of PHYS 2130. Prereqs., PHYS 1120, 1140, or ECEN 2250, 3400. Coreq., MATH 2400. Normally taken with PHYS 2150.

College of Arts & Sciences Physics

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## PHYS-2150 (1) Experimental Physics

One lect., one 2-hour lab per week. Includes many experiments of modern physics, including atomic physics, solid state physics, electron diffraction, radioactivity, and quantum effects. Normally taken concurrently with PHYS 2130 or PHYS 2170 but students may take PHYS 2150 after taking PHYS 2130 or 2170. Prereqs., PHYS 1120 and 1140.

College of Arts & Sciences Physics

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## PHYS-2160 (1) Experimental Physics

For students in Physics Plan 3 teaching track only. Students do another full set of PHYS 2150 experiments (seven different labs from those previously completed). Registration by special arrangements with the Department of Physics. Prereqs., PHYS 1120 and 1140. Same as PHYS 2150.

College of Arts & Sciences Physics

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## PHYS-2170 (3) Foundations of Modern Physics

For physics majors in plans 1 and 2 and those studying computer applications in physics. Completes the three-semester sequence of general physics. Emphasizes developing skills for physics majors. Includes relativity, quantum mechanics, atomic structure. Normally taken with the laboratory PHYS 2150. Prereq., PHYS 1120. Coreq., MATH 2400 or APPM 2350.

College of Arts & Sciences Physics

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## PHYS-2210 (3) Classical Mechanics and Mathematical Methods 1

Theoretical Newtonian mechanics, including position and velocity dependent forces, oscillation, stability, non-inertial frames and gravitation from extended bodies. Ordinary differential equations, vector algebra, curvilinear coordinates, complex numbers, and Fourier series will be introduced in the context of the mechanics. Prereqs., PHYS 2130 or 2710, MATH 2400 or APPM 2350. Coreq., APPM 2360. Credit not granted for this course and PHYS 2140. Prerequisites: Restricted to Physics, Engineering Physics or Astronomy majors only.

College of Arts & Sciences Physics

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## PHYS-2810 (1-3) Special Topics in Physics

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-2840 (1-3) Independent Study

Selected topics for undergraduate independent study. Subject matter to be arranged. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-3000 (3) Science and Public Policy

For nonscience majors. Reading, discussions, debates, and lectures are used to study how science affects society economically, intellectually, and in terms of health and national security. Another focus is how government fosters and funds scientific activities. Recommended prereq., completion of core science requirement.

College of Arts & Sciences Physics

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## PHYS-3050 (3) Writing in Physics: Problem-Solving and Rhetoric

Teaches strategies used in scientific writing with an emphasis on argument, reviews and reinforces essential writing skills, provides experience in writing both academic and professional communications in a style appropriate to the literature of physics. Prereqs., PHYS 2130 or 2170 and lower-division core writing requirement. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Physics

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## PHYS-3070 (3) Energy and the Environment

Contemporary issues in energy consumption and its environmental impact, including fossil fuel use and depletion; nuclear energy and

waste disposal; solar, wind, hydroelectric, and other renewable sources; home heating; energy storage; fuel cells; and alternative transportation vehicles. Included are some basic physical concepts and principles that often constrain choices. No background in physics is required. Approved for arts and sciences core curriculum: natural science. Same as ENV5 3070.

College of Arts & Sciences Physics

## PHYS-3210 (3) Classical Mechanics and Mathematical Methods 2

Lagrangian and Hamiltonian treatment of theoretical mechanics, including coupled oscillations, waves in continuous media, central force motion, rigid body motion and fluid dynamics. The calculus of variations, linear algebra, tensor algebra, vector calculus, and partial differential equations will be introduced in the context of the mechanics. Prereqs., PHYS 2210, APPM 2360, or equivalent.

College of Arts & Sciences Physics

## PHYS-3220 (3) Quantum Mechanics and Atomic Physics 1

Introduces quantum mechanics with wave, operator, and matrix computational techniques. Investigates solutions for harmonic oscillator, potential well, and systems with angular momentum. Develops a quantitative description of one-electron atoms in lowest order. Prereqs., PHYS 2130 or 2170, 2210, and 3210. Prerequisites: Requires pre-requisite courses of PHYS 2210 and 3210, and PHYS 2130 or 2170.

College of Arts & Sciences Physics

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# Courses

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PHYS

## PHYS-3221 (1) Tutorial Practicum for Quantum Mechanics 1

Uses interactive group work to aid student learning in co-requisite course PHYS 3220. In this tutorial, students will work in small groups to practice how to solve challenging problems and their underlying conceptual basis, as well as using hands-on activities, demonstrations, and other techniques to help learn content. Coreq., PHYS 3220.

College of Arts & Sciences Physics

## PHYS-3310 (3) Principles of Electricity and Magnetism 1

Covers mathematical theory of electricity and magnetism, including electrostatics, magnetostatics, and polarized media, and provides an introduction to electromagnetic fields, waves, and special relativity. Prereqs., PHYS 2210 and 2130 or 2170. Prerequisites: Requires pre-requisite courses of PHYS 2210 and PHYS 2130 or 2170.

College of Arts & Sciences Physics

## PHYS-3311 (1) Tutorial Practicum for Electricity & Magnetism 1

Uses interactive group work to aid student learning in co-requisite course PHYS 3310. In this tutorial, students will work in small groups to practice how to solve challenging problems and their underlying conceptual basis, as well as using hands-on activities, demonstrations, and other techniques to help learn content. Coreq., PHYS 3310.

College of Arts & Sciences Physics

## PHYS-3320 (3) Principles of Electricity and Magnetism 2

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Continuation of PHYS 3310. Electromagnetic induction; magnetic energy; microscopic theory of magnetic properties; Ac circuits; Maxwell's Equations; planewaves; waveguides and transmission lines; radiation from electric and magnetic dipoles and from an accelerated charge. Prereq., PHYS 3310.

College of Arts & Sciences Physics

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## PHYS-3330 (2) Electronics for the Physical Sciences

One lect. and one three-hour lab per week. Introduces laboratory electronics for physical science students. Includes basic electronic instruments, dc bridge circuits, operational amplifiers, bipolar transistors, field-effect transistors, photodiodes, noise in electronic circuits, digital logic, and microcontrollers. Students gain hands-on experience in designing, building, and debugging circuits. Concludes with a three-week project in which students design and build an experiment of their choice and present a seminar on the results. Prereq., PHYS 2150 and 2130 or 2170.

College of Arts & Sciences Physics

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## PHYS-3340 (3) Introductory Research in Optical Physics

Two lect., one three-hour lab plus variable unsupervised labs each week. Students design and build their own experiments using a modular type of optical research kit. Experiments cover basic research methods in instrument design, laser physics, Fourier optics, holography, spectroscopy, and interferometry. Students learn how to plan major projects and evaluate critically the significance of results. Course concludes with a four-week major project. Prereq., PHYS 3330.

College of Arts & Sciences Physics

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## PHYS-4130 (3) Biological Electron Microscopy: Principles and Recent Advances

Prereq., EBIO 1220, or MCDB 1150, or MCDB 4500/5500, or PHYS 1120, or 2020, or instructor consent. Same as PHYS 5130 and MCDB 4130.

College of Arts & Sciences Physics

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## PHYS-4150 (3) Plasma Physics

Discusses the fundamentals of plasma physics, including particle motion in electromagnetic fields, wave propagation, collisions, diffusion, and resistivity. Presents examples from space plasmas, astrophysical plasmas, laboratory fusion plasmas, and plasmas in accelerators. Prereqs., PHYS 1110--1120, PHYS 3310, and MATH 2400 or APPM 2350.

College of Arts & Sciences Physics

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## PHYS-4230 (3) Thermodynamics and Statistical Mechanics

Statistical mechanics applied to macroscopic physical systems; statistical thermodynamics, classical thermodynamics systems; applications to simple systems. Examines relationship of statistical to thermodynamic points of view. Prereqs., PHYS 3220 and APPM 2360.

College of Arts & Sciences | Physics

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## PHYS-4340 (3) Introduction to Solid State Physics

Primarily for senior physics majors. Discusses crystal structure, lattice dynamics, band theory, semiconductors, and ferromagnetism. Prereq., PHYS 3220. Same as ECEN 4345.

College of Arts & Sciences | Physics

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## PHYS-4410 (3) Quantum Mechanics and Atomic Physics 2

Extends quantum mechanics to include perturbation theory and its applications to atomic fine structure, interactions with external forces, the periodic table, and dynamical processes including electromagnetic transition rates. Prereqs., PHYS 3220, 3320.

College of Arts & Sciences | Physics

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## PHYS-4420 (3) Nuclear and Particle Physics

Introduces structure of the atomic nucleus, spectroscopy of subnuclear particles, scattering, reactions, radioactive decay, fundamental interactions of quarks and leptons. Prereq., PHYS 4410.

College of Arts & Sciences | Physics

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## PHYS-4430 (3) Introduction to Research in Modern Physics

One lect., one lab per week to be taken with PHYS 4410. Experiments introduce students to realities of experimental physics so they gain a better understanding of theory and an appreciation of the vast amount of experimental work done in the physical sciences today. Prereqs., PHYS 3220 and 3320. Coreq., PHYS 4410. Same as PHYS 5430.

College of Arts & Sciences | Physics

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## PHYS-4450 (3) History and Philosophy of Physics

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Investigates the role of experiment in physics; case studies in the history and philosophy of physics and in scientific methodology. Prereq., PHYS 1020 or 1120 or 2020 or instructor consent. Same as PHYS 5450, PHIL 4450.

College of Arts & Sciences Physics

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## PHYS-4460 (3) Teaching and Learning Physics

Learn how people understand key concepts in physics. Through examination of physics content, pedagogy and problems, through teaching, and through research in physics education, students will explore the meaning and means of teaching physics. Students will gain a deeper understanding of how education research is done and how people learn. Useful for all students, especially for those in interested in physics, teaching and education research. Prereq., PHYS 3210 and 3310 or instructor consent. Same as PHYS 5560 and EDUC 4460.

College of Arts & Sciences Physics

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## PHYS-4510 (3) Optics

Basic electromagnetic theory of light, using Maxwell's equations. Examples in geometrical optics; extensive applications in physical optics including diffraction and polarization. Spectra, including Zeeman effect and fluorescence. Recent advances in experimental techniques: microwaves, lasers, image converters. Prereq., PHYS 3320.

College of Arts & Sciences Physics

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## PHYS-4610 (2) Physics Honors

Students are matched with a faculty member and work independently on a research topic. Typically, the honors program lasts three semesters. A senior thesis and an oral presentation of the work are required. See also PHYS 4620 and PHYS 4630. Prereq., 3.00 GPA. Registration by special arrangement with the Department of Physics.

College of Arts & Sciences Physics

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## PHYS-4620 (2) Physics Honors

Students are matched with a faculty member and work independently on a research topic. Typically, the honors program lasts three semesters. A senior thesis and an oral presentation of the work are required. See also PHYS 4610 and PHYS 4630. Prereq., 3.00 GPA. Registration by special arrangement with the Department of Physics.

College of Arts & Sciences Physics

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## PHYS-4630 (2) Physics Honors

Students are matched with a faculty member and work independently on a research topic. Typically, the honors program lasts three semesters. A senior thesis and an oral presentation of the work are required. See also PHYS 4610 and PHYS 4620. Prereq., 3.00 GPA. Registration by special arrangement with the Department of Physics.

College of Arts & Sciences Physics

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## PHYS-4810 (1-3) Special Topics in Physics

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. See also PHYS 4820 and PHYS 4830. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-4840 (1-3) Independent Study

Selected topics for undergraduate independent study. Subject matter to be arranged. See also PHYS 4850. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-4850 (1-3) Independent Study

Selected topics for undergraduate independent study. Subject matter to be arranged. See also PHYS 4840. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-4970 (3) Seminar on Physical Methods in Biology

Prereq., PHYS 1120 or 2020, and MCDB 1060 or 1150, or EBIO 1220, or instructor consent. Same as PHYS 5970 and MCDB 4970.

College of Arts & Sciences Physics

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## PHYS-5030 (3) Intermediate Mathematical Physics 1

This course and its continuation, PHYS 5040, form a survey of classical mathematical physics. Studies complex variable theory and finite vector spaces, and includes topics in ordinary and partial differential equations, boundary value problems, potential theory, and Fourier analysis. Prereqs., MATH 4001 and 4320. Same as MATH 5030. Prerequisites: Restricted to Graduate Students only.

## PHYS-5040 (3) Intermediate Mathematical Physics 2

Continuation of PHYS 5030. Includes group theory, special functions, integral transforms, integral equations, and calculus of variations. Prereq., PHYS 5030. Same as MATH 5040.

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# Courses

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PHYS

## PHYS-5130 (3) Biological Electron Microscopy: Principles and Recent Advances

Same as PHYS 4130 and MCDB 5130.

[College of Arts & Sciences](#) [Physics](#)

## PHYS-5141 (3) Astrophysical and Space Plasmas

Covers magnetohydrodynamics and a few related areas of plasma physics applied to space and astrophysical systems, including planetary magnetospheres and ionospheres, stars, and interstellar gas in galaxies. Prereq., graduate standing in astrophysical and planetary science or physics. Same as ASTR 5140.

[College of Arts & Sciences](#) [Physics](#)

## PHYS-5150 (3) Introductory Plasma Physics

Includes basic phenomena of ionized gases, static and dynamic shielding, linear waves, instabilities, particles in fields, collisional phenomena, fluid equations, collisionless Boltzman equations, Landau damping, scattering and absorption of radiation in plasmas, elementary nonlinear processes, Wkb wave theory, controlled thermonuclear fusion concepts, astrophysical applications, and experimental plasma physics (laboratory). Prereq., PHYS 3310. Same as ASTR 5150.

[College of Arts & Sciences](#) [Physics](#)

## PHYS-5160 (3) Fundamentals of Optics and Lasers

Covers the basic physics of lasers. Topics include basics of optical resonators and gaussian beam propagation, stimulated emission, laser threshold conditions, laser linewidth, q-switching and mode locking of lasers, tuning of Cw lasers, and specifics of various common lasers. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-5210 (3) Theoretical Mechanics

Variational principles, Lagrange's equations, Hamilton's equations, motion of rigid body, relativistic mechanics, transformation theory, continuum mechanics, small oscillations, Hamilton-Jacobi theory. Coreq., PHYS 5250. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-5250 (3) Introduction to Quantum Mechanics 1

Quantum phenomena, Ehrenfest theorem and relation to classical physics, applications to one-dimensional problems, operator techniques, angular momentum and its representations, bound states and hydrogen atom, and Stern-Gerlach experiment and spin and spinor wave function. Prereqs., PHYS 3220 and 4410. Coreq., PHYS 5210. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-5260 (3) Introduction to Quantum Mechanics 2

Symmetries and conservation laws, identical particle systems, approximation techniques (including time-dependent and time-independent perturbation theories and variational techniques) and their applications, scattering theory, radiative transitions, and helium atom. Prereq., PHYS 5250.

College of Arts & Sciences | Physics

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## PHYS-5430 (3) Introduction to Research in Modern Physics

Same as PHYS 4430.

College of Arts & Sciences | Physics

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## PHYS-5450 (3) History and Philosophy of Physics

Same as PHYS 4450 and PHIL 5450. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-5460 (3) Teaching and Learning Physics

Same as PHYS 4460 and EDUC 5460. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Physics

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## PHYS-5606 (3) Optics Laboratory

Consists of 13 optics experiments that introduce the techniques and devices essential to modern optics, including characterization of sources, photodetectors, modulators, use of interferometers, spectrometers, and holograms, and experimentation of fiber optics and Fourier optics. Prereq., undergraduate optics course such as PHYS 4510. Same as ECEN 5606.

College of Arts & Sciences Physics

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## PHYS-5770 (3) Gravitational Theory (Theory of General Relativity)

Presents Einstein's relativistic theory of gravitation from geometric viewpoint; gives applications to astrophysical problems (gravitational waves, stellar collapse, etc.). Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Physics

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## PHYS-5840 (1-3) Selected Topics for Graduate Independent Study

Subject matter to be arranged. May be repeated up to 7 total credit hours.

College of Arts & Sciences Physics

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## PHYS-5970 (3) Seminar: Physical Methods in Biology

Same as PHYS 4970 and MCDB 5970. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Physics

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## PHYS-6260 (3) Geometry of Quantum Fields and Strings

Focuses on differential geometric techniques in quantum field and string theories. Topics include spinors, Dirac operators, index theorem, anomalies, geometry of superspace, supersymmetric quantum mechanics and field theory, and nonperturbative aspects in field and string theories. Prereq., MATH 6230, PHYS 5250, or instructor consent. Recommended prereqs., MATH 6240 and PHYS 7280. Same as MATH 6260.

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College of Arts & Sciences Physics

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College of Arts & Sciences | Physics

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## PHYS-6610 (3) Earth and Planetary Physics 1

Same as GEOL 6610 and ASTR 6610.

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College of Arts & Sciences | Physics

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## PHYS-6620 (3) Earth and Planetary Physics 2

Same as GEOL 6620 and ASTR 6620. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences | Physics

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## PHYS-6630 (3) Earth and Planetary Physics 3

Same as GEOL 6630 and ASTR 6630.

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College of Arts & Sciences | Physics

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## PHYS-6650 (1-3) Seminar in Geophysics

Same as GEOL 6650 and ASTR 6650. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences | Physics

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## PHYS-6670 (2) Geophysical Inverse Theory

Prereqs., calculus, computer programming (any language). Same as GEOL 6670. Prerequisites: Restricted to Graduate Students only.

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College of Arts & Sciences | Physics

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## PHYS-6940 (1) Master's Degree Candidate

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College of Arts & Sciences | Physics

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## PHYS-6950 (1-6) Master's Thesis

Approved problem in theoretical or experimental physics under the direction of staff members. Intended to introduce the student to procedures in research and development work. Work of an original nature expected. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Physics

## PHYS-7160 (3) Intermediate Plasma Physics

Continuation of PHYS 5150. Topics vary yearly but include nonlinear effects such as wave coupling, quasilinear relaxation, particle trapping, nonlinear Landau damping, collisionless shocks, solutions; nonneutral plasmas; kinetic theory of waves in a magnetized plasma; anisotropy; inhomogeneity; radiation---ponderomotive force, parametric instabilities, stimulated scattering; plasma optics; kinetic theory, and fluctuation phenomena. Prereq., PHYS 5150 or instructor consent. Same as ASTR 7160.

College of Arts & Sciences Physics

## PHYS-7230 (3) Statistical Mechanics

Classical and quantum statistical theory, including study of both equilibrium and nonequilibrium systems. Topics covered include kinetic theory, degenerate gases, macrocanonical and grand canonical ensembles, and irreversible processes. Prereq., PHYS 5250 and 5260.

College of Arts & Sciences Physics

## PHYS-7240 (3) Advanced Statistical Mechanics

Introduces current research topics in statistical mechanics. Topics vary from year to year and may include phase transitions, critical phenomena, nonequilibrium phenomena, dense fluids, dynamical systems, plasma physics, or quantum statistical mechanics. Prereq., PHYS 7230.

College of Arts & Sciences Physics

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## Courses

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PHYS

### PHYS-7250 (3) Quantum Many Body Theory

Theory of quantum many body systems, including methods based on Green's functions, Feynman diagrams, and coherent state path integral with applications to interacting quantum gases, superconductivity and superfluidity, quantum phase transitions, quantum magnetism, quantum motion in the presence of disorder, and topological states of matter. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Physics](#)

### PHYS-7270 (3) Introduction to Quantum Mechanics 3

Radiation theory; relativistic wave equations with simple applications; introduction to field theory and second quantization. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Physics](#)

### PHYS-7280 (3) Advanced Quantum Theory

Quantum theory of fields, elementary particles, symmetry laws, and topics of special interest. Prereq., PHYS 7270 or instructor consent.

[College of Arts & Sciences](#) [Physics](#)

### PHYS-7310 (3) Electromagnetic Theory 1

Sophisticated approach to electrostatics, boundary value problems, magnetostatics, applications of Maxwell's equations to electromagnetic wave propagation, wave guides, and resonant cavities and magnetohydrodynamics. See also PHYS 7320. Prereq., PHYS 5030. Prerequisites: Restricted to Graduate Students only.

## PHYS-7320 (3) Electromagnetic Theory 2

This is a continuation of PHYS 7310. Topics include relativistic particle dynamics; radiation by moving charges; multiple fields; radiation damping and self-fields of a particle; collisions between charged particles and energy loss; radiative processes; and classical field theory. See also PHYS 7310. Prereq., PHYS 7310.

## PHYS-7440 (3) Theory of the Solid State

Stresses application to the solid state of physical concepts basic to much of modern physics, single-particle approximation, and the energy-band description of electron states in solids, pseudopotential theory applied to ordered and disordered systems, dynamical behavior of electrons in solids, lattice dynamics, Hartree-Fock and random-phase approximation in solids, many-body aspects of magnetism, and superconductivity. Prerequisites: Restricted to Graduate Students only.

## PHYS-7450 (3) Theory of Solid State 2

The second semester of condensed matter physics covers topics in soft condensed matter physics, liquid crystals, semiconductors, Quantum Hall effect, Fractional Quantum Hall effect, superconductivity, and other topics at the discretion of the instructor.

## PHYS-7550 (3) Atomic and Molecular Spectra

Covers theory of atomic structure and spectra, including coupling of angular momenta, tensor operators, energy levels, fine and hyperfine structure, transition probabilities, Zeeman and Stark effects. Molecular spectra: electronic, vibrational, and rotational states. Rotation matrices, symmetric top.

## PHYS-7730 (3) Theory of Elementary Particles

Systematics of elementary particles, leptons, quarks, gauge bosons, symmetries and symmetry breaking, scattering cross sections, decay rates, electron-positron annihilation, lepton scattering and hadron structure, quantum chromodynamics, electroweak interactions, gauge theories.

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## PHYS-7810 (1-3) Special Topics in Physics

Various topics not normally covered in the curriculum; offered intermittently depending on student demand and availability of instructors. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-7840 (1-3) Selected Topics for Graduate Independent Study

Subject matter to be arranged. May be repeated up to 7 total credit hours. Same as PHYS 7850.

College of Arts & Sciences | Physics

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## PHYS-7850 (1-3) Selected Topics for Graduate Independent Study

Subject matter to be arranged. May be repeated for a total of 7 credit hours. Same as Phys 7840.

College of Arts & Sciences | Physics

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## PHYS-7915 (1) Seminar Topics in Physics

Various seminar topics not normally covered in the curriculum: offered intermittently depending on student demand and availability of instructors. May be repeated up to 3 hours per semester. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Physics

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## PHYS-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences | Physics

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## Courses

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PMUS

### PMUS-1105 (1) Keyboard Musicianship 1

Introduces the keyboard, music reading in the treble and bass clefs, basic theory and keyboard harmony, technical patterns, and improvisation. Studies easy classical and pop repertoire. May be repeated up to 12 total credit hours. Restricted to music majors with no keyboard experience or instructor consent required. Prerequisites: Restricted to Music majors or graduate students only.

[College of Music](#) | [Music](#) | [Keyboard Musicianship](#)

### PMUS-1184 (1) Voice Class

Involves basic vocal technique and easy solo repertoire taught through a group medium, for beginner and intermediate level students. May be repeated up to 6 total credit hours. Restricted to MUSC majors. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Voice](#)

### PMUS-1205 (1) Keyboard-Musicianship 2

Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) | [Music](#) | [Keyboard Musicianship](#)

### PMUS-1515 (2) Jazz Piano Class

Offers small group instruction in the concepts and skills required to learn jazz piano. Students not only learn basic techniques required to play jazz but also become familiar with the theory, grammar, and lexicon of the jazz language. May be repeated up to 4 total credit hours. Prereq., PMUS 1205 or instructor consent required. Offered spring only.

College of Music | Music | Keyboard Musicianship

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## PMUS-2105 (1) Keyboard-Musicianship 3

Continuation of PMUS 1205. May be repeated up to 12 total credit hours. Prereq., PMUS 1205 or instructor consent required. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Keyboard Musicianship

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## PMUS-2184 (1) Voice Class.

Continuation of Pmus 1184, with more advanced repertoire and vocal techniques. May be repeated up to 6 total credit hours. Prereq., Pmus 1184. Restricted to Musc majors. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music | Music | Voice

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## PMUS-2205 (1) Keyboard-Musicianship 4

College of Music | Music | Keyboard Musicianship

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## PMUS-3167 (3) Opera Theatre Stagecraft

Introduction to the processes, materials, and equipment used in theatrical production. Lecture and lab requirements. Lab experiences include introductory work in the opera scenery, property, costume, and electrical shops. Prerequisites: Restricted to Music majors or graduate students only.

College of Music | Music | Voice

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## PMUS-3271 (2) Basic Improvisation

The exploration of basic music improvisation; performance in various musical styles. Prereq. MUSC 2111 or instructor consent. Offered spring of even-numbered years.

College of Music | Music | Choral and Instrumental Music

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## PMUS-4105 (1) Supervised Accompanying

Assigned projects, both vocal and instrumental, are coached by collaborative piano faculty and others. May involve recital, jury, or master class performances. Prereq., MUSC 1325 and MUSC 2365 or instructor consent. Prerequisites: Requires pre-requisite course of MUSC 1325 and MUSC 2365). Restricted to Music majors or graduate students only.

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## PMUS-4137 (1) Opera Theatre 1

Addresses issues related to young artist development. Areas of concentration include (but are not limited to) acting technique, resume preparation, audition technique, scene analysis, and role preparation. The acting technique is addressed in this course through textbook reading and exercise. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Voice

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## PMUS-4147 (1) Opera Theatre 2

Continuation of PMUS 4137. Further scene analysis and movement exercises are addressed in this class. May be repeated up to 12 total credit hours. Prereq., PMUS 4137.

College of Music Music Voice

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## PMUS-4157 (1-3) Opera Practicum

Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Voice

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## PMUS-4167 (1-3) Opera Theatre Lab

Advanced work in the scenery, property, costume, and electrical shops in opera performance. Additional experiences may include positions with opera run crews, the box office, or other supporting areas. May be repeated up to 12 total credit hours. Prerequisites: Restricted to College of Music undergraduate students only.

College of Music Music Voice

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## PMUS-4497 (1-2) Vocal Repertoire Coaching

Group coaching class to prepare for voice recitals as well as to learn vocal repertoire including historical background, composers, styles, and poetic interpretation. May be repeated up to 12 credit hours. Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Voice

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## PMUS-4517 (2) Orchestral Repertoire

Trains practice techniques for String Players to master orchestral excerpts needed for all orchestra and festival auditions. Through careful listening students learn to improve the four basic elements of orchestral excerpt preparation: Rhythm, Intonation, Tone Quality,

Interpretation. Prerequisites: Restricted to Music majors or graduate students only.

College of Music Music Choral and Instrumental Music

## PMUS-5137 (2) Opera Theatre 1

Addresses issues related to young artist development at the graduate level. Areas of concentration will include (but are not limited to) acting technique for singers, resume preparation and scene and character analysis. Students will participate in acting and improvisation exercises. Substantial classical voice study is required and this course is recommended for voice majors only. May be repeated up to 12 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music Music Voice

## PMUS-5147 (2) Opera Theatre 2

Continuation of PMUS 5137. May be repeated up to 12 total credit hours. Prereq., PMUS 5137.

College of Music Music Voice

## PMUS-5184 (1) Graduate Voice Class

Teaches solo and choral singing and vocal modeling. Designed for choral and music education graduate students. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Music Music Voice

## PMUS-5497 (1-2) Vocal Repertoire Coaching

Group coaching class to prepare for voice recitals as well as to learn vocal repertoire including historical background, composers, styles, and poetic interpretation. Class may fulfill voice literature requirements when appropriate classes are not offered. Also available: weekly individual coaching to prepare for voice recitals and other projects. Diction, musical styles, and interpretation (music and text) are the main focus of this course. May be repeated up to 12 credit hours. for graduate voice students and collaborative pianists. Prerequisites: Restricted to Graduate Students only.

College of Music Music Voice



# Courses

Search by College, Department & Category

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PORT

## PORT-1010 (5) Beginning Portuguese 1

Offers students a firm command of Portuguese grammar. Uses grammar as point of departure for development of oral skills. Reading and writing stressed to lesser degree. Attendance at language laboratory may be mandatory.

[College of Arts & Sciences](#) [Spanish](#) [Portuguese](#)

## PORT-1020 (5) Beginning Portuguese 2

Continuation of PORT 1010. Prereq., PORT 1010 (min. grade C-) or placement.

[College of Arts & Sciences](#) [Spanish](#) [Portuguese](#)

## PORT-2110 (3) Second-Year Portuguese 1

Includes grammar review and a study of Portuguese and Brazilian culture, civilization, literature, and art. Prereq., PORT 1020 (min. grade C-) or placement. Meets MAPS requirement for foreign language.

[College of Arts & Sciences](#) [Spanish](#) [Portuguese](#)

## PORT-2120 (3) Second-Year Portuguese 2

Includes grammar review and a study of Portuguese and Brazilian culture, civilization, literature, and art. Prereq., PORT 2110 (min. grade C-) or placement.

College of Arts & Sciences Spanish Portuguese

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## PORT-2150 (5) Intensive Second-Year Portuguese.

Intensive review of grammar and other subjects normally covered in Port 2110 and 2120. Attendance at the language laboratory may be mandatory. Prereq., Port 1020 (min. grade of C-), or placement and departmental approval. Credit not granted for this course and Port 2110 and 2120. Meets MAPS requirement for foreign language.

College of Arts & Sciences Spanish Portuguese

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## PORT-2350 (3) Portuguese for Spanish Speakers

Intensive introduction to the Portuguese language for those able to speak Spanish. Prereq., five semesters of college Spanish or equivalent, SPAN 3000, placement, or departmental approval.

College of Arts & Sciences Spanish Portuguese

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## PORT-3003 (3) Advanced Portuguese Language Skills

Builds vocabulary and competence in more sophisticated written Portuguese. Involves composition, reading, grammar and class discussion. Themes are drawn primarily from current issues in Brazil. Mandatory for the Portuguese-track majors. Prereqs., PORT 2120 or 2150 or 2350.

College of Arts & Sciences Spanish Portuguese

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## PORT-3220 (3) Latin American Culture: Spanish America and Brazil

Examines literary, artistic, and philosophical currents in Spanish America and Portuguese America (Brazil), from pre-Columbian times to the present. Taught in Spanish. Prereq., SPAN 3000. Recommended prereqs., PORT 2110 and 2120. Credit not granted for this course and SPAN 3210. Same as SPAN 3220.

College of Arts & Sciences Spanish Portuguese

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## PORT-3230 (3) Lusophone Cultures: Brazil, Portugal, and Lusophone Africa

Examines literary, artistic and intellectual currents in Brazil, Portugal and Lusophone Africa from the 15th century period of Portuguese expansion to the post-colonial present. Taught in Portuguese. Prereqs., PORT 2110, 2120 and 2350 (min. grade C-) or departmental approval.

College of Arts & Sciences Spanish Portuguese

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## PORT-4110 (3) Survey of Brazilian Literature

Examines major works of Brazilian literature. Prereqs., PORT 2120, 2350 and 3230 (min. grade C-) or equivalent. Same as PORT 5110.

College of Arts & Sciences Spanish Portuguese

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## PORT-4150 (3) Survey of Portuguese Literature

Examines major works of Portuguese literature. Prereqs., PORT 2120, 2350, and 3230 (min. grade C-) or equivalent. Same as PORT 5150.

College of Arts & Sciences Spanish Portuguese

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## PORT-4230 (3) Special Topics in Luso-Brazilian and/or African Literature

Designed to examine intensively particular topics or issues concerning the literatures of Portugal, Brazil, and/or the African countries of Portuguese colonization. Taught in Spanish. May be repeated up to 6 total credit hours. Prereqs., PORT 3230, SPAN 3100, 3120, and an additional course above SPAN 3000. Same as SPAN 4230.

College of Arts & Sciences Spanish Portuguese

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## PORT-4840 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prereq., departmental approval.

College of Arts & Sciences Spanish Portuguese

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## PORT-5110 (3) Survey of Brazilian Literature

Same as PORT 4110.

College of Arts & Sciences Spanish Portuguese

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## PORT-5150 (3) Survey of Portuguese Literature

Same as PORT 4150.

[College of Arts & Sciences](#) [Spanish](#) [Portuguese](#)

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# Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

PRLC

## PRLC-1810 (3) Ethical Leadership

Introduces fundamental principles of leadership and ethics. Emphasizes application of the principles for self-development and organizational effectiveness. Approved for arts and sciences core curriculum: ideals and values.

[Cross College Programs](#) [Student Leadership Institute](#)

## PRLC-1820 (3) Community Issues in Leadership

Explores challenges to leadership at the community level such as drug abuse, poverty, decline of infrastructure, care of the aged, etc. Gives particular attention to the development of effective leadership responses to community difficulties at university, city, state, and national levels. Approved for arts and sciences core curriculum: contemporary societies.

[Cross College Programs](#) [Student Leadership Institute](#)

## PRLC-2810 (3) Global Issues in Leadership

Examines the challenges of leadership posed by change and major global issues affecting everyone. Explores issues such as human rights, hunger, disease, large-scale collective violence, and environmental deterioration with a special emphasis on effective, long-term leadership strategies.

[Cross College Programs](#) [Student Leadership Institute](#)

## PRLC-2820 (3) Multilevel Issues in Leadership

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Studies multilevel issues that originate in organizational settings but carry community and global implications. Encourages students to fully explore the complexity and interrelatedness of issues with a special emphasis on leadership and ethical implications. Same as LDSP 2820.

[Cross College Programs](#) [Student Leadership Institute](#)

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## PRLC-2930 (3) Leadership Internship

Students analyze the leadership styles within a host organization, examine how successfully an organization fulfills its mission, and further refine their own theories of what constitutes effective leadership. Students also complete a meaningful project over the course of the internship. Prereqs., PRLC 1810, PRLC 1820, and PRLC 2820.

[Cross College Programs](#) [Student Leadership Institute](#)

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## PRLC-3810 (3) Global Issues in Leadership

Examines the challenges to leadership posed by major global issues. Problems in the areas of human rights, hunger, disease, large-scale collective violence, and environmental deterioration are explored with a special emphasis on the development of effective, long-term leadership strategies. Prereqs., PRLC 1810, PRLC 1820, and PRLC 2820.

[Cross College Programs](#) [Student Leadership Institute](#)

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## PRLC-4010 (4) 21st Century Leadership

An advanced course that focuses on critical analysis of leadership principles and techniques. Designed to provide theoretical and hands-on experience for individuals who wish to function in leadership roles at high levels of competence in the workplace and in the civic arena.

[Cross College Programs](#) [Student Leadership Institute](#)

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## PRLC-4081 (3) Icons of the American Republic

Examines the founding period of the United States through the events, political concepts and individuals depicted in the art exhibited in the U.S. Capitol Building in Washington, D.C. The course includes a visit to the U.S. Capitol Building, the floor of the U.S. House of Representatives, the floor of the U.S. Senate, and an exploration of the legislative process. Prereq., PSCI 1101 or 2012 or 2223 or 2004. Restricted to students with a minimum 3.4 GPA and 60 credit hours completed. PSCI 4081 and PRLC 4081 are the same course.

[College of Arts & Sciences](#) [Student Leadership Institute](#) [American](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

PSCI

## PSCI-1101 (3) The American Political System

Emphasizes interrelations among levels and branches of government, formal and informal institutions, processes, and behavior. Meets MAPS requirement for social science: general or U.S. history. Approved for arts and sciences core curriculum: contemporary societies or United States context.

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-2004 (3) Survey of Western Political Thought

Studies main political philosophies and political issues of Western culture, from antiquity to 20th century. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Political Science](#) [Political Theory](#)

## PSCI-2012 (3) Introduction to Comparative Politics

Most countries confront a variety of common political problems, including how to gain popular support, what kinds of political institutions are most appropriate, and how to distribute burdens and benefits to different segments of the population. Concentrates on learning how to compare different political systems and provides illustrative examples from several countries in both the industrialized and nonindustrialized world. Approved for arts and sciences core curriculum: contemporary societies.

[College of Arts & Sciences](#) [Political Science](#) [Comparative](#)

## PSCI-2028 (3) Special Topics

Offers subjects not covered by existing courses. Offered when department approves a special topic. May be repeated up to 12 total credit hours for different topics.

College of Arts & Sciences Political Science General

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## PSCI-2075 (3) Quantitative Research Methods

Introduces quantitative research methods used in political science. Focuses on basic tools of analysis: data collection, processing, and evaluation, with special attention to survey techniques. Includes elite and case study analysis; aggregate, cluster, and content analysis; and the use of computers in political research. Restricted to students with 6 completed hours of political science course work. Approved for arts and sciences core curriculum: quantitative reasoning and mathematical skills.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-2106 (3) Introduction to Public Policy Analysis

Studies policymaking processes in American government, factors shaping public decision, and issues and questions relevant to political inquiry.

College of Arts & Sciences Political Science Public Policy

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## PSCI-2116 (3) Introduction to Environmental Policy and Policy Analysis

Teaches a systematic general framework for the analysis of environmental policy issues. Analyzes the interaction of environmental sciences, ethics, and policy across a range of environmental policy problems. Stresses critical thinking and practical applications. Recommended prereq., ENVS 1000.

College of Arts & Sciences Political Science Public Policy

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## PSCI-2223 (3) Introduction to International Relations

Introduces the field of international relations, with general survey of the theories, histories, and problems of historical and contemporary relations among state and nonstate actors. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Political Science International Relations

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## PSCI-2481 (3) Introduction to the Legal Process

Covers basic legal concepts and processes emphasizing the American system. Gives special attention to political functions of law.

Recommended as preparation for PSCI 4241 and 4251. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

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## PSCI-3011 (3) The American Presidency

Covers constitutional and institutional foundations and historical development of the presidency; roles, powers, selection, recent modifications, and institutionalization. Uses lectures and class discussion. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-3021 (3) U.S. Campaigns and Elections

Introduces students to the subjects, techniques, and findings of Political Science research on campaigns and elections. Particular emphasis is placed on the study of voting, campaign effects, partisan coalitions, electoral rules, campaign finance, and the policy impact of elections. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences Political Science American

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## PSCI-3022 (3) Russian Politics

Examines the development of Russian politics from the late Soviet period to the present. Topics covered include political culture, democratic transition, economic reform, and social problems in Russia. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Political Science Comparative

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## PSCI-3031 (3) Political Parties and Interest Groups

Highlights the practice of party politics in the United States, including the nature, structure, organization, and functions of political parties and interest groups. Analyzes interest group politics and political behavior. Prereq., PSCI 1101. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-3032 (3) Latin American Political Systems

Stresses different perspectives on Latin American politics and understanding key political actors and processes. Country focus varies. Prereq., PSCI 2012, IAFS 1000, IAFS major, Latin American studies major, or instructor consent. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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College of Arts & Sciences Political Science American

College of Arts & Sciences Political Science Comparative

## PSCI-3041 (3) The American Congress

Provides intensive examination of the role of Congress in American government, including congressional elections, representation, the organization of Congress, and congressional policy making. Examines larger context of congressional politics, including political parties, the president, and interest groups. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

## PSCI-3051 (3) Public Opinion and Political Behavior

Examines measurement of public opinion and evaluation of its impact on governmental policy formation, including survey research techniques and field work in opinion sampling. Prereq., PSCI 1101. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

## PSCI-3052 (3) Women and Politics in Latin America

Examines ways Latin American women have engaged in politics and their participation in social movements, war, peace processes and elections. Focuses on why women "Do politics" in certain ways, the role of the State in women's politics, the (dis)advantages of various political strategies, and how political, economic and social changes have affected women's political opportunities and interests. Prereq., WMST 2000 or instructor consent. Recommended prereqs., WMST 2400, 2600, 3600 or 3730. Same as WMST 3650. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

## PSCI-3054 (3) American Political Thought

Highlights the development of American political theories and ideas from colonial period to present. Can also be taken for American field credit. Recommended prereq., PSCI 2004. Approved for arts and sciences core curriculum: United States context or ideals and values. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Political Theory

## PSCI-3061 (3) State Government and Politics

Examines politics in the American states from a comparative and historical perspective. Considers major political actors---interest groups, citizens (direct democracy), and political parties, as well as central institutions, in the state political arena. Also focuses on major state public policy concerns. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-3062 (3) Revolution and Political Violence

Studies and evaluates alternative theoretical frameworks for the analysis of revolution and political violence. Theoretical material is firmly couched in case situations, such as ethnic, class, colonial, urban, racial, and religious conflicts. Prereq., PSCI 1101, 2012, or IAFS 1000. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-3064 (3) Environmental Political Theory

Examines environmental discourses as conceptual means for theorizing environmental politics, and applies normative political theories to contemporary environmental policy issues. Considers the roles of political actors (individuals, groups, the state) in defining and addressing environmental problems on local, national, and global levels. Recommended prereq., PSCI 2004. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Political Science Political Theory

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## PSCI-3071 (3) Urban Politics

Examines the structure of political, social, and economic influence in urban areas. Focuses on the relationship of the political system to governmental, social, and economic institutions and the contemporary policy processes in American cities. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-3072 (3) Government and Politics in Southeast Asia

Surveys historical and contemporary forces shaping politics in Southeast Asia. Gives special attention to comparative political economy, including development strategies and transitions to democracy. Prereqs., PSCI 2012 or IAFS 1000. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-3074 (3) Dimensions of Citizenship in the US and the EU

Studies theories and problems related to citizenship in the US and the EU. This includes rights and restrictions of citizenship, issues of immigration, multicultural citizenship, globalization and citizenship. In the EU the relation between member nation citizenship and EU citizenship is a special problem. Examines how the US and EU compare. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Political Science Political Theory

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## PSCI-3082 (3) Political Systems of Sub-Saharan Africa

Analyzes post-independence and post-Cold War change in sub-Saharan Africa and provides intensive case studies of selected countries exemplifying each type with South Africa seen as a special case. Prereq., PSCI 2012 or IAFS 1000. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) | [Political Science](#) | [Comparative](#)

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## Courses

Search by College, Department & Category

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Subject Number

PSCI

### PSCI-3084 (3) Diversity, Disagreement, and Democracy: an Introduction to the Theory and Practice of Democracy

Examines the justification and limits for moral, political, and religious pluralism. The students will be trained in the practice of dialogue. They will research the historical context of a subject that would be appropriate for a dialogue and interview members of the community who have different perspectives on the subject. Restricted to students with minimum 26 hours completed.

College of Arts & Sciences Political Science Political Theory

### PSCI-3091 (3) Politics of Social Movements

Examines theoretical and empirical research on social movements from a U.S. perspective. Considers why social movements arise, who participates in them, the tactics they employ, obstacles they face, and their political impact. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

### PSCI-3092 (3) Comparative Political Economy

Presents theories on the interaction between policies and economics, economic models of politics, and familiarizes students with an approach that will prove useful in understanding current developments in both economics and politics. Explores relationships between financial markets, currency regimes, and politics with some special consideration of the behavioral foundations of political and economic developments. Prereq., PSCI 2012.

College of Arts & Sciences Political Science Comparative

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## PSCI-3101 (3) Black Politics

Examines structure of political, social, and economic influence in urban areas. Focuses on the relationship of political processes to governmental, social, and economic institutions and contemporary policy processes in American cities. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: human diversity.. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-3102 (3) South Asian Politics

Examine the diverse political trajectories of four South Asian countries: India, Pakistan, Nepal, and Sri Lanka. Using a comparative lens, we will take into account historical, cultural, and economic, in addition to political, factors in deciphering this diversity of political paths. Prereqs., ASIA 1000, HIND 1011, HIST 1408, and PSCI 2012.

College of Arts & Sciences Political Science Comparative

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## PSCI-3105 (3) Designing Social Inquiry: An Introduction to Analyzing Political Phenomena

This course is designed to survey the wide range of research designs and methods employed in political science research, including normative analysis, interpretive analysis and causal analysis. It will provide an introduction to students planning to write honors theses and will be useful for any student planning to do research in political science as part of a senior seminar or capstone course. Approved for arts and sciences core curriculum: quantitative reasoning and mathematics. Prerequisites: Restricted to students with 27-86 credits (Sophomores or Juniors) only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-3123 (3) War, Peace, and Strategic Defense

Analyzes employment, or the threat of employing force, in securing American interests in the post-Cold War world. Gives special attention to utilities claimed for nuclear weapons, and alternatively, to weapons control and disarmament. Prereq., PSCI 2223.

College of Arts & Sciences Political Science International Relations

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## PSCI-3143 (3) Problems in International Relations

Analyzes the various theoretical and policy challenges facing the post-Cold War world, with an emphasis on examining alternative conceptions of and approaches to such challenges. Prereq., PSCI 2223. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science International Relations

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## PSCI-3163 (3) American Foreign Policy

Examines foundations, assumptions, objectives, dynamics, and methods of U.S. foreign policy since WWII. Gives special attention to domestic and external problems of adapting U.S. policy to the changing world environment. Prereq., PSCI 2223. Approved for arts and sciences core curriculum: United States context. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science International Relations

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## PSCI-3171 (3) Government and Capitalism in the United States

Examines competing theoretical approaches to questions related to origins, development, and purposes of modern government in the United States; particular attention paid to impact of transformations in the underlying structure of the capitalist economy. Prereq., PSCI 1101. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences Political Science American

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## PSCI-3191 (3) National Security Organization and Policy Making

Analyzes how the American governmental and political system is structured to define, select, and implement national security policies. Examines roles of the president, Congress, bureaucracy, interest groups, and other actors. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

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## PSCI-3193 (3) International Behavior

Presents alternate theoretical frameworks for the explanation of international processes. Applies theories of conflict behavior and social organization to problems of war and peace. Prereq., PSCI 2223. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science International Relations

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## PSCI-3206 (3) The Environment and Public Policy

Considers constitutional, political, and geographic factors in development of public policy affecting the use of natural resources and management of the environment; organization, procedures, and programs for use of natural resources; and administration of environmental policies. Prereq., PSCI 1101. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Public Policy

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## PSCI-3225 (3) Rationality, Democracy, and Public Policy

Focuses on the rational choice approach to understanding social decision making. Examines possibilities for choosing rational courses of

social action and concrete problems of rational decision making. Prereqs., PSCI 1101 or 2012. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-3271 (3) Law and Society: The Interaction between Legal Institutions and Human Behavior

Examines relationship between human behavior and legal system, looking closely at the voluntary relationship between the citizen and the state, the use of law to balance economic liberty and equality, support for civil liberties, and procedural, distributive, and retributive justice. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

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## PSCI-3301 (3) Gender, Sexuality and U.S. Law

Contemporary and historic overview of U.S. courts' treatment of sex and gender. Using the case method, examines policy issues including, but not limited to: same sex marriage and civil unions; privacy; affirmative action; abortion; reproductive technologies; and discrimination based on sex and sexual orientation in education and in the workplace. Prereq., WMST 2000 or PSCI 1101. Same as WMST 3300. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Political Science American

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## PSCI-3311 (3) Gender and U.S. Politics: Protest, Polls and Policy

Provides an overview and critical examination of women as political actors within the United States. Students will examine the gendered components of citizenship, election, political office, and public policy. Furthermore, students will explore the ways in which gender intersects with class, race, ethnicity, sexual orientation, and other identities in U.S. politics. Same as WMST 3311.

College of Arts & Sciences Political Science American

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## PSCI-4002 (3) Western European Politics

Comparatively analyzes development of the political systems and processes of European democracies. Emphasizes contemporary institutions, decision making patterns, and policy issues. Special attention to challenges of welfare systems. Prereq., PSCI 2012 or IAFS 1000. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-4008 (3) Political Science Honors Thesis

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Involves writing an honors thesis. Prereq., PSCI 4718.

College of Arts & Sciences Political Science General

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## PSCI-4012 (3) Global Development

Analyzes development theory, case studies in development strategies, and the problems and promises of development: specifically issues of gender, environment, labor, corruption and poverty. The primary focus is on explanations for variation in level of development over time and across countries. Prereq., PSCI 2012, ECON 2020, IAFS 1000, or one upper-division PSCI course. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-4022 (3) Chinese Foreign Policy

History of China's external relations and theories of foreign policy decision making. Explores two vital bilateral relations (Sino-U.S. and Sino-Japanese) and several key issues (like Taiwan) in China's 21st century foreign policy. Prereq., PSCI 2012. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-4024 (3) Senior Seminar in Political Theory

Intensively analyzes and discusses major theories and issues of both contemporary political thought and the history of political philosophy. The topic is announced by the instructor, but might include analysis of concepts (justice, human rights, democracy, etc.) or major theories. Emphasizes advanced discussion plus individual research. Prereq., PSCI 2004.

College of Arts & Sciences Political Science Political Theory

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## PSCI-4028 (3) Special Topics

Offers subjects not covered by existing courses. Offered when the department approves a special topic. May be repeated up to 12 total credit hours for different topics. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science General

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## PSCI-4052 (3) Chinese Politics

Explores the politics of 20th century China to speculate on China's future in the 21st century. Begins with an extensive look at the political history of the People's Republic, before turning to social, cultural, economic, and political issues today. Concludes with an examination of Chinese foreign policy, with a focus on Sino-American relations. Prereq., PSCI 2012 or IAFS 1000. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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## PSCI-4062 (3) The Emerging Democracies of Central and Eastern Europe

Studies developments in the former Soviet satellites and Yugoslavia, their governmental organizations, and their relation to the former Soviet Union and the West. Prereq., PSCI 2012 or IAFS 1000. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**   **Number**

PSCI

## PSCI-4081 (3) Icons of the American Republic

Examines the founding period of the United States through the events, political concepts and individuals depicted in the art exhibited in the U.S. Capitol Building in Washington, D.C. The course includes a visit to the U.S. Capitol Building, the floor of the U.S. House of Representatives, the floor of the U.S. Senate, and an exploration of the legislative process. Prereq., PSCI 1101 or 2012 or 2223 or 2004. Restricted to students with a minimum 3.4 GPA and 60 credit hours completed. PSCI 4081 and PRLC 4081 are the same course. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-4092 (3) Comparative Urban Politics

Comparatively analyzes major urban systems in different political/economic settings and Third-World countries. Gives special attention to political and economic factors shaping urbanization processes and distinctive policy issues in these different settings. Recommended prereqs., PSCI 1101 and 3071. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Political Science](#) [Comparative](#)

## PSCI-4122 (3) The Military in Politics: Latin America and the U.S.

Analyzes the causes and consequences of military intervention in politics, contrasting patterns of civil-military relations, and the problem of democratic control of the armed forces. Focuses on the Latin American military, with secondary attention to U.S. military. Prereq., PSCI 2012 or IAFS 1000, and PSCI or ROTC major. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Political Science](#) [Comparative](#)

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## PSCI-4131 (3) Latinos and the U.S. Political System

Examines the political status and activities of Mexican Americans and other Latino groups (Cuban Americans and Puerto Ricans) in the U.S. Also covers Latino political attitudes and behaviors; Latino efforts to influence the major national, state, and local institutions of the American government; and public policy concerns of Latinos. Recommended prereq., PSCI 1101. Restricted to sophomores/juniors/seniors. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Political Science American

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## PSCI-4173 (3) International Organization

Analyzes international organizations to determine whether they are an effective instrument for achieving peace and security and for the promotion of human welfare. Prereq., PSCI 2223. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science International Relations

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## PSCI-4183 (3) International Law

Investigates the body of law that regulates relations between nation states and provides a framework for the solving of common problems. Explores its nature and effectiveness as well as its adaptability to a changing environment. Prereq., PSCI 2223. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science International Relations

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## PSCI-4193 (3) International Political Economy

Analyzes issues at the intersection of international politics and international economics. Utilizes theories and concepts from both economics and political science to understand issues in trade, finance, development and migration. Prereq., PSCI 2223.

College of Arts & Sciences Political Science International Relations

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## PSCI-4213 (3) Europe in the International System

Covers European and Atlantic regionalism. Discusses such communities as the Council of Europe, NATO, EFTA, and OECD, and provides a detailed examination of the European Union. Looks at theories of integration, problems of partnership and interdependence, rival nationalisms and strategic doctrines, and problems of the post-Cold War era. Prereq., PSCI 2223.

College of Arts & Sciences Political Science International Relations

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## PSCI-4221 (3) Political Psychology

Examines the psychological foundations of political decision-making among citizens and elites. Considers the role of political psychology

in explaining political behavior and outcomes at the individual and collective level. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

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## PSCI-4241 (3) Constitutional Law 1

Focuses on the nature and scope of American constitutional principles as developed by the U.S. Supreme Court: federalism, jurisdiction of the federal courts, separation of powers, the taxing power, and the commerce power. Involves the case method. Prereq., PSCI 1101 and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science American

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## PSCI-4242 (3) Middle Eastern Politics

Explores the domestic politics of various Middle Eastern countries as well as the development and globalization of the region. Includes topics such as the ongoing prevalence of dictatorships, political Islamism, oil politics, economic growth and stagnation, and relations with the U.S. Prereq., PSCI 2012.

College of Arts & Sciences Political Science Comparative

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## PSCI-4251 (3) Constitutional Law 2

Continuation of PSCI 4241. Emphasizes war power, powers of the president, citizenship, the Bill of Rights, and the Civil War amendments. Involves the case method. Not open to freshmen. Prereq., PSCI 1101 or instructor consent. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-4252 (3) Politics of Ethnicity and Nationalism

Analyzes ethnic identity as a factor in contemporary politics. Deals extensively with the role of ethnic groups in political mobilization, the development of national collective consciousness, nation building, and international relations. Explores the influence of religion, language, history, culture and class on ethnic group formation and behavior. Prereq., PSCI 2012. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science Comparative

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## PSCI-4272 (3) The Political Economy of Advanced Industrial Democracies

Considers how political power is used to achieve economic ends and to shape the operations of market economies. Focuses on economic conflicts as political contests, and explores how politics shapes the course of economic development as well as the basis of social and political life. Prereq., PSCI 2012 or IAFS 1000. Recommended prereq., ECON 2020. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

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College of Arts & Sciences Political Science Comparative

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## PSCI-4302 (3) European Union Politics

Explores the development, functioning, focus and future of the European Union. Examines history, institutions, policies and politics as well as governance theories that have been developed to explain origins and evolution of the EU. Prereq., PSCI 2012.

College of Arts & Sciences Political Science Comparative

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## PSCI-4312 (3) Politics and Language

Examine the politics of language. Topics covered include the primordial versus instrumental role of languages, the politics over minority language recognition, and the trade-offs surrounding the use of a lingua franca. Course will start with a regional focus on Asia then shift to the European Union and conclude in the United States. Prereqs., ASIA 1000 and PSCI 2012.

College of Arts & Sciences Political Science Comparative

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## PSCI-4341 (3) Political Communication

Addresses the idea of political communication as a central aspect of policy making and how the inability to develop persuasive political arguments in particular circumstances invites policy failure. Examines aspects of political communication as it applies to citizens, political decision makers, and specific public policies. Prereq., PSCI 1101 or instructor consent. Restricted to students with 57-180 credits (Junior or Senior). Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science American

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## PSCI-4701 (3) Symbolic Politics

Introduces uses and abuses of symbols as instruments and indicators of political change. Prereq., PSCI 1101. Recommended prereq., junior or senior standing.

College of Arts & Sciences Political Science American

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## PSCI-4703 (3) Alternative World Futures

Aims to help students think about the future of the world in a systematic way. Focuses on alternative projections and policies dealing with major problems. Prereq., PSCI 2223 and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science International Relations

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## PSCI-4714 (3) Liberalism and Its Critics

Examines contemporary arguments for and against liberalism. Focuses on the analysis, evaluation, and understanding of the philosophical contributions to this debate. Gives special attention to the concepts of justice, freedom, equality, and individualism. Restricted to students with 57-180 credits (Junior or Senior). Prereq., PSCI 2004. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science Political Theory

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## PSCI-4715 (3) Honors Political Science Seminar

Involves writing and discussion of selected topics in political science. Critically reviews the major methodological and conceptual features of the discipline. Students begin their honors papers in the seminar. Prereq., GPA of at least 3.50. Formerly PSCI 4718. Generally offered in fall term only.

College of Arts & Sciences Political Science Empirical Theory & Research Methods

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## PSCI-4716 (3) Selected Policy Problems

Integrates general principles of policy inquiry with documents and other literature on specific problems in public policy, in order to evaluate courses of action. May be repeated up to 6 total credit hours on different topics. Prereq., PSCI 1101. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science Public Policy

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## PSCI-4721 (3) Rethinking American Politics

Examines the political history and development of the United States of America. Looks at the particular policy choices we have made and examines the future political agenda. Prereq., junior or senior standing and PSCI 1101 recommended. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science American

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## PSCI-4731 (3) Progress and Problems in American Democracy

Closely examines the various understandings of democracy, the arguments for and against democracy, and the progress of and prospects for democratic politics in the United States. Particular attention is paid to economic, social, and political developments in the United States that affect popular sovereignty, political equality, and liberty. Prereq., PSCI 1101. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Political Science American

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## PSCI-4732 (3) Critical Thinking in Development

Exposes students to current issues in the political economy of development. Subjects range from globalization, democratization, and economic development. Specifically, the course explores the international and domestic determinants of economic development with special reference to currency markets, foreign direct investment, trade, and democratization. Prereqs., PSCI 2012 or IAFS 1000, ECON 2010 and 2020, and one upper-division PSCI course. Same as INVS 4302. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Political Science](#) [Comparative](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

PSCI

## PSCI-4734 (3) Politics and Literature

Broadly examines political topics as they are presented in important literary works and analyzes the possibilities involved in using the literary mode to present political teachings. Prereq., PSCI 2004. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Political Science](#) [Political Theory](#)

## PSCI-4751 (3) The Politics of Ideas

Examines theoretical arguments and case studies of interactions of ideas, interests, and institutions in policymaking. Analyzes processes through which ideas come to the public agenda, how institutional settings shape those ideas, and why some ideas and interests are more successful. Prereq., PSCI 1101. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-4771 (3) Civil Rights and Liberties in America

Implementation of rights and liberties in America. Examines fundamental issues of free speech, press, association, and religion along with rights to due process and equal protection under the law. Prereq., PSCI 2481. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-4774 (3) Liberal Democracy and the First Amendment

Examines in depth various philosophical and legal justifications of First Amendment rights of speech, press, association, and religion.

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Assesses these justifications in relation to broader normative theories of liberal democracy. Prereq., PSCI 2004. Recommended prereq., PSCI 2481. Restricted to juniors/seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science Political Theory

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## PSCI-4783 (3) Global Issues

Studies the principal issues confronting humanity that affect stability and survivability and their economic, social, and political implications. Prereq., PSCI 2012 or 2223. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Political Science (PSCI), International Affairs (IAFS) or Environmental Studies (ENVS) majors only.

College of Arts & Sciences Political Science International Relations

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## PSCI-4792 (3) Issues in Latin American Politics

Studies several Latin American countries in some depth including history and contemporary politics. Teaches students to listen to and evaluate different sides of political controversies, and critically evaluate arguments. Prereqs., PSCI 2012 or IAFS 1000, and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Political Science Comparative

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## PSCI-4841 (1-3) Independent Study in American Politics

Subjects are chosen and arrangements are made to suit the needs of each student. Independent study is for upper-division students who have completed 9 credit hours of political science and who have an overall GPA of at least 3.00. Not more than 6 credit hours of independent study may be credited toward the minimum requirements in the political science major. A special independent study approval agreement form must be obtained from the department. May be repeated up to 7 total credit hours. Prereq., PSCI 1101.

College of Arts & Sciences Political Science American

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## PSCI-4842 (1-3) Independent Study in Comparative Politics

Subjects chosen and arrangements made to suit needs of each student. Independent study is for upper-division students who have completed 9 credit hours of political science and who have an overall GPA of at least 3.00. Not more than 6 credit hours of independent study may be credited toward the minimum requirements in the political science major. Special independent study approval agreement form must be obtained from the department. May be repeated up to 7 total credit hours. Prereq., PSCI 2012 or IAFS 1000.

College of Arts & Sciences Political Science Comparative

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## PSCI-4843 (1-3) Independent Study in International Relations

Subjects chosen and arrangements made to suit needs of each student. Independent study is for upper-division students who have completed 9 credit hours of political science and who have an overall average of at least 3.00. Not more than 6 credit hours of

independent study may be credited toward the minimum requirements in the political science major. Special independent study approval agreement form must be obtained from the department. May be repeated up to 7 total credit hours. Prereq., PSCI 2223.

College of Arts & Sciences Political Science International Relations

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## PSCI-4844 (1-3) Independent Study in Political Theory

Subjects and arrangements suit individual student needs. Independent study is for upper-division students who have completed 9 credit hours of political science and who have an overall GPA of at least 3.00. Not more than 6 credit hours of independent study may be credited toward the minimum requirements in the political science major. Special independent study approval agreement form must be obtained from the department. May be repeated up to 7 total credit hours. Prereq., PSCI 2004.

College of Arts & Sciences Political Science Political Theory

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## PSCI-4848 (1-3) Independent Study

Subjects chosen and arrangements made to suit needs of each student. Independent study is for upper-division students who have completed 9 credit hours of political science and who have an overall average of at least 3.00. Not more than 6 credit hours of independent study may be credited toward the minimum requirements in the political science major. Special independent study approval agreement form must be obtained from the department. May be repeated up to 7 total credit hours.

College of Arts & Sciences Political Science General

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## PSCI-4938 (3-6) Internship in Government

With instructor's assistance, students secure an internship with a political or governmental organization. In addition to the internship, the class consists of regular seminars, course readings and assignments, and individual conferences with the instructor. Student pursues an academic research project and writes an original research paper. Instructor approval required in semester preceding internship. Contact instructor prior to early registration. Prereq., PSCI 1101.

College of Arts & Sciences Political Science General

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## PSCI-6901 (3-6) Graduate Research Topic

Independent research in a topic of special interest. Arrangements are made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 8901. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science American

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## PSCI-6902 (1-3) Graduate Research Topic

Guides independent research on a topic of special interest. Arrangements made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 8902.

College of Arts & Sciences Political Science Comparative

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## PSCI-6903 (1-3) Graduate Research Topic

Independent research in a topic of special interest. Arrangements made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 8903.

College of Arts & Sciences Political Science International Relations

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## PSCI-6904 (1-3) Graduate Research Topic

Independent research in a topic of special interest. Arrangements made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. Maybe repeated up to 7 total credit hours. Same as PSCI 8904.

College of Arts & Sciences Political Science Political Theory

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## PSCI-6905 (1-3) Graduate Research Topic

Independent research in a topic of special interest. Arrangements made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 8905. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-6906 (1-3) Graduate Research Topic

Provides the opportunity for independent research in topic of interest. Arrangements made to suit needs of each student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 8906.

College of Arts & Sciences Political Science Public Policy

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## PSCI-6908 (1-3) Graduate Research Topic

Same as PSCI 8908.

College of Arts & Sciences Political Science General

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## PSCI-6948 (1) Master's Degree Candidate

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science General

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## PSCI-6951 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science American

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## PSCI-6952 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Comparative

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## PSCI-6953 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science International Relations

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## PSCI-6954 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Political Theory

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## PSCI-6955 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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**[Courses](#)**

# Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

**Subject**    **Number**

PSCI

## PSCI-6956 (1-6) Master's Thesis

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [Public Policy](#)

## PSCI-7002 (3) Seminar in West European Politics

Examines West European politics in terms of general theories of comparative politics, including institutional, behavioral and political economy approaches. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [Comparative](#)

## PSCI-7004 (3) Seminar: Political Theory

Allows for intensive research in and presentation of selected topics. Introduces students to the broad context within which political ideas arise. Deals with classical and modern thought. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [Political Theory](#)

## PSCI-7008 (1) Teaching Political Science 1

First of two courses designed to prepare graduate teachers in the essentials of political science teaching and provide a background in theories of political science teaching and practical skills development in discipline-specific education. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [General](#)

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## PSCI-7011 (3) Seminar: American Politics

Core field seminar for students of American politics. Course work emphasizes the diversity of contemporary research on American political history, political institutions, and political behavior. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science American

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## PSCI-7012 (3) Seminar: Comparative Political Systems

Discusses current literature on comparative politics including theoretical and methodological issues. Restricted to graduate students or instructor consent. required.

College of Arts & Sciences Political Science Comparative

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## PSCI-7013 (3) Seminar: International Relations

Reviews salient literature on international relations, and subsequent presentation and critical discussion of analytical studies. Allows students wide latitude in substantive and methodological approaches. Emphasizes changing trends and efforts to understand the bases for cooperation and conflict. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science International Relations

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## PSCI-7016 (3) Introduction to the Policy Sciences

Provides an introduction to the policy sciences as a distinctive tradition within the policy field. Emphasizes the use of conceptual tools to improve analysis of complex problems. Teaches problem solving framework that students apply to an issue of their choice. Restricted to graduate students or instructor consent required. Same as ENV5 5710. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7021 (3) Latinos and U.S. Politics

Examines in depth the theoretical and empirical literature assessing the political situation and activities of Latinos (Mexican Americans, Puerto Ricans, Cuban Americans, and others) in the U.S. Stresses original research. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science American

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## PSCI-7022 (3) Seminar in Political and Economic Development

Covers domestic political and economic development in Latin America, Africa, and Asia, as well as interactions with the global economy. Includes defining, explaining, and prescribing policies for successful development, and comparing the experiences of developing and industrialized countries. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science Comparative

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## PSCI-7023 (1) Foreign Policy

Examines sources of foreign policy in terms of international pressures, economic interests, bureaucratic politics, cognitive process, public opinion, elections, congress, and presidential leadership. Examines uses and limitations of economic statecraft, military intervention, and current foreign policy issues. Recommended prereq., PSCI 7013.

College of Arts & Sciences Political Science International Relations

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## PSCI-7024 (3) Seminar: Selected Political Theories

Familiarizes students with selected political philosophies or theories in classical or modern political thought. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science Political Theory

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## PSCI-7026 (3) The Problem Orientation

Teaches basic problem solving framework for policy analysis. Emphasizes applications to develop policy recommendations for issues selected by students. Includes group projects. Restricted to graduate students or instructor consent required. Same as ENVS 5720.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7028 (1) Teaching Political Science 2

Second course designed to train graduate teachers in the essentials of political science teaching and provide a background in theories of political science teaching and practical skills development in discipline specific education. Prereqs., PSCI 7008 and completion of comprehensive examinations.

College of Arts & Sciences Political Science General

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## PSCI-7031 (3) Seminar: Political Attitudes and Behavior

Provides an intensive examination of topics in political attitudes and behavior such as political participation, ideology, voting, and elite

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behavior. Reviews methodology of behavioral research and introduces ICPSR data archive and computer-based research. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science American

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## PSCI-7032 (3) Seminar: Latin American Politics

Stresses intensive study of the political process in Latin America with special emphasis on democratization. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science Comparative

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## PSCI-7036 (3) Introduction to the Policy Sciences: The Decision Process

Provides policy sciences frameworks for analyzing policy processes and designing political strategies to influence those processes in the direction of the preferred alternative. Emphasizes applications to problems selected by students for term projects. Restricted to graduate students or instructor consent required. Same as ENVS 5730. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7043 (3) Seminar: Problems of International Organization

Studies selected problems concerning administration and operation of public international organizations, including the United Nations and its specialized agencies. Considers decision making, executive leadership, internal organization, personnel policies, coordination of activities, and financing. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science International Relations

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## PSCI-7046 (3) Seminar: Urban Public Policy

Focuses on formulation, revision, and outcomes of public policy in American urban communities. Also uses some comparative Canadian and European literature. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7051 (3) Seminar: The United States Congress

Comprehensively examines literature and selected research topics concerning the United States Congress. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science American

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College of Arts & Sciences Political Science American

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## PSCI-7052 (3) Democracy & Authoritarianism

Examine differences between democracies and authoritarian regimes; the choices and the consequences of democratic institutions in authoritarian regimes; and the causes of authoritarian survival and demise and the subsequent political choice. Recommended prereq., PSCI 7012. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Comparative

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## PSCI-7053 (3) War and Peace

Provides systematic treatment of theories, concepts, and data addressing the conditions and processes of international conflict, violence, and stability, with attention to historical and contemporary cases. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science International Relations

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## PSCI-7055 (3) Introductory Game Theory

Develops competence in engaging formal theories of politics and in constructing and solving basic game-theoretic models of political behavior. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-7056 (3) Readings in Public Policy

Explores diverse approaches to policy choice, change, and learning processes. Overviews literature on policy determinants and typologies, policy subsystems, innovation and diffusion, agenda setting, implementation, problem definition and social construction, policy design, institutional analysis, and policy and democratic values. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7062 (3) The Politics of Ethnicity

Explores the political aspects of pluralism, ethnonationalism, separatism, and related phenomena. Examines theories of ethnic mobilization, conflict, and accommodation in the context of political development and nation building. Includes cross-polity comparisons and case studies of multiethnic societies in the developed and developing world. Prereq., at least one course in comparative politics. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science Comparative

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# Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

PSCI

## PSCI-7071 (3) Seminar: An Introduction to the Rule of Law

Provides an intensive, critical examination of theoretical and substantive literature dealing with the behavior of the primary actors in the legal system---police, lawyers, judges, and citizens. Emphasizes empirical approach and quantitative methods. Requires research papers. Restricted to graduate students or instructor consent required. Formerly PSCI 7077. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-7073 (3) Seminar: Global Political Economy

Introduces graduate students to concepts, theories, and data used to study the global system from a political-economic framework. Examines world systems analysis, regime change theory, and dependency theory with respect to operation of the exchange and power relationship within the contemporary world system. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [International Relations](#)

## PSCI-7075 (3) Introduction to Professional Political Science

Introduces graduate students to intellectual foundations and historical development of political science; epistemologies, subfields, intellectual approaches, methodological strategies of the discipline; and ethics and norms of professional conduct. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [Empirical Thry & Research Mthd](#)

## PSCI-7085 (4) Introduction to Political Science Data Analysis

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Provides intensive experience with quantitative techniques commonly employed in political science research; builds on a review of multivariate regression, inferential statistics, and causal modeling. Students undertake substantive research projects, requiring lab instruction in the use of the computer in quantitative applications of political science research. Prereq., graduate standing in PSCI or instructor consent. Prerequisites: Restricted to Political Science (PSCI) graduate students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-7091 (3) Politics of Social Movements

Examines theoretical and empirical research on American social movements. Emphasizes the role of movements as political actors and their ability to bring about changes in public policy and national political institutions. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science American

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## PSCI-7095 (3) Advanced Political Data Analysis

Provides advanced training in empirical and analytic methods of political analysis. Covers general multivariate linear (regression) model as employed in political science. Also covers a variety of dynamic approaches to empirical analysis (stochastic models, time series, and simulation). Prereq., PSCI 7085. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-7108 (3) Special Topics

Various topics not normally offered in the curriculum. Topics vary each semester. May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science General

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## PSCI-7111 (3) Seminar: American Political Institutions

Intensive examination of the structure and rules of different political institutions in the United States. Explores both the changing approaches to the study of American political institutions as well as many of the major research topics on the presidency, Congress, the judiciary, and the bureaucracy. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science American

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## PSCI-7112 (3) Seminar: Comparative Political Parties and Interest Groups

Critically examines topics relating to social forces, parties, and interest groups. Analyzes concepts, theories, and case studies with particular emphasis on Western political systems. Also examines party systems in comparison and the role of groups and the determinants of group politics. Restricted to graduate students or instructor consent required.

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College of Arts & Sciences Political Science Comparative

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## PSCI-7113 (3) Advanced Readings in International Relations

Provides an advanced readings course for international relations graduate students. Acts as a capstone course for those preparing to take the PhD comprehensive exams, and is intended to provide in-depth knowledge about core areas of international relations scholarship. Prereq., PSCI 7013. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science International Relations

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## PSCI-7115 (3) Qualitative Methods

Develop proficiency in constructing research designs with qualitative methods. The goal is to understand and be able to justify research designs involving relatively small numbers of observations as good political science given the fact that such designs may limit our ability to generalize. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-7116 (3) Context-Sensitive Research Methods

Prepares students to conduct research on topics where data is not obvious or not easily available. Encompasses variations in context and setting as part of data observations. Methods include interviewing protocols, interpretive methods, cluster analyses, case study methodologies, and textual analyses. Restricted to graduate students or instructor consent required. Same as ENVS 5740.

College of Arts & Sciences Political Science Public Policy

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## PSCI-7121 (3) Black Leadership and Public Policy

Examines the writings of African American political leaders, public policy critics, and politicians who have influenced black politics and society since 1900. Explores the ideas and leadership of W.E.B. Dubois, E. Franklin Frazier, Martin Luther King Jr., and others. Restricted to graduate students or instructor consent required.

College of Arts & Sciences Political Science American

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## PSCI-7123 (3) Seminar: Conflict Behavior - The Politics of Violence

Surveys historical, theoretical, and empirical analyses of violent conflict behavior, including causes and consequences of riots, terrorism, revolution, international war, and intervention. Restricted to graduate students or instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science International Relations

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## PSCI-7132 (3) Comparative Political Economy

Explores the relationship between economics and politics in developed and developing countries. Gives students an historical overview of 20th century economic trends and covers scholarly approaches to topics such as political and economic institutions, economic ideas and interests, the political causes of growth and equality, globalization and the welfare state, and varieties of capitalism. Recommended prereq., PSCI 7012. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Political Science | Comparative

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## PSCI-7142 (3) The Political Economy of the Democratic Welfare State

Advanced seminar that examines the structure of political and economic relations in several advanced democracies. Specifically examines a series of historical, institutional, and cultural theories that purport to explain these differences. Restricted to graduate students or instructor consent required.

College of Arts & Sciences | Political Science | Comparative

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## PSCI-7145 (3) Basic Formal Methods in Political Science

Introduces the application and role of models in political science (domestic and international politics), in areas such as voting, committees, power, decision making, and war and peace. Models include applications of set theory, elementary probability, games, and systems analysis. Restricted to graduate students or instructor consent required.

College of Arts & Sciences | Political Science | Empirical Thry & Research Mthd

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## PSCI-7151 (3) American Subnational Politics and Government

Provides a comprehensive overview of the issues and literature concerning American "Subnational" politics. Considers three bodies of literature: American federalism and intergovernmental relations, state politics, and urban/local politics. Also examines a number of policy issues. Restricted to graduate students or instructor consent required.

College of Arts & Sciences | Political Science | American

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## PSCI-7171 (3) Seminar: Law and Democratic Governance

Explores cutting-edge debates in election law. Studies different perspectives on the current controversies in the field, in addition to select opportunities to engage scholars directly about their work. Develops students' understanding of the law of democracy, exposing students to some of the best scholarship, and improving students' ability to evaluate and critique legal scholarship. Recommended prereq., PSCI 7011. Same as LAWS 8205.

College of Arts & Sciences | Political Science | American

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## PSCI-7175 (3) Dissertation Seminar

Help students make progress towards (1) in the short term: focusing in on a dissertation topic, crafting a dissertation prospectus, and identifying potential funding sources; and (2) in the long term: sending papers out for review, developing a package for the job market, and understanding the academic job market and the tenure process. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-7333 (3) Globalization and Democratization: An Introduction

Introduces research on globalization and democratization from an interdisciplinary perspective. Examines ongoing interdisciplinary research on the global political economy. Students learn about ongoing research, critique current efforts, and design their own research project. Prereq., graduate standing in PSCI, ECON, GEOG, or SOCY. Same as GEOG 5332, SOCY 6031, and ECON 8333.

College of Arts & Sciences Political Science International Relations

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## PSCI-7901 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours.

College of Arts & Sciences Political Science American

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## PSCI-7902 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Political Science Comparative

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## PSCI-7903 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours.

College of Arts & Sciences Political Science International Relations

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## PSCI-7905 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Political Science](#) [Empirical Thry & Research Mthd](#)

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# Courses

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PSCI

## PSCI-7906 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Political Science](#) [Public Policy](#)

## PSCI-7908 (1-3) Independent Study

Not a free option; must be approved by the student's advisor and program chair. Does not count as seminar. Not more than 6 hours of independent study may be credited toward PhD degree in political science. Special independent study approval agreement form must be completed by student and signed by faculty advisor. May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [General](#)

## PSCI-8901 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6901. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Political Science](#) [American](#)

## PSCI-8902 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6902.

College of Arts & Sciences Political Science Comparative

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## PSCI-8903 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6903.

College of Arts & Sciences Political Science International Relations

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## PSCI-8904 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6904.

College of Arts & Sciences Political Science Political Theory

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## PSCI-8905 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6905.

College of Arts & Sciences Political Science Empirical Thry & Research Mthd

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## PSCI-8906 (1-3) Graduate Research Topic

Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6906.

College of Arts & Sciences Political Science Public Policy

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## PSCI-8908 (1-3) Graduate Research Topic

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Provides an opportunity for independent research in a topic of special interest. Arrangements are made to suit the needs of each particular student. Not a free option; must be approved by student's advisor and department chair. Does not count as a seminar. May be repeated up to 7 total credit hours. Same as PSCI 6908.

College of Arts & Sciences Political Science General

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## PSCI-8991 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Political Science American

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## PSCI-8992 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Political Science Comparative

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## PSCI-8993 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Political Science International Relations

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## PSCI-8994 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

College of Arts & Sciences Political Science Political Theory

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## PSCI-8995 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

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## PSCI-8996 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

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# Courses

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PSYC

## PSYC-1001 (3-4) General Psychology

Surveys major topics in psychology: perceptions, development, personality, learning and memory, and biological bases of behavior. Students may participate as subjects for several hours in ongoing research. Meets MAPS requirement for social science: general.

[College of Arts & Sciences](#) [Psychology](#) [General](#)

## PSYC-2012 (3) Biological Psychology 1

Surveys biological bases of learning, motivation, emotion, sensory processes and perception, movement, comparative animal behavior, sexual and reproductive activity, instinctual behavior, neurobiology of language and thought, and neurophysiology and neuroanatomy in relation to behavior. Prereq., PSYC 1001. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Psychology](#) [Biological](#)

## PSYC-2022 (3) Biological Psychology 2

Continuation of PSYC 2012. Integrates knowledge and facts presented in PSYC 2012 into current topics in biopsychology. Course no longer taught after fall 2003, except through Continuing Education correspondence. Prereq., PSYC 2012.

[College of Arts & Sciences](#) [Psychology](#) [Biological](#)

## PSYC-2145 (3) Introductory Cognitive Psychology

Introduces the study of cognitive processes of human beings: sensation, perception, attention, pattern recognition, memory, learning,

language, visual thought, reasoning, problem solving, and decision making. Discusses applications to education, human factors, human computer interaction, law, and other areas of psychology. Prereq., PSYC 1001.

College of Arts & Sciences Psychology Experimental

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## PSYC-2303 (3) Psychology of Adjustment

Surveys concepts bearing upon processes of normal psychological adjustment, with emphasis on using the concepts to understand common human problems in personal growth and relationships with others.

College of Arts & Sciences Psychology Clinical

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## PSYC-2606 (3) Social Psychology

Covers general psychological principles underlying social behavior. Analyzes major social psychological theories, methods, and topics, including attitudes, conformity, aggression, attraction, social perception, helping behavior, and group relations. Prereq., PSYC 1001. Credit not granted for this course and PSYC 4406. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Psychology Social

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## PSYC-2643 (3) Child and Adolescent Psychology

Surveys major psychological processes of childhood and adolescence. Prereq., PSYC 1001.

College of Arts & Sciences Psychology Clinical

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## PSYC-2700 (3) Psychology of Contemporary American Women

Surveys psychological theory and research concerning contemporary American women. Deals with such issues as masculine bias in American culture, sex difference in cognitive functioning and personality, psychological conflict for women between career and home, and specific areas pertaining to women's mental health. Prereq., PSYC 1001 or WMST 2000. Same as WMST 2700. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Psychology

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## PSYC-2841 (1-3) Independent Study (Lower Division)

May be repeated up to 6 total credit hours. Pass/fail only. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology General

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## PSYC-3001 (4) Honors Research Methods Seminar

Focuses on research design. Each student prepares an original, detailed research proposal, which can become the honors thesis. Open only to students who have been accepted into the psychology departmental honors program. Prereq., instructor consent.

College of Arts & Sciences Psychology General

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## PSYC-3005 (3) Cognitive Science

Introduces cognitive science, drawing from psychology, philosophy, artificial intelligence, neuroscience, and linguistics. Studies the linguistic relativity hypothesis, consciousness, categorization, linguistic rules, the mind-body problem, nature versus nurture, conceptual structure and metaphor, logic/problem solving and judgment. Emphasizes the nature, implications, and limitations of the computational model of mind. Prereqs., two of the following: PSYC 2145, LING 2000, CSCI 1300, and PHIL 2440. Same as LING 3005, PHIL 3310, and CSCI 3702.

College of Arts & Sciences Psychology Experimental

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## PSYC-3101 (4) Statistics and Research Methods in Psychology

Three hours of lecture and one two-hour lab per week. Introduces descriptive and inferential statistics and their roles in psychological research. Topics include correlation, regression, T-test, analysis of variance, and selected nonparametric statistics. Recommended prereqs., MATH 1011 or MATH 1150, 1300, or 1081.

College of Arts & Sciences Psychology General

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## PSYC-3102 (3) Behavioral Genetics

Inheritance of behavioral characteristics. Prereq., PSYC 3101.

College of Arts & Sciences Psychology Biological

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## PSYC-3105 (3) Experimental Methods in Psychology

Provides an introduction to the use of experimental procedures in psychology. Students learn about the logic and design of experiments, the meaning of psychological data, how to analyze and interpret data, and the role of theory in psychology. Prereqs., Psyc 1001 and 3101. Recommended prereq., Psyc 2145.

College of Arts & Sciences Psychology Experimental

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## PSYC-3313 (4) Psychopathology

Three hours lec. and two hours rec. per week. Analyzes major theories of personality and behavioral disorders. Restricted to junior and senior PSYC majors. Prereq. PSYC 1001 or instructor consent. Credit not granted for this course and PSYC 4303. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Clinical

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## PSYC-4001 (3) Honors Seminar 2

Surveys contemporary issues, explores current controversies, and examines in detail selected topics in psychology. Open to juniors and seniors in the department's honors program. Prereq., instructor consent.

College of Arts & Sciences Psychology General

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## PSYC-4011 (1-6) Senior Thesis

Critically reviews some aspect of psychological literature, scholarly analysis of a major psychological issue, and/or empirical research project. See the psychology honors director for further information. May be repeated up to 6 total credit hours.

College of Arts & Sciences Psychology General

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## PSYC-4021 (3) Psychology and Neuroscience of Exercise

Integrative course exploring the social, cognitive, neuroscience and physiological aspects of exercise as it relates to mental health. Examines how psychological and neuroscience research have been used to study how participation in regular physical activity affects mental health and how psychological variables influence participation in, adherence to, enjoyment of, and performance in sports and exercise. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only. Prereqs., PSYC 2012, 2145 and 2606. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology General

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## PSYC-4052 (4) Behavioral Neuroscience

Intensive survey of the morphological, neurochemical, and physiological aspects of behavior. Prereqs., PSYC 2012-2022 or EBIO 1210-1220, or CHEM 1111-1131, or PHYS 1010-1020, or PHYS 2010-2020. NRSC 4052 and PSYC 4052 are the same course. Same as NRSC/PSYC 5052.

College of Arts & Sciences Psychology Biological

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## PSYC-4112 (3) Behavioral Genetics Laboratory

Provides laboratory experience in behavioral genetics. Students train in one or more aspects of data collection and interpretation, read research papers, contribute nine hours per week to a research project in behavioral genetics, and write a report. Prereq., PSYC 3102 or 4102.

College of Arts & Sciences Psychology Biological

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## PSYC-4114 (3) Educational Psychology and Adolescent Development

Examines the principles of educational and adolescent psychology and development that play a significant role in analyzing and understanding the complex processes in middle and secondary school classrooms. Course has both theoretical and practical dimensions. Same as EDUC 4112.

College of Arts & Sciences Psychology Developmental

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## PSYC-4136 (4) Judgment and Decision Making

One lab, three lectures per week. Introduces the study of judgment and decision making processes (estimation, prediction and diagnosis, choice under certainty, and risky decision making) and the methods that have been developed to improve these processes (statistical modeling, decision analysis, and expert systems). Prereqs., PSYC 1001, 2606 and 3101. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Social

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## PSYC-4142 (3) Brain Injury, Plasticity and Recovery: From Neuron to Behavior

Traumatic brain injury is prevalent in all aspects of society, with incidence rates varying according to age, gender, military affiliation and participation in certain sports. The course will delve into the full spectrum of consequences following injury, beginning with the individual neural cells in the brain through to the behaving individual. It will also cover strategies to improve functional recovery. Prereq., PSYC 2012 or NRSC 2100. Recommended prereq., PSYC/NRSC 4132. Restricted to junior/seniors or instructor consent required. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Psychology Biological

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## PSYC-4145 (4) Advanced Cognitive Psychology

Advanced course in human cognitive processes. Focuses on attention pattern recognition. Memory, learning, language, visual thought, reasoning, problem solving, and decision making. Discusses major theories and ideas in terms of the research they have inspired. Emphasis varies with instructor. One lab per week; research project required. Prereqs., PSYC 1001, 2145, and 3101. Same as PSYC 5145. Prerequisites: Requires pre-requisite classes of PSYC 1001, 2145, and 3101.

College of Arts & Sciences Psychology Experimental

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## PSYC-4155 (4) Cognitive Neuroscience/Neuropsychology

An introduction to cognitive neuroscience and neuropsychology. Provides a survey of the neuropsychological underpinnings for a wide range of cognitive functions: motor control, object recognition, spatial processing, attention, language, memory and emotion. One lab, three lectures per week. Prereqs., PSYC 1001, 2012 or NRSC 2100, PSYC 3101 or MATH 2510 or MATH 2520 or IPHY 2800 or APPM 1710 or APPM 2750 or CHEN 3010 or CHEN 3130 or ECON 3818. Same as NRSC 4155.

[College of Arts & Sciences](#) [Psychology](#) [Experimental](#)

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## Courses

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PSYC

### PSYC-4165 (4) Psychology of Perception

One lab, three lect. per week. Analyzes peripheral and central mechanisms involved in the transduction and interpretation of experience. Gives special attention to vision and audition; major theories in these areas are discussed in terms of research they have inspired. Prereqs., PSYC 1001 and 3101. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Psychology](#) [Experimental](#)

### PSYC-4175 (4) Computational Cognitive Neuroscience

Introduction to cognitive neuroscience (how the brain gives rise to thought) using computer simulations based on the neural networks of the brain. Covers a full range of cognitive phenomena including perception and attention, learning and memory, language, and higher-level cognition based on both large-scale cortical neuroanatomy and detailed properties of cortical neural networks. One lab per week. Recommended only for students with a strong interest in the topic, as it requires a combination of computer modeling, neuroscience and cognition. Prereq., PSCY 1001, 2012, 2145, and 3101. Same as PSYC 5175. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

[College of Arts & Sciences](#) [Psychology](#) [Experimental](#)

### PSYC-4220 (3) Language and Mind

Studies processes of perceiving speech, interpreting it as meaningful, and expressing intentions to communicate as utterances. Emphasizes roles of the brain and of perceptual and motor systems. Writing, gestural, and animal communicative systems also are treated. Prereqs., PSYC 1001 and LING 2000. Same as LING 4220.

[College of Arts & Sciences](#) [Psychology](#)

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## PSYC-4303 (3) Abnormal Psychology

Examines borderline disorders as extreme variations of the normal personality. Focuses on major functional and organic disorders, theories of mental disorders, and methods of psychotherapy. Prereq., PSYC 1001. Credit not granted for this course and PSYC 3313.

College of Arts & Sciences Psychology Clinical

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## PSYC-4376 (4) Research Methods in Social Psychology

Designed primarily for psychology majors interested in learning about research methodology. Topics include research design, data collection and data analysis, and written research reports. Prereqs., PSYC 1001, 2606, and 3101. Prerequisites: Requires pre-requisite classes of PSYC 1001, 2606, and 3101. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Social

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## PSYC-4385 (3) Ethology and Comparative Psychology

Discusses behavior of representative members of each animal phylum. Emphasizes ontogeny of behavior as well as phylogeny. Prereq., PSYC 1001 or EBIO 1210. Same as PSYC 5385.

College of Arts & Sciences Psychology Experimental

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## PSYC-4443 (4) Research Methods in Clinical Psychology

Learn to evaluate research methods as they relate to etiology, assessment, and intervention of psychological disorders. Emphasizes the importance of using sound methodological strategies in both research and clinical settings. Three lectures, one lab per week. Prereqs., PSYC1001, 3101, and 3313 or 4303. Prerequisites: Requires pre-requisite classes of PSYC 1001, PSYC 3101, and either PSYC 3313 or 4303. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Clinical

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## PSYC-4456 (3) Psychology of Personality

Offers a psychological study of structure, organization, and development of the person as a whole. Analysis of major theories, methods, and research, including topics such as emotion, motivation, temperament, inner experience, identity and the self, personality change, and the influence of sociocultural context. Restricted to Junior or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Psychology Social

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## PSYC-4511 (3) History of Psychology

Includes outline of development of psychological theories since the Greek philosophers, the story of experimental psychology and its problems, and schools of psychological thinking. Students read original sources in English and English translations. Restricted to Junior

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or Seniors only. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Psychology General

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## PSYC-4521 (3) Critical Thinking in Psychology

Allows students to expand their powers as they think about psychological problems, or about how psychological knowledge and techniques can be applied to pressing political, economic, biological, quantitative, and social issues. Encourages intellectual discipline and critical thinking about concepts and ideas; enables students to participate in oral and written discussion. May not be repeated, only 3 credit hours allowed. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Psychology (PSCY) majors only.

College of Arts & Sciences Psychology General

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## PSYC-4541 (1-6) Special Topics in Psychology

Studies and analyzes special interest topics from the broad and diversified field of psychology. Particular section content is determined by instructor. May be repeated up to 9 total credit hours, provided the topics vary. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only. Same as PSYC 5541. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology General

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## PSYC-4543 (3) Clinical Neuropsychological Disorders

Neuropsychological disorders are behavioral and cognitive expressions of underlying brain diseases or injury. The course will provide in-depth coverage from clinical perspectives of wide range of disorders caused by stroke, traumatic brain injury, degenerative diseases, and inflammatory diseases. Students will learn the various neurologic, neuroimaging and neuropsychological methods for assessing and diagnosing these disorders and will review specific illustrative cases. Recommended prereqs., PSYC 3313 or 4303. Restricted to sophomores/juniors/seniors. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Psychology Clinical

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## PSYC-4553 (3) Women's Mental Health: A Biopsychosocial Approach

Examines women's mental health risks as they occur over the life span, from adolescence through menopause, and helps students develop a multi-dimensional understanding of factors contributing to the higher prevalence of women's mental health disorders, including social, neurobiological, cultural, developmental, reproductive, behavioral, cognitive and emotional factors. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only. Prereqs., PSYC 3313 or 4303. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Clinical

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## PSYC-4560 (3) Language Development

Examines the development of language in childhood and into adult life, emphasizing the role of environment and biological endowment in

learning to communicate with words, sentences, and narratives. Restricted to Psychology majors only. Prereqs. or coreqs., PSYC 1001 and LING 2000. Same as LING 4560 and SLHS 4560. Prerequisites: Restricted to Psychology majors only.

College of Arts & Sciences Psychology

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## PSYC-4606 (3) Advanced Topics in Social Psychology

In-depth study of selected topics in social psychology. Particular section content each semester is determined by the instructor. May be repeated for a maximum of 6 credit hours, provided the topics vary. Prereqs., PSYC 1001, 2606 and 3101. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Social

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## PSYC-4684 (3) Developmental Psychology

In-depth consideration of human developmental processes across the life span. Includes coverage of the major topics in human development, such as physical, cognitive, social, and personality development. Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only. Prereq., PSYC 1001. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Developmental

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## PSYC-4700 (3) Women and Mental Health

Examines mental health issues of women by focusing on theories of female personality development. Explores theory and research pertaining to women and psychopathology and to women as patients in traditional and nontraditional forms of treatment. Prereq., PSYC 2700, WMST 2000, or WMST 2700. Same as WMST 4700.

College of Arts & Sciences Psychology

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## PSYC-4713 (3) Survey of Clinical Psychology

Covers theories and practices relating to problems of ability and maladjustment. Diagnostic procedures and treatment methods with children and adults. Prereq., PSYC 3313 or 4303. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology Clinical

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## PSYC-4733 (4) Psychological Testing and Assessment

Provides an overview of issues central to testing and assessment of psychological constructs, including types of evaluation instruments currently in use in the field, their applications, and design. Prereqs., PSYC 1001 and 3101.

College of Arts & Sciences Psychology Clinical

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## PSYC-4740 (3) Biology of Amphibians and Reptiles

Focuses on comparative morphology, taxonomy, ecology, behavior, and geographic distribution of amphibians and reptiles. Prereqs., EBIO 1210, 1220, 1230, and 1240; or PSYC 1001, 2012. Same as PSYC 5740 and EBIO 4740.

College of Arts & Sciences Psychology

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## PSYC-4841 (1-6) Independent Study (Upper Division)

Pass/fail only. May be repeated up to 8 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Psychology (PSYC) majors only.

College of Arts & Sciences Psychology General

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## PSYC-4911 (3) Teaching of Psychology

Students receive concrete experience in teaching general psychology under supervision of a psychology faculty member. Alternative pedagogical strategies are discussed. Students must submit an application to the undergraduate advising center.

College of Arts & Sciences Psychology General

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## PSYC-4931 (3) Field Placement Internship

Offers valuable volunteer experience through a supervised field placement. Provides hands-on insight into the decisions and issues that confront professionals in psychology and related fields. Prereqs., completion of 15 or more hours of psychology course work. Restricted to psychology majors. Prerequisites: Restricted to Psychology majors only.

College of Arts & Sciences Psychology General

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## PSYC-5052 (4) Behavioral Neuroscience

PSYC 5052 and NRSC 5052 are the same course. Same as PSYC/NRSC 4052.

College of Arts & Sciences Psychology Biological

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## PSYC-5082 (2-3) Seminar: Biological Psychology

Special topics concerning biological bases of behavior. Prereqs., PSYC 4052 and instructor consent.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

PSYC

## PSYC-5102 (2) Behavioral Genetics

Instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Biological

## PSYC-5112 (3) Concepts in Behavioral Genetics

Examines selected topics in greater detail than is possible in the comprehensive undergraduate course in behavioral genetics (PSYC 3102). Topics covered may include inheritance of behavioral characteristics from perspectives of pharmacogenetics, transmission genetics, biochemical genetics, and evolutionary genetics. May be repeated up to 9 total credit hours. Instructor consent required.

College of Arts & Sciences Psychology Biological

## PSYC-5122 (3) Quantitative Genetics

Surveys principles of genetics of quantitative characteristics. Topics include gene frequencies, effects of mutation, migration, and selection. Also looks at correlations among relatives, heritability, inbreeding, crossbreeding, and selective breeding.

College of Arts & Sciences Psychology Biological

## PSYC-5145 (4) Advanced Cognitive Psychology

Instructor consent required. Same as PSYC 4145. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5175 (4) Computational Cognitive Neuroscience

Instructor consent required. Same as PSYC 4175. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5200 (3) Physiological Genetics and Genomics

Introduces genetic and genomic concepts as they apply to mammalian physiology. The course covers fundamental concepts and methods in molecular genetics and genomics and their applications towards understanding the role of genetics in the normal and pathological function of physiological systems. Same as IPHY 5200.

College of Arts & Sciences Psychology

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## PSYC-5232 (2) Molecular Genetics and Physiology

Covers fundamental mechanisms of gene action, including genome structure and regulation of gene expression. Discusses molecular techniques used to examine human genetic diseases. Emphasizes genetic diseases with behavioral, neurologic, and physiologic abnormalities. Prereq., IPHY/PSYC 5200 or instructor consent. Same as IPHY 5232.

College of Arts & Sciences Psychology Biological

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## PSYC-5242 (3) Biometrical Methods in Behavioral Genetics

Studies development of structural models appropriate to behavioral genetics and the estimation procedures necessary for their application. Instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Biological

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## PSYC-5262 (3) Mammalian Neuroanatomy

Covers microscopic anatomy and function of different brain regions. Emphasizes correlation between structure and function, particularly at cellular and synaptic level. Course includes brain dissection, description of neuroanatomical and neurohistological techniques, and an introduction to the ultrastructure of neurons. Prereqs., PSYC 4052 or NRSC 4052 or MCDB 4190, and instructor consent.

College of Arts & Sciences Psychology Biological

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## PSYC-5300 (3) Research in Psycholinguistics

After a general introduction to issues and research methods in psycholinguistics (language production and comprehension, language and cognition, language acquisition), several major current research topics, such as models of speech production, and theories of brain specialization for language, are explored. Prereq., instructor consent. Same as LING 5300.

College of Arts & Sciences Psychology

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## PSYC-5385 (3) Ethology and Comparative Psychology

Prereq., instructor consent. Same as Psyc 4385.

College of Arts & Sciences Psychology Experimental

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## PSYC-5423 (3) Research Problems in Clinical Psychology

Examines research issues relevant to the field of clinical psychology and mental health for the purpose of developing familiarity with substantive and methodological problems facing the field. Prereq., instructor consent.

College of Arts & Sciences Psychology Clinical

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## PSYC-5433 (3) Adult Psychopathology

Intensively surveys major theories, research findings, and behavioral characteristics associated with deviant reaction patterns. Prereq., instructor consent.

College of Arts & Sciences Psychology Clinical

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## PSYC-5453 (3) Developmental Psychopathology

Prereq., instructor consent. Restricted to graduate psychology majors. Prerequisites: Restricted to Psychology Graduate Students only.

College of Arts & Sciences Psychology Clinical

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## PSYC-5541 (1-6) Special Topics in Psychology

Same as PSYC 4541. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology General

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## PSYC-5606 (3) Proseminar: Social-Personality Psychology

Provides a thorough introduction to methods and theories in social psychology concerned with topics such as the self, social cognition, judgment and decision making, attitude formation and change, small group processes, inter-group relations, health and social psychology, and others. May be repeated up to 12 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Social

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## PSYC-5665 (2) Proseminar: Advanced Experimental Psychology

Provides an advanced and intensive survey to topics in experimental psychology. General areas are higher-level cognition, attention, and learning and memory. Meets seven weeks in the term. May be repeated up to 4 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5685 (2) Proseminar: Advanced Experimental Psychology

Provides an advanced and intensive survey of topics in experimental psychology. General areas are research methods in cognitive psychology, and low-level perception. Meets seven weeks in the term. May be repeated up to 4 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5695 (2) Proseminar: Memory

Provides beginning Ph.D. students with a basic introduction to (primarily human) memory research. This is one of the six Cognitive Psychology Proseminar modules that all students in the Cognitive Psychology Ph.D. program are required to take. The seminar will include consideration of theoretical, behavioral, and cognitive neuroscience perspectives on memory. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5740 (3) Biology of Amphibians and Reptiles

Same as PSYC 4740, EBIO 5740.

College of Arts & Sciences Psychology

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## PSYC-5741 (4) General Statistics

Surveys probability and statistics in psychology. Instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology General

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## PSYC-5751 (4) General Statistics

Continuation of PSYC 5741. Instructor consent required. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology General

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## PSYC-5815 (2) Proseminar: Advanced Experimental Psychology

Provides an advanced and intensive survey of topics in experimental psychology. General areas are language and high-level thinking. Meets seven weeks in the term. May be repeated up to 4 total credit hours. Prereq., instructor consent.

College of Arts & Sciences Psychology Experimental

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## PSYC-5825 (2) Proseminar: Executive Function

Provides beginning Ph.D. students with basic introduction to research on executive functions -- a set of general-purpose control processes regulate one's thoughts and behaviors. This is one of the six Cognitive Psychology Proseminar modules that all students in the Cognitive Psychology Ph.D. program are required to take. The seminar will include consideration of theoretical, behavioral, and cognitive neuroscience perspectives on executive function. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-5835 (2) Proseminar: Thinking

Provides beginning Ph.D. students with a basic introduction to research on complex human cognition. This is one of the six Cognitive Psychology Proseminar modules that all students in the Cognitive Psychology Ph.D. program are required to take. The seminar will include consideration of theoretical, behavioral, and cognitive neuroscience perspectives. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

PSYC

### PSYC-6200 (3) Issues and Methods in Cognitive Science

Same as CSCI 6402, EDUC 6504, LING 6200, PHIL 6310. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology

### PSYC-6606 (1) Professional Issues in Social Psychology

Covers a range of topics important for professional development in social psychology, including preparation and delivery of research presentations, preparation of grant proposals and manuscripts, and peer review of manuscripts. Intended to prepare students for careers as research scientists. May be repeated up to 6 total credit hours. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Social

### PSYC-6841 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prereq., graduate standing.

College of Arts & Sciences Psychology General

### PSYC-6911 (1-3) Research Practicum

College of Arts & Sciences Psychology General

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## PSYC-6941 (1) Master's Degree Candidate

May be repeated up to 7 total credit hours.

College of Arts & Sciences Psychology General

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## PSYC-6951 (1-6) Master's Thesis

May be repeated up to 7 total credit hours.

College of Arts & Sciences Psychology General

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## PSYC-7012 (1-3) Research in Behavioral Genetics

Individual research projects. May be repeated up to 7 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Biological

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## PSYC-7102 (2) Seminar: Behavioral Genetics

Intensive study of selected topics in behavioral genetics. Emphasizes recent research. Attention to both human and animal studies. May be repeated up to 8 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Biological

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## PSYC-7215 (3) Seminar: Experimental Psychology

Advanced seminar dealing with different specialized topics, at the discretion of the instructor, in different years. Topics chosen are within the broad range of experimental psychology. Instructor consent required. May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-7291 (3) Multivariate Analysis

Familiarizes students with scientific concepts, matrix theory, and computer techniques of multivariate analyses for psychological research. Topics include cluster and factor analysis, multiple regression, and discriminant functions. Emphasizes research technology rather than mathematical theory. Instructor consent required.

College of Arts & Sciences Psychology General

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## PSYC-7315 (2) Advanced Research Seminar on Human Memory

Addresses topics in the experimental psychology of human memory. Content varies from semester to semester, depending on interests of faculty and students. a sample topic is the long-term retention of skills. Prereq., graduate standing in psychology or related disciplines.

College of Arts & Sciences Psychology Experimental

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## PSYC-7415 (2) Cognitive Science Research Practicum

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint PhD in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., CSCI 6402 or EDUC 6504 or LING 6200 or PHIL 6310 or PSYC 6200. Recommended prereq., CSCI 7762 or EDUC 6505 or LING 7762 or PHIL 7310 or PSYC 7762. Same as LING 7415, CSCI 7412, PHIL 7415, and EDUC 6506. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-7425 (2) Cognitive Science Research Practicum 2

Independent, interdisciplinary research project in cognitive science for advanced graduate students pursuing a joint PhD in an approved core discipline and cognitive science. Research projects integrate at least two areas within the cognitive sciences: psychology, computer science, linguistics, education, philosophy. Students need commitments from two mentors for their project. Prereq., LING 7415 or PSYC 7415 or CSCI 7412 or EDUC 6506. Same as LING 7425, CSCI 7422, PHIL 7425, and EDUC 6516. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Experimental

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## PSYC-7503 (3) Developmental Child Clinical Assessment

Provides clinical psychology students with a theoretical understanding and skills to conduct a comprehensive review of psychological and developmental functioning. Includes assessment from a variety of sources and contexts, including testing. Prereq., PSYC 5453 and enrollment in the clinical psychology graduate program.

College of Arts & Sciences Psychology Clinical

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## PSYC-7536 (3) Personality and Social Psychology

Selected topics in the area of social-personality psychology. Students may register for more than one section of this course within the term and/or within their graduate career. These seminars may be on one of the following topics: stereotyping and person perception, social psychology and self, social psychology of problem behavior, health and social psychology, race and ethnic identity, or groups and small group organization. May be repeated up to 8 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Social

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## PSYC-7653 (3) Child Psychotherapy

The second semester in this year-long course builds upon concepts in PSYC 5453 to explore the theoretical and empirical bases for understanding child psychopathology and intervention. Prereq., PSYC 5453 and instructor consent.

College of Arts & Sciences Psychology Clinical

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## PSYC-7663 (1) Intellectual Assessment Laboratory

Practice administration of common intellectual tests. Prereq., instructor consent. Coreq., PSYC 7683. Restricted to clinical psychology graduate students. Prerequisites: Restricted to Psychology Graduate Students only.

College of Arts & Sciences Psychology Clinical

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## PSYC-7673 (3) Adult Psychotherapy

Discusses selected topics in the field of psychotherapy, including content consideration and pertinent research. Topics vary from semester to semester. Prereq., instructor consent.

College of Arts & Sciences Psychology Clinical

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## PSYC-7683 (1-3) Intellectual Assessment, with Practicum, in Clinical Psychology

Focuses on administering and interpreting objective test results commonly used in clinical psychology practice. Probable inventories used are MMPI, SCII, WISC, WAIS, plus other objective measures where relevant. Includes case study approach and direct clinical experience. May be repeated up to 8 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Clinical

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## PSYC-7693 (3) Personality Measurement

Covers theory and practice primarily in areas of individual personality testing. Involves intensive field work and report writing. Prereq., instructor consent.

College of Arts & Sciences Psychology Clinical

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## PSYC-7703 (3) Seminar: Clinical Psychology

Offers selected topics in the area of clinical psychology. May be repeated up to 12 total credit hours. Prereq., instructor consent.  
Prerequisites: Restricted to Psychology Graduate Students only.

College of Arts & Sciences Psychology Clinical

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## PSYC-7713 (1-3) Practicum in Clinical Psychology

Provides direct clinical experience for Phd candidates in clinical psychology only. May be repeated up to 18 total credit hours.  
Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Psychology Clinical

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## PSYC-7765 (1-2) Readings and Research in Cognitive Science

Interdisciplinary reading of innovative theories and methodologies of cognitive science. Participants share interdisciplinary perspectives through in-class and online discussion and analysis of controversial texts and of their own research in cognitive science. Required for joint PhD in cognitive science. Prereq., graduate standing. Same as CSCI 7762, EDUC 6505, and LING 7762.

College of Arts & Sciences Psychology Experimental

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## PSYC-7773 (3) Professional Issues and Ethics in Prevention and Intervention

Focuses on ideographic study of attitudes, values, and personality characteristics of individuals using data obtained from personal interviews. Covers theory and practice of various interviewing approaches. Open to PhD candidates in clinical psychology only.

College of Arts & Sciences Psychology Clinical

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## PSYC-7775 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the LCS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in LCS Cognitive Science Academic Programs. Same as LING 7775, CSCI 7772, EDUC 7775, SLHS 7775, and PHIL 7810.

College of Arts & Sciences Psychology Experimental



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

PSYC

## PSYC-8991 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.

[College of Arts & Sciences](#) [Psychology](#) [General](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

REAL

## REAL-3000 (3) Principles of Real Estate

Introduction to real estate as an asset with associated property rights, an industry, profession, and investment. Covers a broad spectrum of real estate principles and terms including legal concepts, regulation and land use, industry issues, valuation, financing methods and sources, and investment analysis. Excellent elective for all students and provides the foundation for other real estate courses. Prereq., BCOR 1010, 1020, 2000, 2200, and 52 hours completed. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Real Estate](#)

## REAL-4000 (3) Real Estate Law

Building upon the legal concepts and issues introduced in REAL 3000, the course provides a deeper study of the laws and legal issues impacting and governing real property rights and interests including the acquisition, ownership, possession, use and transfer of real property. Incorporates both a lecture and case study approach fostering regular classroom discussions. Prereq., REAL 3000. Prerequisites: Restricted to Business majors with 52-180 units completed.

[Leeds School of Business](#) | [Real Estate](#)

## REAL-4100 (3) Real Estate Finance and Investment Analysis

Covers: 1) traditional and alternative financing of residential and commercial real estate; 2) pro forma cash flows and valuation of income generating properties; 3) real estate decisions of non-real estate corporations; and 4) mortgage backed securities and real estate investment trusts (REITs). Prereq., REAL 3000. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Leeds School of Business (BUSN) majors only.

[Leeds School of Business](#) | [Real Estate](#)

## REAL-4810 (3) Real Estate Internship

As the capstone course for the Real Estate Certificate program, students complete approximately 150 internship hours with a real estate company over the semester (approximately 10 hours per week). The class will meet biweekly and focus on career options and opportunities in real estate. Contact the Real Estate Center for internship and registration information.

Leeds School of Business | Real Estate

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## REAL-4820 (3) Topics: Real Estate Development

Surveys the process of real estate development with a focus on the market analysis, urban dynamics and financing. Students will understand the complexities of the development process as it creates the communities in which we live and the many roles the student can play as a real estate professional. Prereq., REAL 3000. Prerequisites: Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Real Estate

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## REAL-4825 (3) Experimental Seminar

Offered irregularly to provide opportunity for investigation of new frontiers in Real Estate. Restricted to juniors/seniors.

Leeds School of Business | Real Estate

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## REAL-4900 (1-3) Independent Study

Intended for exceptionally well-qualified business seniors who desire to study an advanced topic. Must be in Real Estate Certificate Program. Prereq., dean and instructor consent.

Leeds School of Business | Real Estate

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## REAL-6820 (3-6) Graduate Seminar

Experimental seminar offered irregularly to provide opportunity for investigation of new frontiers in real estate.

Leeds School of Business | Real Estate

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## REAL-6900 (1-3) Independent Study

Students must have consent of instructor under whose direction study is taken. Departmental form required.

Leeds School of Business | Real Estate



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

RLST

## RLST-1620 (3) Religious Dimension in Human Experience

Studies religion as individual experience and social phenomenon. Examines varieties of religious language (symbol, myth, ritual, scripture) and of religious experience (Asian, Western, archaic). Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Religious Studies

## RLST-1850 (3) Ritual and Media

Ritual continues to play an important role in contemporary societies in both religious and secular contexts. This course examines the elements and genres of ritual activity from African rites of passage to the Beijing Olympics, paying close attention to how the media documents, appropriates and transforms aspects of ritual. Approved for arts and sciences core curriculum: Contemporary Societies.

College of Arts & Sciences Religious Studies

## RLST-2400 (3) Religion and Contemporary Society

Studies the nature of contemporary American society from various theoretical perspectives in religious studies. Gives attention to the impact of secularization and to the religious elements found in aspects of secular life (e.g., politics, literature, education, and recreation). Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Religious Studies

## RLST-2500 (3) Religions in the United States

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Explores the development of various religions within the shaping influences of American culture, including separation of church and state, the frontier experience, civil religion, and the interaction of religions of indigenous peoples, immigrants, and African Americans. Approved for arts and sciences core curriculum: United States context or ideals and values.

College of Arts & Sciences Religious Studies

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## RLST-2600 (3) Judaism, Christianity, and Islam

Introduces literature, beliefs, practices, and institutions of Judaism, Christianity, and Islam, in historical perspective. Same as JWST 2600. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Religious Studies

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## RLST-2610 (3) Religions of South Asia

Introduces the literature, beliefs, practices, and institutions of Hinduism, Buddhism, Jainism, and Sikhism, in historical perspective. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Religious Studies

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## RLST-2620 (3) Religions of East Asia

Introduces literature, beliefs, practices, and institutions of Taoism, Confucianism, Buddhism, and Shintoism in historical perspective. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Religious Studies

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## RLST-2700 (3) American Indian Religious Traditions

Introduces religions of the peoples indigenous to the Americas. Concerns include ritual, mythology, and symbolism occurring throughout these cultures in such areas as art, architecture, cosmology, shamanism, sustenance modes, trade, and history. Same as ETHN 2703. Approved for arts and sciences core curriculum: ideals and values or human diversity.

College of Arts & Sciences Religious Studies

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## RLST-2800 (3) Women and Religion

Examines roles of women in a variety of religious traditions including Judaism, Christianity, Hinduism, Buddhism, and goddess traditions. Same as WMST 2800. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Religious Studies

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## RLST-2840 (1-3) Independent Study

May be repeated up to 8 total credit hours.

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College of Arts & Sciences Religious Studies

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## RLST-3000 (3) Christian Traditions

Studies origins and development of various aspects of Christian tradition as expressed through scripture, theology, ritual, church order, ethics, and the arts. Approved for arts and sciences core curriculum: historical context.

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College of Arts & Sciences Religious Studies

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## RLST-3010 (3) Religion and the Senses

Expanding the five common senses so they are grounded on a more fundamental kinesthetic sense, that is, sense of movement, this course focuses on the study of religion and culture on all those marvelous richly and sensuously textured aspects of religious behavior: movement, experience, feeling, action, sensation, gesture, art, music, dancing, architecture, costume, food, and ritual.

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College of Arts & Sciences Religious Studies

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## RLST-3020 (3) Advanced Writing in Religious Studies

Seminar for religious studies majors that emphasizes the development of writing skills for use inside as well as outside the academy. Writing assignments are focused on one or more core topics in religious studies. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Religious Studies (RLST) majors only.

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College of Arts & Sciences Religious Studies

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## RLST-3050 (3) Religion and Literature in America

Studies religious dimensions of American culture through representative literature, beginning with the Puritans and focusing on diversity in the 19th and 20th centuries. Approved for arts and sciences core curriculum: United States context.

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College of Arts & Sciences Religious Studies

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## RLST-3100 (3) Judaism

Explores Jewish religious experience and its expression in thought, ritual, ethics, and social institutions. Same as JWST 3100. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Religious Studies

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## RLST-3200 (3) Hinduism

Studies literature, beliefs, practices, and institutions of Hinduism, in historical perspective.

College of Arts & Sciences Religious Studies

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## RLST-3300 (3) Foundations of Buddhism

Introduction to Buddhist thought and practice in the variety of its historical and cultural contexts. The course begins with an exploration of narrative, cosmology, doctrine and ritual in early Buddhism and the Theravada of South and Southeast Asia. Through case studies, we then trace diverse conceptions of the Buddhist path in Tibet and East Asia where the Mahayana spread. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Religious Studies

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## RLST-3400 (3) Japanese Religions

Studies the literature, beliefs, practices, and institutions of Shinto, Buddhism, and Confucianism within the development of Japanese culture.

College of Arts & Sciences Religious Studies

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## RLST-3600 (3) Islam

Introduces Islamic beliefs and practices through an examination of the Qur'an, Muhammad's life, ritual duties, law and theology, mysticism, and social institutions.

College of Arts & Sciences Religious Studies

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## RLST-3800 (3) Chinese Religions

Studies classical Confucianism, Taoism, Buddhism, and Neo-Confucianism within the historical context of Chinese culture.

College of Arts & Sciences Religious Studies

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## RLST-3820 (3) Topics in Religious Studies

Intensive study of a selected area or problem in religious studies. May be repeated up to 9 total credit hours as topics change.

Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Religious Studies

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## RLST-3838 (3) Dancing, Religion, and Culture

A critical examination of the received cultural, religious, and academic understandings of dancing and the body; the construction of a richer theory of dancing that will more adequately support comparative studies; the study of dancing in cultures and religions in a diverse representation of cultures; and a more in depth social study of Latin American dancing including actual dancing experience.

College of Arts & Sciences Religious Studies

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## RLST-4030 (3) Religions in America

Studies various religious movements in the U.S. and other parts of the Americas. Includes American religion and religions, religion and nationalism, revitalization and religion, and Asian religions in America. May be repeated up to 9 total credit hours within a term as topics change. Prereq., 6 hours RLST or instructor consent. Same as RLST 5030.

College of Arts & Sciences Religious Studies

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## RLST-4050 (3) Topics in Christian Studies

Studies a particular topic in Christian theology and culture such as early Christianity, medieval Christianity, Christianity in the United States, women and Christianity, liberation theologies, Christianity and literature, and modern Christian thought. Maybe repeated up to 9 total credit hours as topics change. Prereqs., 6 hours of RLST courses at any level or instructor consent. Same as RLST 5050.

College of Arts & Sciences Religious Studies

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## RLST-4200 (3) Topics in Hinduism

Examines in depth central themes, schools of thought, and movements in Hinduism, such as myth and ritual, renunciation, Vedanta, and 19th century Renaissance. May be repeated up to 9 total credit hours as topics change. Prereqs., 6 hours of RLST courses at any level or instructor consent. Same as RLST 5200. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Religious Studies

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

RLST

## RLST-4250 (3) Topics in Buddhism

Examines in depth central themes, schools of thought, and movements in Buddhism, such as Theravada in Southeast Asia, Mahayana and Tantrayana thought, Zen, and Buddhism in America. May be repeated up to 9 total credit hours as topics change. Prereqs., 6 hours of RLST courses at any level including RLST 3300 or instructor consent. Same as RLST 5250. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Religious Studies](#)

## RLST-4260 (3) Topics in Judaism

Examines in depth central themes, schools of thought, and movements in Judaism across a range of historical periods. May be repeated up to 9 total credit hours as topics change. Recommended prereqs., 6 hours of RLST courses at any level including RLST/JWST 3100, RLST/JWST 2600, HIST/JWST 1108 or HEBR/JWST 2350 or instructor consent. RLST 4260, JWST 4260, and 5260 are the same course.

[College of Arts & Sciences](#) [Religious Studies](#)

## RLST-4300 (3) Topics in Native American Religions

Examines a topic (varies at different offerings) focusing on religions of peoples indigenous to the Americas. May consider mythology; shamanism and medicine; trickster, clown, and fool; and crisis cult movements. May be repeated up to 9 total credit hours as topics change. Prereqs., RLST 2700 and 3 additional credit hours of RLST course work or instructor consent. Same as RLST 5300.

[College of Arts & Sciences](#) [Religious Studies](#)

## RLST-4450 (3) Religion and Nonviolence

Studies theories of nonviolence developed by major thinkers and movements, especially in the U.S., in the context of their religious commitments and beliefs and their historical circumstances.

College of Arts & Sciences Religious Studies

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## RLST-4650 (3) Islam in the Modern World

Globally surveys Islam, covering religion and politics; Islam and the West; the Islamic revival and its varied forms in Iran, Indonesia, Libya, and Pakistan; development and change; the status of women; and media and academic stereotyping. Prereq., 6 credit hours of religious studies at any level or instructor consent. Same as RLST 5650.

College of Arts & Sciences Religious Studies

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## RLST-4750 (3) Daoism

Detailed examination of the history and current state of Daoism, China's indigenous organized religion. Focusing on its origins and development, ethnical teachings, ritual activities, and world view. Topics created include the relationship of Daoism to popular religion, the practice of alchemy and self cultivation, beliefs concerning death and the afterlife, and the structure of the Daoist pantheon. Prereq., RLST 3800 or instructor consent. Same as RLST 5750 and CHIN 4750.

College of Arts & Sciences Religious Studies

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## RLST-4800 (3) Critical Studies in Religion

Focuses on a current issue or area of research in the study of religion. Students analyze the way theories develop and learn to develop their own critical analysis. Topics vary, e.g., comparative kingship, colonialism, ritual theories, feminist analysis. May be repeated up to 6 total credit hours. Restricted to RLST majors. Prerequisites: Restricted to Religious Studies Majors only.

College of Arts & Sciences Religious Studies

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## RLST-4810 (3) Honors Thesis

Students write an honors thesis based on independent research under the direction of a faculty member. Required for students who elect departmental honors.

College of Arts & Sciences Religious Studies

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## RLST-4820 (3) Interdisciplinary Seminar on Religion: Topics

Variable topics in religion, drawing from a variety of disciplines and methodologies as they shed light on specific traditions and issues.

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May be repeated up to 9 total credit hours as topics change. Prereq., 6 credit hours of religious studies at any level or instructor consent. Same as RLST 5820. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Religious Studies

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## RLST-4830 (3) Senior Majors Seminar

Topics and instructors vary. Brings advanced majors together in order to focus their major experience on significant topics and issues of common interest. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior).

College of Arts & Sciences Religious Studies

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## RLST-4840 (1-6) Senior Independent Study

May be repeated up to 8 total credit hours.

College of Arts & Sciences Religious Studies

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## RLST-5030 (3) Religions in America

Same as RLST 4030 Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

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## RLST-5050 (3) Topics in Christian Studies

Same as RLST 4050.

College of Arts & Sciences Religious Studies

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## RLST-5200 (3) Topics in Hinduism

Same as RLST 4200.

College of Arts & Sciences Religious Studies

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## RLST-5210 (3) Advanced Readings in Sanskrit

This is an advanced Sanskrit reading course, requiring at least two years of prior Sanskrit training. Students will read texts in the original. Class time is devoted to parsing out difficult grammatical structures, discussing the philosophical import of the readings and addressing

the historical contexts that assist in interpreting the texts. The topic varies according to student interest. Prereq., SNSK 2120 or 2 years of Sanskrit training.

College of Arts & Sciences Religious Studies

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## RLST-5250 (3) Topics in Buddhism

Same as RLST 4250. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

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## RLST-5260 (3) Topics in Judaism

Examines in depth central themes, schools of thought, and movements in Judaism across a range of historical periods. May be repeated up to 9 total credit hours as topics change. Recommended prereqs., 6 hours of RLST courses at any level including RLST/JWST 3100, RLST/JWST 2600, HIST/JWST 1108 or HEBR/JWST 2350 or instructor consent. RLST 4260, JWST 4260, and 5260 are the same course. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

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## RLST-5300 (3) Topics in Native American Religions

Same as RLST 4300.

College of Arts & Sciences Religious Studies

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## RLST-5350 (3) Native American Religions: Regional Studies

Same as RLST 4350.

College of Arts & Sciences Religious Studies

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## RLST-5650 (3) Islam in the Modern World

Same as RLST 4650.

College of Arts & Sciences Religious Studies

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## RLST-5750 (3) Daoism

Restricted to graduate students. Same as RLST 4750 and CHIN 5750.

College of Arts & Sciences Religious Studies

## RLST-5820 (3) Interdisciplinary Seminar on Religion

Same as RLST 4820. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

## RLST-5840 (1-6) Independent Study

May be repeated up to 8 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

## RLST-6830 (3) Introduction to the Academic Study of Religion

Introduction to the graduate academic study of religion through the exploration of contemporary models and issues that demonstrate the nature and future of the field. Each student will prepare a profile of his/her intended area of research. Restricted to Religious Studies graduate students. Prerequisites: Restricted to Religious Studies graduate students only.

College of Arts & Sciences Religious Studies

## RLST-6840 (1-6) Independent Study

May be repeated up to 8 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Religious Studies

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# Courses

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RLST

## RLST-6940 (1) Master's Degree Candidate

[College of Arts & Sciences](#)
[Religious Studies](#)

## RLST-6945 (1-4) Directed Readings: Non-Thesis Option

Course work finished or in the last semester. May be repeated up to 4 total credit hours.

[College of Arts & Sciences](#)
[Religious Studies](#)

## RLST-6950 (1-4) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Religious Studies](#)



# Courses

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RSEI

## RSEI-5000 (3) Energy Science and Technology

Examines the basics of energy science and technology. Covers both conventional energy sources such as oil, natural gas, coal, nuclear and hydroelectric; and renewable/sustainable energy technologies including wind, solar, biomass, geothermal, and end-use efficiency. Investigates the technological promise and progress of each technology, as well as its limitations and challenges. Prerequisites: Restricted to Graduate Students only.

[Cross College Programs](#) | [Renewable and Sustainable Energy Institute](#)

## RSEI-5001 (3) Renewable Energy Policy

Examines the technology, policy and politics of renewables. Technology includes the resource, science, and engineering aspects of renewables. Policy includes various policy levers used to influence renewables. Politics refers to political settings of renewables: how decision-makers perceive them, who supports/opposes policies, and how policies progress through the political process. Prereq., an introductory energy science and technology course. Prerequisites: Restricted to Graduate Students only.

[Cross College Programs](#) | [Renewable and Sustainable Energy Institute](#)

## RSEI-5002 (3) The Business of Renewable Energy

Addresses the business of renewable energy, including opportunities and challenges with renewable electricity, renewable transportation fuels, and energy efficiency. Topics include energy markets, opportunity identification, life cycle analysis, economic analysis, policy impacts, and project financing of sustainable renewable energy business models. Prereqs., RSEI 5000 and 5001. Prerequisites: Restricted to Graduate Students only.

[Cross College Programs](#) | [Renewable and Sustainable Energy Institute](#)

## RSEI-5100 (1) Renewable and Sustainable Energy Seminar

Examines a wide range of energy issues in seminar format. Students attend energy-related seminars and critique/evaluate the presented material. Open to graduate students from all disciplines. Prerequisites: Restricted to Graduate Students only.

[Cross College Programs](#) | [Renewable and Sustainable Energy Institute](#)

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## RSEI-5200 (3) Energy Topics Course

Covers timely topics related to renewable and sustainable energy. Specific offerings vary by semester. Prerequisites: Restricted to Graduate Students only.

[Cross College Programs](#) | [Renewable and Sustainable Energy Institute](#)

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## Courses

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RUSS

### [RUSS-1010 \(4\) Beginning Russian 1](#)

For students with no previous training in Russian. Credit not granted for this course and RUSS 1050.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian](#)

### [RUSS-1020 \(4\) Beginning Russian 2](#)

Continuation of RUSS 1010. Prereq., RUSS 1010 (min grade of C-). Credit not granted for this course and RUSS 1050.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian](#)

### [RUSS-1050 \(5\) Intensive Beginning Russian](#)

Covers same material as RUSS 1010 and RUSS 1020 combined in one course. Focuses on acquiring basic grammar (all cases for nouns, adjectives and possessives, verb conjugations, in all three tenses), and ability to understand and speak basic everyday Russian. Develops basic reading and writing skills and provides exposure to the fundamentals of the Russian culture. Credit not granted for this course and RUSS 1010 or 1020.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian](#)

### [RUSS-1900 \(1-6\) Independent Study](#)

May be repeated up to 6 total credit hours.

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College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-2010 (4) Second-Year Russian 1

Review and continuation of basic skills learned in the first year: reading, writing, speaking, and oral comprehension. Prereq., RUSS 1020 or 1050 (min grade C-). Meets Maps requirement for foreign language. Satisfies arts and sciences language requirement.

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College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-2020 (4) Second-Year Russian 2

Continuation of RUSS 2010. Prereq., RUSS 2010 (min grade of C-).

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College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-2211 (3) Introduction to Russian Culture

Provides a chronological overview of civilization in the area now known as Russia, from its beginnings to the end of the Romanov dynasty, paying particular attention to the geographic, social, artistic, economic, and political forces that have combined to give the Russian people and their culture their unique characteristics. Taught in English. Approved for arts and sciences core curriculum: historical context.

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College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-2221 (3) Introduction to Modern Russian Culture

Introduces students to major trends in Russian culture from the 1890's to the present, through the study of literature, art, architecture, music, journalism and film in an historical context. Addresses such questions as: how have past events affected Russian society? How can we use knowledge about Russia's past to understand social and cultural forces today? Taught in English. Approved for arts and sciences core curriculum: historical context.

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College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-2231 (3) Fairy Tales of Russia

Provides a general introduction to fairy tales including various theoretical approaches to classifying and interpreting them; introduces students to a wide selection of Russian folk and fairy tales. Examines the cultural, social and political values they reflect, as well as the continuing influence of fairy tales and folk beliefs in Russian literature, music, folk art, and film, as well as in the political propaganda of the 20th century. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

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## RUSS-2471 (3) Women in Russian Culture: From Folklore to the Nineteenth Century

Explores the changing role and cultural images of women as reflected in Russian folklore, medieval documents, and literature (fiction and non-fiction) of the 10th--19th centuries. Focuses on the construction of gender in traditional (patriarchal) Russian culture and on the strategies of women's resistance to the political, social and cultural implications of gender stereotypes. Although the course includes works of Russian women and men alike, it intends to revise the canon of Russian culture by reading them through the prism of the gender issues of their times. Taught in English. Approved for arts and sciences core curriculum: historical context.

## RUSS-2501 (3) Russia Today

Introduces students to post-communist Russia, its values and ideologies. It is equally wrong to interpret post-Soviet society through the prism of the Cold War as through the models of contemporary post-industrial capitalism. Neither totalitarian nor liberal, contemporary Russia raises numerous questions about such ideological and cultural constructions as neo-liberalism and capitalism, nationalism, globalization, state power, and popular vs. high cultures. Taught in English. Approved for arts and sciences core curriculum: contemporary societies.

## RUSS-3000 (3) Advanced Conversation

Enables students to speak and understand contemporary Russian. Discussion topics and source materials vary. May be repeated up to 6 total credit hours. Prereq., RUSS 2010.

## RUSS-3010 (3) Third-Year Russian 1

Review of Russian grammar coordinated with reading, speaking, writing, and understanding modern Russian. Uses some texts from modern Russian literature. Prereq., RUSS 2020.

## RUSS-3020 (3) Third-Year Russian 2

Continuation of RUSS 3010. Prereq., RUSS 3010.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-3050 (3) Business Russian

Studies general commercial practices, vocabulary, and terminology applied in various business transactions. Emphasizes oral and written communication and correspondence. Prereq., RUSS 2020 or instructor consent.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-3060 (3) Advanced Russian for Heritage Speakers (Part 1)

Enhances heritage student competence and performance in Russian language. The course offers intensive review of Russian grammar and focuses on developing advanced reading, writing and translation skills. Readings are selected from a wide range of contemporary writings that reflect current issues in Russia. Credit not granted for this course and RUSS 4010.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-3211 (3) History of Russian Cinema

Surveys Russian cinema in historical and cultural context from early 20th century to the present. Taught in English. Prereq., RUSS 2221 or FILM 1502. Same as FILM 3211. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-3231 (3) Laughter in Slavic Cultures

Examines forms, genres and social functions of laughter in Slavic cultures (Russian, Polish, Czech, Serbian, and others). Analysis of the carnivalesque, grotesque, and irony in the works of Gogol, Chapek, Hashek, Lem, Kundera, Gombrowicz, Kharms, Zoshchenko, Ilf and Petrov, Kusturica, Kieslewsky, and other authors; also provides an introduction to literature and film of Eastern Europe. Taught in English.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-3301 (3) Contemporary Issues in Russian Film

Examines the relationship between politics, economics, aesthetics, and the way moral and social issues are treated in noteworthy Russian films of the last 20 years. Taught in English. Same as FILM 3301.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-3601 (3) Russian Culture Past and Present

Russian culture from the ninth century to the present. Focuses on interdisciplinary exploration of literature, folklore, art, architecture, and music through study in St. Petersburg. Offered abroad only. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-3701 (3) Slavic Folk Culture: Ideals and Values in the Contemporary World

Explores contemporary Slavic and American folk practices and investigates the possible origins and consequences of such practices. Focuses upon the value systems these practices represent, and ways that core values help to define identities and cultures. Topics include folk religion, magic, healing, life cycle and calendar rituals and folk music. Taught in English. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-3900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-3930 (1-6) Russian Internship

Provides an academically supervised opportunity for upper-division students to earn credit while working for public or private organizations. Students apply skills and knowledge earned in the major, and supplement their work experience through directed readings and assignments. May be repeated up to 6 total credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Russian (RUSS) majors only.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-4010 (3) Advanced Conversation and Composition 1

Prereq., RUSS 3020. Credit not granted for this course and RUSS 3060.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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# RUSS-4020 (3) Advanced Conversation and Composition 2

Prereq., RUSS 4010. Credit not granted for this course and RUSS 4060.

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# Courses

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RUSS

## RUSS-4060 (3) Advanced Russian for Heritage Speakers (Part 2)

Enhances heritage student competence and performance in Russian language. The course offers intensive review of Russian grammar and focuses on developing advanced reading, writing and translation skills. Readings are selected from a wide range of contemporary writings that reflect current issues in Russia. Recommended prereq., RUSS 3060, 4010 or equivalent. Credit not granted for this course and RUSS 4020.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Russian](#)

## RUSS-4210 (1-3) Topics in Russian Culture

Selected topics in Russian literature, film, art, and music. May be repeated up to 9 total credit hours when topic varies. Taught in English.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Russian](#)

## RUSS-4221 (3) Cultural Mythologies of Russian Communism

Investigates how cultural and ideological myths such as those of the great leader, utopian future, new man, hero, "enemies of the people", and some others were produced in Soviet Russia from the 1920's to the 1950's; what general mechanisms of cultural production in the age of modernity do they reveal. Taught in English. Recommended prereqs., RUSS 4821, 2221, 2211. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Russian Courses Taught in Engl](#)

## RUSS-4230 (3) Russian Cultural Idioms

Focuses on the critical analysis of the Russian cultural discourse through Russian idioms. Taught in Russian. Prereq., RUSS 2020 or instructor consent. Same as GSLL 5230.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian

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## RUSS-4301 (3) American-Russian Cultural Relations

Surveys the development of American-Russian cultural relations from the second half of the 18th century to the present. Examines the character and significance of Russian-American relations in social, intellectual, artistic, and other spheres from a comparative perspective. Taught in English. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: historical context or U.S. context. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4421 (3) Gogol

Explores major fictional and dramatic texts of great Russian writer Nikolai Vasil'evich Gogol (1809-52) -- "The strangest prose-poet Russia ever produced" (Nabokov). Works will be analyzed in the context of Western and Russian Romanticism. Relevant nonfiction texts will also be introduced when appropriate. Class will be run largely as group discussion, with necessary historical and critical background provided. Taught in English. Same as GSLL 5421.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4431 (3) Dostoevsky

Focuses on close reading of major novels and other works by Dostoevsky, one of the most important psychological novelists in modern literature, a profound religious thinker, and the greatest crime novelist in the world. Taught in English. Same as GSLL 5431.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4441 (3) Tolstoy

Examines the development of Tolstoy's thought and literary style through study of the novel War and Peace and short works from different periods of Tolstoy's writing. Taught in English. Recommended prereq., some experience with college-level expository writing. Same as GSLL 5441.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4451 (3) Chekhov

Analyzes the life and creative works of the author of some of the funniest and some of the gloomiest stories in Russian literature. Examines Chekhov's major plays that laid the foundation for modernist theatre. Taught in English. Same as GSSL 5451.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4471 (3) Women in 20th Century Russian Culture

Acquaints students with major issues concerning women in 20th century Russian culture. Examines sources from folk culture, popular culture, and high culture (poetry, prose, songs, tales, visual art, and cinema) that mythologize or question women's images and societal roles. All texts and films are offered in English translation. Taught in English. Recommended prereq., course(s) in literature or film studies, and upper-division writing courses. Same as WMST 4471 and GSSL 5471. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4811 (3) 19th Century Russian Literature

Surveys background of Russian literature from 1800 to 1900. Russian writers and literary problems in the 19th century emphasizing major authors: Pushkin, Lermontov, Gogol, Dostoevsky, Turgenev, Tolstoy, and Chekhov. Taught in English. Same as HUMN 4811. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4821 (3) 20th Century Russian Literature and Art

Interdisciplinary course emphasizing the influence of art in 20th century Russian literature. Follows the changing cultural landscape from the time when Russia was in the vanguard of modern European literature to the gradual cultural relaxation that culminated in Perestroika and Glasnost. Taught in English. Same as HUMN 4821. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4831 (3) Contemporary Russian Literature

Acquaints students with the most representative works of Russian writers from the 1960s to the present in a broad historical and political perspective. Examines the relationships between ideological concepts and aesthetics, and the treatment of moral and social issues in recent literary works. All readings are provided in translation. Taught in English. Recommended prereq., lower level literature course. Approved for arts and sciences core curriculum: literature and the arts or contemporary societies.

College of Arts & Sciences Germanic & Slavic Languages & Literature Russian Courses Taught in Engl

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## RUSS-4851 (3) Critical Thinking: Russian Film and Society

Through structured discussions, selected readings, and written assignments, examines topics in Russian film from socio-historical and cultural studies perspectives. Identification and critical analysis of concepts and assumptions underlying differing cinematic approaches to controversial topics. Taught in English. Prereqs., RUSS 2221 or RUSS/FILM 3301 and RUSS 3010 or equivalent. Same as GSSL 5851.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian Courses Taught in Engl](#)

## RUSS-4861 (3) Absurd and Supernatural in Russian Literature

Studies themes of grotesque, bizarre, surreal, absurd, supernatural, and fantastic in Russian short stories and novels of the 19th and 20th centuries. Discusses works by Pushkin, Gogol, Dostoevsky, Kharms, Bulgakov, Siniavskii, Petrushevskaja, and Pelevin, within contexts of Russian folklore, Freud and Jung's interpretations of jokes and dreams, and Romanticism. Taught in English. Recommended prereq., one upper division humanities course. Same as GSSL 5861.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian Courses Taught in Engl](#)

## RUSS-4900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Russian](#)

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SCAN

## SCAN-1202 (3) Tolkien's Nordic Sources and the Lord of the Rings

Examines the Nordic aspect of J.R.R. Tolkien's work, especially The Lord of the Rings. The course concentrates on the Nordic saga tradition, mythology, folklore and fairy tales Tolkien used as his sources. Students will explore the transformations of these sources from prehistoric times to contemporary cinematic adaptations, while paying special attention to cultural appropriations, national revisions, and political alterations. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Nordic Study Course English](#)

## SCAN-1900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Nordic Study Course English](#)

## SCAN-2201 (3) Introduction to Modern Nordic Culture and Society

Provides a comprehensive introduction to modern Nordic culture and society. Surveys the history of Nordic countries and examines their culture using art, architecture, literature, and film. Studies social issues, environmental concerns, and political patterns. In profiling aspects of culture and society unique to Nordic countries, students arrive at a conception of a collective Nordic identity. Taught in English. Approved for arts and sciences core curriculum: contemporary societies.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Nordic Study Course English](#)

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## SCAN-2202 (3) The Vikings

Examines the social, cultural, technological, and artistic backgrounds of the Viking experience, charting the history of the period both within the Nordic region and Europe as well as North America. Additionally, looks at some of the lasting influences of the Vikings on Western civilization. Taught in English. Approved for arts and sciences core curriculum: historical context.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-2900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3020 (3) Advanced Readings in Scandinavian

Develops the type of advanced reading knowledge of the four closely related Scandinavian languages (Swedish, Danish, and the two Norwegian standards) that will prepare students for their senior thesis, and for possible graduate work. Readings will help students see relationships and connections operating across national and linguistic borders within the Nordic region. Prereqs., NORW/SWED 2120 and NORW/SWED 3900 for 3 credits.

College of Arts & Sciences Germanic & Slavic Languages & Literature Norwegian

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## SCAN-3201 (3) Contemporary Nordic Society and Culture

Explores contemporary Nordic culture and society with special focus on Iceland. Emphasis is on the relationship between historical, geographic, artistic, and political forces in Iceland and their effects on culture and society. Provides insight into the life and attitudes of contemporary Icelanders and stresses their place in the global culture of today. Taught in English. Recommended prereq., SCAN 2201. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3202 (3) Old Norse Mythology

Surveys the mythology and heathen cult practices of the Old Norse world. Students learn to read mythological texts and study the major gods (Odin, Thor, Frey and Freyja, among others), along with other mythological beings. The course examines and evaluates evidence for beliefs and cult practices in texts, art, archeological finds, and other sources. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3203 (3) 19th & 20th Century Nordic Literature

Examines the Nordic region's influence on social realism, expressionism, and postwar literature, including such themes as women in society, nature and industrialization, and identity and angst. May include works by Ibsen, Strindberg, Dinesen, and Nobel Prize winners Lagerlof, Hamsun, Undset, and Lagerkvist. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3204 (3) Medieval Icelandic Sagas

Advanced introduction to medieval Icelandic saga with readings in the family, outlaw, skald, and legendary sagas as well as the main scholarly approaches to this unique literature. Topics include honor, blood feud, fate, sexuality/gender, oral composition, and legend. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3205 (3) Scandinavian Folk Narrative

Introduces the rich tradition of Scandinavian oral narrative. Looks at relationships between the various genres of oral narrative and their historical, social, and cultural contexts. Genres studied may include ballad, fairy tale, rural legend, and urban legend. Explores various interpretive methodologies. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3206 (3) Nordic Colonialisms

Examines Nordic colonial enterprise and the relationship between the Scandinavian center and colonial peripheries from the Arctic to the Caribbean, Africa, and India. Studies colonial and postcolonial cultures, and postcolonial criticism and theory. Taught in English. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3208 (3) Women in Nordic Society: Modern States of Welfare

Examines the role and status of women and marginalized social classes in the Nordic countries, whose societies have been heralded as egalitarian models since the twentieth century. Texts include a variety of media, from literature to sociological works to artifacts of political and popular culture. Taught in English. Same as WMST 3208. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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## SCAN-3209 (3) Contemporary Nordic Literature and Film

Advanced introduction to contemporary Nordic literature and film. Readings/screenings of recent translated Nordic texts and films, presenting a broad spectrum of contemporary issues, along with current critique and theoretical approaches. Topics: history, culture, translation, gender/sexuality, nationalidentity, minority issues, etc. Taught in English.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

## SCAN-3506 (3) Scandinavian Drama

Examines the many contributions of Scandinavian dramatists to world theater from the 18th century to the present. With emphasis on Holberg, Bjornson, Ibsen, Strindberg, and Bjorneboe, surveys Enlightenment comedy, national romanticism, realism, naturalism, symbolism, expressionism, and Brechtian epic theater. Taught in English. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

## SCAN-3900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Nordic Study Course English

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# Courses

Search by College, Department & Category

**College/School**

All

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SEWL

## SEWL-1020 (1-3) Topics-Social Sciences 1

[College of Arts & Sciences](#) [Sewall Residential Academic Program](#)

## SEWL-2000 (3) America, the Environment, and the Global Economy

Examines the debate over globalization and the global environmental crisis. Does increasing global economic development threaten to undermine the environment? What role should America play in the development of a sustainable economy? Credit not granted for this course and SOCY 1002. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#) [Sewall Residential Academic Program](#)

## SEWL-2020 (1) Civic Engagement

Explores the concept of citizenship and develops students' leadership skills through discussions and service-learning. Working with Sewall faculty mentors, students discuss citizenship and related topics and learn concretely about aspects of the larger community by choosing a local community organization, becoming actively involved in its programs, and presenting their work at a culminating symposium. May be repeated up to 4 total credit hours.

[College of Arts & Sciences](#) [Sewall Residential Academic Program](#)



# Courses

Search by College, Department & Category

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SLHS

## SLHS-1010 (3) Disabilities in Contemporary American Society

Addresses the issue that 50 percent of all individuals experience disability in their lifetime. Introduces students to the social, cultural, psychological, economic, political, legal, and health-care issues related to society and individuals with disabilities. Approved for arts and sciences core curriculum: contemporary societies or ideals and values.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: All-Department](#)

## SLHS-2000 (3) Introduction to Communication Disorders

Surveys communication disorders, including hearing impairments, learning disabilities, and speech-language disorders, as well as an introduction to basic speech and hearing science.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: All-Department](#)

## SLHS-2010 (3) Science of Human Communication

Discusses how human communication (the process by which a thought is transmitted from the brain of a speaker to the brain of a listener) involves a complex interaction of acoustics, anatomy, physiology, neurobiology, and psychology. Approved for arts and sciences core curriculum: natural science.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: All-Department](#)

## SLHS-2305 (4) American Sign Language 1

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Introduces basic sign vocabulary, grammatical structures of ASL, and the culture of deaf people. Classes are taught using ASL without the use of spoken English.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | American Sign Language

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## SLHS-2315 (4) American Sign Language 2

Develops more complex vocabulary and grammatical structures, and an understanding of deaf culture. Classes are taught using ASL without the use of spoken English. Prereq., SLHS 2305 or equivalent.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | American Sign Language

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## SLHS-2325 (4) American Sign Language 3

Continuation of SLHS 2315. Covers ASL literature, advanced grammatical structures, idiomatic expressions, and deaf culture. Prereq., SLHS 2315 or equivalent. Meets MAPS and core requirement for a foreign language.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | American Sign Language

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## SLHS-3006 (3) Phonetics

Focuses on production of speech sounds, transcribing speech using the International Phonetic Alphabet, analyzing the acoustic properties of speech sounds, understanding how speech sounds vary depending on the context. Provides a foundation for understanding normal and atypical speech development, atypical speech problems and patterns, regional and foreign accents, and speech recognition by computers.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Speech-Hearing Sci

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## SLHS-3106 (3) Hearing Science

Focuses on the three main aspects of the hearing process: sounds in the environment (physical acoustics), sounds encoded within the auditory system (physiological acoustics), and perception of sound (psychological acoustics). Prereq., SLHS 2010.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Speech-Hearing Sci

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## SLHS-3116 (3) Speech Science

Provides a basic understanding of the structural organization (anatomy), function (physiology), and neural controls of the structures used to produce speech, swallowing, respiration, and related behaviors in humans. Prereq., SLHS 2010.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Speech-Hearing Sci

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## SLHS-4000 (3) Multicultural Aspects of Communication Differences and Disorders

Examines perceptions and attitudes regarding differences in communication as a function of cultural-linguistic diversity. Discusses implications of differing verbal and nonverbal communication styles of various cultural groups in terms of professional responsibilities. Prereq., upper-division standing and a minimum of 60 credit hours. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: All-Department

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## SLHS-4100 (1-3) Special Topics in Speech, Language, and Hearing Sciences

Studies selected topics in speech, language, hearing sciences, communication disorders, and other professional issues.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: All-Department

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## SLHS-4502 (3) Language Disorders: Child and Adult

Language disorders can result from problems with cognitive, linguistic, and/or discourse processing. The theoretical framework of language dysfunction is addressed while drawing upon real clinical examples of language disorders that have been observed in children and adults. Prereq., SLHS 4560.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-4512 (3) Speech Disorders: Voice, Cleft Palate, Motor Disorders, Stuttering

Emphasizes stuttering, clefting, voice disorders, and motor disorders. Discusses research, evaluation, and treatment pertaining to each of these four disorder areas. Prereq., SLHS 3136.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-4560 (3) Language Development

Covers the development of language in childhood and into adult life, emphasizing the role of environment and biological endowment in learning to communicate with words, sentences, and narratives. Prereqs. or coreqs., PSYC 1001, LING 2000. Same as LING 4560, Psyc 4560.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: All-Department

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## SLHS-4704 (3) Audiological Evaluation

Studies basic principles and techniques of hearing evaluation, including pure-tone, speech, immittance, and advanced audiometry; hearing conservation in hospital, school, and industrial settings; and identification and evaluation of auditory pathologies. Required projects in screening and pure-tone audiometry. Prereq., SLHS 3136. Prerequisites: Restricted to Speech, Language, and Hearing Sciences majors only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Audiology

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## SLHS-4714 (3) Audiological Rehabilitation

Covers basic principles and techniques related to the habilitation and rehabilitation of individuals who are deaf or hard of hearing: amplification, speech, language, auditory, speech reading, and educational issues. Prereq., SLHS 4704.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Audiology

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## SLHS-4849 (1-4) Independent Study for Undergraduates

May be repeated up to 7 total credit hours. Prereq., departmental consent.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Independent Study

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## SLHS-4918 (2) Introduction to Clinical Practice

Introduces students to the clinical processes and key components of assessment and interventions. Explores the applications of the theoretical and scientific information to clinical settings. Students complete supervised observation of individuals with communication challenges. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Speech, Language and Hearing Sciences (SLHS) majors only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Practica

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## SLHS-4938 (1-6) Internship: Speech-Language Intervention

Provides a supervised clinical experience with children who have communication challenges enrolled in the Child Learning Center programs; individuals demonstrating communication disorders as a cotherapist in the Speech, Language, and Hearing Center; or off-campus experience in an affiliated hospital or public school program. May be repeated up to 6 total credit hours. Prereq., SLHS 4918 or instructor consent.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Practica

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## SLHS-5000 (2) SLHS Research Methods 1

Familiarizes students with basic methodologies and research designs employed in the field. Focuses on critical reading of research papers and design of experiments. At least one research project is conducted and written as part of the course requirements. May be repeated up to 4 total credit hours.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-5006 (2) Applied Speech Science

Provides an advanced understanding of the acoustics, aerodynamics, and biomechanics of speech production and related non-speech behaviors. Emphasizes the integration of theoretical constructs in the speech sciences with applied clinical and basic research. Prereq., SLHS 3136 or equivalent. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Speech-Hearing Sci

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## SLHS-5032 (3) Competencies and Strategies for the SLPA

Includes roles and responsibilities for the Speech Language Pathology Assistant (SLPA) working in the public schools, service delivery models, health and safety, screening assistive technology, intervention and self reflection and evaluation. Prereq., SLHS 4918. Must be accepted in the SLPA certification program.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic:Speech-Lang Pathology

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## SLHS-5110 (2) Clinical Theory and Practice

Reviews models and theoretical perspectives regarding communication disorders with application to the clinical processes of assessment, intervention, counseling, and efficacy of intervention. Focuses on issues, challenges, and skills related to working with consumers of speech-language pathology and audiology services and their families, cultural competence, legal and ethical practices, teaming, and collaborative service delivery. Prereq., graduate standing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-5120 (3) Foreign Language Learning in Students with Language Learning Disabilities

Introduces a foundational knowledge of language based learning and processing problems that impact foreign language learning in students with disabilities. Must be accepted into the MFL certificate program.

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## SLHS-5130 (3) Curricular Accommodation Programs for Students with Foreign Language Learning Disabilities

Provides knowledge about the legal bases for student accommodations for MFL learning disabilities, the administrative procedures and policies surrounding accommodations, assessment, advising and related implementation issues. Must be accepted into the MFL certificate program.



# Courses

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SLHS

## SLHS-5140 (3) Accommodated Foreign Lang Instructional Interventions for Students with Lang Learning Disabilities

Provides knowledge of the principles and skills used to develop modified foreign language instruction for students with language based learning disabilities. Must be accepted into the MFL certificate program.

[College of Arts & Sciences](#)
[Speech, Language, & Hearing Sciences](#)
[Didactic: All-Department](#)

## SLHS-5242 (3) Language Disorders in School Age Children

Addresses the nature, assessment, and treatment of developmental language disorders in school age children. Prereqs., graduate standing and undergraduate background in SLHS. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Speech, Language, & Hearing Sciences](#)
[Didactic: Speech-Lang Pathology](#)

## SLHS-5252 (3) Acquired Language Disorders in Adults

Introduces the neural bases and medical etiologies of acquired language disorders in adults, explores the ways in which normal language processing may become disordered, and studies current methods of evaluation and treatment design. Prereqs., graduate standing and undergraduate SLHS background. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#)
[Speech, Language, & Hearing Sciences](#)
[Didactic: Speech-Lang Pathology](#)

## SLHS-5262 (3) Dysphagia

Provides students with background in the anatomical, physiological, and neurological bases of swallowing function and disorders across

the lifespan. Etiological factors are presented, as well as various assessment tools and principles of treatment of swallowing disorders in children and adults. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic:Speech-Lang Pathology](#)

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## SLHS-5272 (3) Augmentative Alternative Communication: Theory and Use

Provides an overview of the application of current technology to alternative/augmentative communication. Emphasizes assessment and intervention with nonverbal children and adults with need for alternative/augmentative communication systems. Presents various technological devices and systems. Addresses system selection, programming, development, and integration of use in environmental contexts. Prereq., SLHS 5232 and instructor consent. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic:Speech-Lang Pathology](#)

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## SLHS-5282 (3) Acquired Cognitive Disorders

Explores the theoretical and clinical management of acquired cognitive disorders that impact communication. Includes basic functional neuroanatomy. Prereq., graduate standing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic:Speech-Lang Pathology](#)

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## SLHS-5292 (3) Motor Speech Disorders

Presents the neural bases of normal and disordered speech motor control, teaches assessment and treatment of motor speech disorders of children and adults, and applies motor control research to clinical problems. Prereqs., graduate standing and undergraduate SLHS background. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic:Speech-Lang Pathology](#)

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## SLHS-5302 (3) Phonological Disorders

Provides overview of phonological development, perception, and production. Presents factors related to articulation and focuses on critical evaluation of traditional and phonological based assessment and intervention procedures. Includes coverage of phonological awareness, metaphonological skills as related to literacy. Prereq., graduate standing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic:Speech-Lang Pathology](#)

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## SLHS-5332 (3) Cleft Palate and Voice Disorders

Examines the anatomical and physiological bases for normal and disordered velopharyngeal and laryngeal function. Familiarizes students with evaluation and treatment of the speech of individuals with cleft lip and palate and laryngeal-based voice disorders. Prerequisites:

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Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-5362 (3) Stuttering: Therapy and Research

Emphasizes evaluation and treatment of children and adults who stutter. Discusses and evaluates various stuttering intervention approaches. Also discusses counseling parents of young children who stutter. Familiarity with research is a secondary emphasis. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-5576 (3) Communication Neuroscience

Provides an introduction to the neuroanatomy and neurophysiology of speech production and perception. Considers how speech and language are represented in, and controlled by, the central nervous system. Emphasizes the mechanisms underlying the communication process and discusses relevant neuropathologies. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Speech-Hearing Sci

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## SLHS-5602 (3) Seminar: Intervention for Children with Communication Challenges: Birth to Six

Provides an orientation to family-directed intervention in serving young children with disabilities and their families. Facilitates integration of medical, physiological, and theoretical perspectives with specific approaches to assessment and intervention. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-5612 (3) Learning Disabilities

Focuses on the nature, assessment, and treatment of learning disabilities and their relation to language disorders. Prereqs., SLHS 5242 or 5293.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-5674 (3) Signals and Systems in Audiology

Provides in-depth study of instrumentation used by audiologists for hearing aid evaluation and fitting, signal generation and modification, and signal measurement and calibration. Prereq., SLHS graduate standing. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Audiology

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## SLHS-5848 (1-4) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Speech, Language, & Hearing Sciences Practica

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## SLHS-5849 (1-4) Independent Study 1, M.A.

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences Speech, Language, & Hearing Sciences Independent Study

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## SLHS-5859 (1-4) Independent Study 2, M.A.

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences Speech, Language, & Hearing Sciences Independent Study

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## SLHS-5878 (1-3) Practicum 1: Speech-Language-Learning Appraisal

Provides a supervised clinical experience on campus in appraisal of speech, language, and learning disorders after training at the observational level. Prereq., SLHS graduate standing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences Speech, Language, & Hearing Sciences Practica

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## SLHS-5898 (1-4) Practicum 1: Speech-Language-Learning Intervention

Offers on-campus and off-campus supervised clinical practice in management of speech-language-hearing disorders in children and adults. May be repeated up to 6 total credit hours. Prereq., SLHS graduate standing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences Speech, Language, & Hearing Sciences Practica

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## SLHS-5918 (1-3) Audiology Clinical Practicum: Level 1

Provides clinical training in the on site Speech, Language and Hearing Center in skills including audiology identification, evaluation and management for adults and children with hearing loss. May be repeated up to 16 total credit hours. Prereq., SLHS 6544. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences Speech, Language, & Hearing Sciences Practica

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## SLHS-5930 (4) Speech Language Pathology Assistant Internship

Placement for a minimum of 12 hours per week for a total of 180 hours including 100 direct student contact hours under the supervision of a fully credentialed SLP, to fully develop requisite skills as an SLPA and become employed in a public school setting. Prereq., SLHS 4918. Must be accepted into the SLPA certificate program.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic:Speech-Lang Pathology

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## SLHS-5938 (1-3) Audiology Clinical Practicum: Level 2

Provides clinical training in an off campus Audiology facility in identification, evaluation and management for adults and children with hearing loss. Schedule is variable with a minimum requirement of 16 hours on rotation per week. May be repeated up to 15 total credit hours. Prereqs., SLHS 5918, 6544, 6614, and instructor approval. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Practica

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## SLHS-6000 (1-4) Problems in Speech, Language and Hearing Sciences

Studies selected topics related to the theory and management of communication disorders, and theoretical/scientific information related to speech, language, and hearing. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: All-Department

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## SLHS-6006 (3) Advanced Hearing Science

Provides advanced study in hearing science, including physical, physiological, and psychological acoustics of both normal and impaired auditory systems. Prereq., graduate standing in SLHS; undergraduate course work in biology or anatomy.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Speech-Hearing Sci

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## SLHS-6504 (1) Professional Ethics in Audiology

Overview of ethics and ethical issues in the profession of audiology. Topics to be discussed include code of ethics by professions, approaches to analyzing ethical dilemmas, ethics in relationships with manufacturers, and ethical considerations in teaching, clinical practice and research. Prereq., good standing in SLHS graduate program or instructor consent. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Speech, Language, & Hearing Sciences | Didactic: Audiology

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# Courses

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SLHS

## SLHS-6514 (1) Professional Issues in Audiology

Overview of professional issues related to the profession of audiology. Topics to be discussed include certification, licensure, professional associations, infection control, practice management, federal regulations related to audiology, professional communications and professional relationships. Prereq., good standing in SLHS graduate program or instructor consent. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: Audiology](#)

## SLHS-6544 (3) Auditory Processes: Adult Assessment

Advanced study on the current science surrounding hearing assessment of adults across the age span. Includes theoretical foundations and clinical applications. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: Audiology](#)

## SLHS-6554 (3) Auditory Processes: Child Assessment

Provides advanced study in hearing assessment and management of children across the age span. Topics include epidemiological, medical, audiological, developmental, and rehabilitative aspects of normal and impaired hearing in children. Prereqs., graduate standing and undergraduate audiology course work. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: Audiology](#)

## SLHS-6564 (3) Auditory Processes: Neurodiagnostics

Provides advanced study in the neural bases of hearing. Includes theoretical foundations and clinical assessment of neurological functioning in auditory systems with both normal and impaired function. Prereq., SLHS 6544. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-6614 (3) Fundamentals of Amplification

Discusses theoretical and clinical issues regarding the design, fitting, and evaluation of amplification technology for individuals with hearing loss. Includes the use of behavioral, psychological, electroacoustic, and physiological (real ear) measures in the selection and evaluation of digital and analog hearing aid technology. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-6640 (3) Communication Processes and Hearing Loss: School Age through Adult

Theories and processes of the communication of individuals with hearing loss from the school age to adult population. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-6650 (2) Counseling and Professional Ethics

Explores counseling theories and techniques following the diagnosis of a disability across the life span. Considers issues related to grieving and mourning, parenting, disability, cultural customs, attachment, and relationships. Covers professional ethics and ethical responsibilities. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-6660 (1) Multicultural Issues in SLHS and Communication Theory

Provides an in-depth understanding and first-hand knowledge of different racial, ethnic and religious communities, which is necessary to develop and refine multicultural clinical competence. Incorporates scholarly readings and experiential learning in multicultural settings and fosters participants' qualitative research skills. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-6670 (3) Adult Aural Rehabilitation

Provides an investigation of the impact of hearing loss on adults. Psycho-social aspects, communication challenges, assessment and intervention for adult hearing disorders including presbycusis, tinnitus, vestibular disorders, auditory central processing disorders and

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sudden hearing loss. Prereq., SLHS 6544. Recommended prereqs., SLHS 7814 and 7540. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-6918 (7) Practicum 2: Speech-Language-Learning Internship

Gives an off-campus experience in a clinical or hospital setting that provides in-depth practice in management of communication disorders of children and adults. May be repeated up to 10 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Practica

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## SLHS-6928 (1-7) Practicum 2: Public School Internship

Provides an off-campus supervised experience providing extended and in-depth practice involving school-age children in a school classroom. May be repeated up to 10 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Practica

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## SLHS-6938 (1-10) Audiology Clinical Externship

Provides students with full time off campus experience in an Audiology facility offering in-depth and advanced procedures for identification, evaluation and management of hearing loss in adults and children. May be repeated up to 21 total credit hours. Prereq., consent of department advisor. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Practica

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## SLHS-6940 (1) Candidate for Degree

Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-6950 (1-7) Master's Thesis

Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-7000 (3) Research Designs in Human Communication Sciences and Disorders

Offers an advanced seminar in research designs for human behavior: efficacy, ethnographic, single-subject, quasi-experimental, and experimental designs. Designed to familiarize students with terminologies and research designs frequently used in speech-language-hearing areas. Prereq., basic statistics.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-7100 (3) Cognitive Bases of Human Communication and Its Disorders

Explores major cognitive theories related to language, including connectionism, information processing, and cognitive mechanisms of early lexical learning. Discusses data from children and adults. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-7200 (3) Business, Management and Ethics in Audiology

Focuses on the business aspects of managing an audiology practice. Addresses developing a business plan, contracting for services, legal issues, financial reporting, budgeting, pricing, billing and reimbursement, regulatory issues, marketing, personnel management, risk abatement, and business ethics. Prereq., good standing in the SLHS graduate program or instructor consent. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-7450 (3) Audiology Capstone Project

Provides an individualized project for AUD, completed prior to initiation of final clinical year. May be in the form of research-based investigation, an evidence-based position paper, a clinical protocol based on peer-reviewed literature, a grant proposal, or another format approved by AUD committee. Project requires approved proposal by AUD committee and focused study supervised by capstone advisor. Restricted to students enrolled in the AUD graduate program. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: All-Department

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## SLHS-7520 (3) Auditory Processes: Medical and Genetic Bases

Discusses current developments in epidemiology, pathogenesis, and symptomatology of hearing loss. Investigates the genetic bases of hearing loss and deafness. Incorporates clinical decision theory in assessment and intervention. Explores cross-disciplinary topics from genetics, radiology, pharmacology, pathology, and otology. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7530 (3) Auditory Processes: Theory and Application in the School Environment

Focuses on application of routine audiological practices such as screening, assessment, rehabilitation, and instrumentation to children in educational settings. Emphasizes federal education regulations and pertinent case law. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7540 (3) Auditory Processes: Physiology, Assessment, and Management of the Vestibular System

Emphasizes current research on physiology of the vestibular system, including both structure and function. Considers the etiology of both peripheral and central pathologies of the vestibular system. Discusses ways to assess function of the vestibular system as well as theoretical and practical considerations of vestibular rehabilitation. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7550 (2) Mgmt and Prev of Noise and Noise Induced Hearing Loss

Discusses effects of noise and other damaging agents on the physiology of the auditory system. Highlights principles of hearing conservation programs. Focuses on prevention, identification, and management of occupational hearing loss and current legislation as it pertains to occupational safety and hazards. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7554 (1) Audiometric Instrumentation and Calibration

Introduces students to the basic concepts of electroacoustic transduction, and demonstrates the application of these concepts to the measurement and calibration of audiometric instrumentation. Students will become familiar with standard measurement equipment including multimeters, oscilloscopes, and sound level meters; and will become familiar with calibration standards for instruments including the audiometer, tympanometer, and electrophysiological amplifiers. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7614 (3) Implantable Devices: Technology and Clinical Application

Examines technological aspects and clinical applications of implantable prostheses such as cochlear implants, brainstem implants, hybrid cochlear implants, Baha devices and middle ear implants. Topics will include: history of implantable devices, anatomy and histopathology of the inner ear, speech processing in implants, mapping devices, candidacy criteria, behavioral and electrophysiologic techniques for assessment and outcomes in implanted children and adults. Prereq., good standing in SLHS graduate program or instructor consent. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences    Speech, Language, & Hearing Sciences    Didactic: Audiology

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## SLHS-7640 (3) Communication Processes and Hearing Loss: Birth through Six

Provides in-depth study of current research literature and its implications for clinical practice regarding development of communication processes in the first six years of life and impact of hearing loss. Investigates development of language, auditory perception, speech production, social-emotional abilities, and cognition. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: Audiology](#)

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## Courses

Search by College, Department & Category

College/School

All

Search by Course Number

Subject Number

SLHS

### SLHS-7714 (3) Advanced Topics in Amplification

Discusses advanced issues in the design and fitting of hearing aid technology, including advanced signal processing, outcomes assessment, evidence-based practice and specialized fitting protocols for pediatric and geriatric populations. Current research is integrated with clinical case studies to guide the development of evidence-based practice in hearing aid fittings. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Didactic: Audiology](#)

### SLHS-7775 (1-2) Topics in Cognitive Science

Reading of interdisciplinary innovative theories and methodologies of cognitive science. Students participate in the ICS Distinguished Speakers series that hosts internationally recognized cognitive scientists who share and discuss their current research. Session discussions include analysis of leading edge and controversial new approaches in cognitive science. Restricted to students enrolled in ICS Cognitive Science Academic Programs. Same as LING 7775, CSCI 7772, EDUC 7775, PSYC 7775, and PHIL 7810. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [American Sign Language](#)

### SLHS-7849 (1-4) Independent Study 1, PhD

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

[College of Arts & Sciences](#) [Speech, Language, & Hearing Sciences](#) [Independent Study](#)

### SLHS-7859 (1-4) Independent Study 2, PhD

May be repeated up to 7 total credit hours. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Independent Study](#)

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## SLHS-7918 (3) Practicum 3: Clinical Supervision

Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Practica](#)

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## SLHS-8206 (3) Perception/Production Theories in Human Communication Sciences and Disorders

Provides an advanced seminar in perception/production theories in human communication sciences and disorders. Familiarizes students with current perception theories related to the auditory/visual system and production theories related to the motor/auditory/visual system. Prereq., doctoral student standing or instructor consent.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic: Speech-Hearing Sci](#)

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## SLHS-8918 (3) Practicum 3: Classroom Instruction

Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Practica](#)

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## SLHS-8928 (3) Practicum 3: Research Coordination

Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Practica](#)

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## SLHS-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Speech, Language and Hearing Sciences (SLHS) or Audiology (AUDD) graduate students only.

College of Arts & Sciences | [Speech, Language, & Hearing Sciences](#) | [Didactic: All-Department](#)



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

SNSK

## SNSK-1010 (3-4) Introductory Sanskrit 1

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Sanskrit](#)

## SNSK-1020 (3-4) Introductory Sanskrit 2

Prereq., SNSK 1010.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Sanskrit](#)

## SNSK-2110 (3-4) Intermediate Sanskrit 1

Continued study of the grammar of classical Sanskrit and translation of selected readings from the literature. Meets MAPS requirement for foreign language. Prereq., SNSK 1020.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Sanskrit](#)

## SNSK-2120 (3-4) Intermediate Sanskrit 2

Continuation of SNSK 2120. Prereq., SNSK 2110.

[College of Arts & Sciences](#) [Arts & Sciences Special Courses](#) [Sanskrit](#)



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

SOCY

## SOCY-1001 (3) Introduction to Sociology

Examines basic sociological ideas including social relations, social interaction, social structure, and social change. Examples are drawn from societies around the world. Meets MAPS requirement for social science: general. Approved for arts and sciences core curriculum: contemporary societies.

[College of Arts & Sciences](#)
[Sociology](#)
[General Sociology](#)

## SOCY-1004 (3) Deviance in U.S. Society

Examines the social construction of deviance in the U.S., the process of acquiring a deviant identity and managing deviant stigma, and the social organization of deviant act, lifestyles, relationships and careers. Approved for arts and sciences core curriculum: ideals and values.

[College of Arts & Sciences](#)
[Sociology](#)
[Deviance and Criminology](#)

## SOCY-1006 (3) The Social Construction of Sexuality

Discusses the social determinants of sexuality. Analyzes the economic, psychological, and cultural influences on human sexuality. Interactional perspective of human sexuality is presented. Same as WMST 1006. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
[Sociology](#)
[Sex and Gender](#)

## SOCY-1016 (3) Sex, Gender, and Society 1

Examines status and power differences between the sexes at individual and societal levels. Emphasizes historical context of gender roles and status, reviews major theories of gender stratification. Same as WMST 1016. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences | Sociology | Sex and Gender

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## SOCY-1021 (3) United States Race and Ethnic Relations

An examination of race and minority problems in U.S. society, including the psychological, social, and cultural sources of prejudice and discrimination. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-1022 (3) Ethics and Social Issues in U.S. Health and Medicine

Explores current ethical and policy issues in U.S. health and medical practices. Includes such issues as alcohol and drug abuse, organ transplants and substitutes, genetic engineering, contraception, abortion, occupational safety and health, and euthanasia. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences | Sociology | Population and Health Issue

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## SOCY-1841 (1-6) Independent Study in Sociology

May be repeated up to 7 total credit hours.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-2011 (3) Contemporary Social Issues and Human Values

Explores contemporary societies on a global scale. Focuses on such issues as capitalism, socialism, race and ethnic problems, sex discrimination, poverty and the concentration of wealth, crime and deviance, human rights and human values, peace and war.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-2021 (3) Nonviolence and the Ethics of Social Action

Examines nonviolence as a strategy of social action. Focuses on ethics and dynamics of nonviolent action; racial and economic justice movements; civil disobedience; and conscientious objection to war.

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College of Arts & Sciences | Sociology | General Sociology

## SOCY-2031 (3) Social Problems

Examines U.S. society from a normative perspective emphasizing theories of social change. Considers such problems as distribution of power, unemployment, poverty, racism and sexism, the changing role of the family, and drugs. Approved for arts and sciences core curriculum: ideals and values.

## SOCY-2034 (3) Drugs in United States Society

Examines the relationship between drugs and social contexts. Lends insight into why people find consciousness alteration meaningful, what kinds of experiences and problems arise, and what types of social policies emerge to control drug use.

## SOCY-2044 (3) Crime and Society

Explores issues related to crime, the criminal justice system, and crime-related public policy. It addresses what we know about crime and how we know it, how our society responds to crime, and how the institutions designed to address crime (police, courts, corrections) function.

## SOCY-2061 (3) Introduction to Social Statistics

Introduces students to quantitative analysis of social phenomena. Emphasizes understanding and proper interpretation of graphs; measures of central tendency, dispersion, and association; and the concept of statistical significance. Assumes students have only limited mathematical background.

## SOCY-2077 (3) Environment and Society

Examines how both natural and built environments influence human behavior and social organization. Focuses on microenvironments and their influence on individuals; the impact of macroenvironments on societal organization; and environmental movements. Credit not granted for this course and SOCY 3091. Approved for arts and sciences core curriculum: ideals and values.

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## SOCY-2091 (3) Topics in Sociology

Variety of courses taught by visiting and regular faculty. See current departmental announcements for specific content. Students may receive credit for this course up to three times for different topics.

College of Arts & Sciences Sociology General Sociology

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## SOCY-3001 (3) Classical Theory

In-depth study of classical sociological theorists, particularly Marx, Durkheim, and Weber. Examines their roles in defining the discipline of sociology. Prereq., SOCY 1001. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-3002 (3) Population and Society

Examines population, its structure and processes, and its relationships to selected areas of the social structure. Examines Malthusian, neo-Malthusian, and Marxist perspectives. Restricted to SOCY majors. Prerequisites: Restricted to Sociology majors only.

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-3010 (3) Sociology Capstone Course: Professional Writing

Builds on previous coursework in survey or field methods to result in an original, article-length research paper analyzing sociological data. Students will hone their writing skills through in- and -out-of-class writing exercises, and read and analyze models of quantitative and qualitative sociological articles to develop sociological writing skills. Prereq., SOCY 3301 or SOCY 3401. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Sociology General Sociology

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## SOCY-3011 (3) Contemporary Theory

Continuation of SOCY 3001. In-depth study of modern and post-modern theories of the 20th century, including structural-functionalist, conflict, symbolic interactionist, feminist, and world system theories. Prereq., SOCY 1001. Restricted to junior/senior SOCY majors.

College of Arts & Sciences Sociology General Sociology

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## SOCY-3012 (3) Women and Development

Investigates the status of women in the context of globalization and social and economic development. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors. Same as WMST 3012. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-3016 (3) Marriage and the Family in U.S. Society

Comparative and historical examination of marriage and the family within the U.S. Emphasizes changing family roles and family structures. Also considers alternatives to the nuclear family and traditional marriage exploring new definitions of family. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors. Same as WMST 3016. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences Sociology Sex and Gender

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## SOCY-3034 (3) Perspectives on Violence

What counts as violence? Who decides what is violence and what is not? In what contexts does violence occur? This course critically examines different criminological and social science perspectives on violence. Prereq., SOCY 1001 or 1004. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Arts and Sciences students only.

College of Arts & Sciences Sociology Deviance and Criminology

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## SOCY-3041 (3) Self and Consciousness

Explores human development from a psychosocial perspective, focusing on the interplay between psychological patterns and social forms. Issues such as self-image and social consciousness are studied within the larger context of individual and collective forces leading to transformation. Prereqs., SOCY 1001, and 3001 or 3011, or instructor consent. Same as INVS 3041. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-3042 (3) Topics in Population and Health

A variety of courses in population and/or health will be taught, usually by visiting lecturers. See current departmental announcements for specific content. May be repeated up to 9 total credit hours for different topics. Prereq., SOCY 1001.

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-3044 (3) Race, Class, Gender, and Crime

Overview of race, class, gender, and ethnicity issues in offending, victimization, and processing by the justice system. Examines women and people of color employed in the justice system. Prereq., SOCY 1001 or 1004. Same as WMST 3044. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) | [Sociology](#) | [Deviance and Criminology](#)

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# Courses

Search by College, Department & Category

**College/School**

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Search by Course Number

**Subject**    **Number**

SOCY

## SOCY-3046 (3) Topics in Sex and Gender

Faculty present courses based on their area of expertise and specialization in the field of sex and gender. Students should check current sociology department notices of course offerings for specific topics. Students may receive credit for this course up to three times for different topics. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/ senior SOCY majors. Same as WMST 3046.

[College of Arts & Sciences](#)
[Sociology](#)
[Sex and Gender](#)

## SOCY-3141 (3) Social Movements in the U.S

Considers theory and research about American social movements. Emphasizes leadership, ideology, recruitment, strategy, organizational dynamics, public response, and reasons for success or failure. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

[College of Arts & Sciences](#)
[Sociology](#)
[General Sociology](#)

## SOCY-3151 (3) Self in Modern Society

Explores how modern social institutions and culture shape our personal experiences, how personal experiences can affect the nature of those, institutions and culture, and how strategies can be developed for achieving balance between the individual and society. Prereqs., SOCY 1001 and SOCY 3001 3011. Approved for arts and sciences core curriculum: United States context or ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

[College of Arts & Sciences](#)
[Sociology](#)
[General Sociology](#)

## SOCY-3161 (3) Sociological Perspectives on Race and Ethnicity

Addresses three subtopics of race from a sociological perspective: ethnic and racial identities, immigration, and race and ethnicity in Latin America. Recommended prereq., SOCY 1001.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-3171 (3) Whiteness Studies

Uses the conceptual framework of the sociology of race and ethnic relations to explore whiteness as a racial category that is centered and privileged in American society. Investigates the development of whiteness from past white supremacy, current colorblindness, to possible future multiculturalism. Analyzes the consequences of whiteness as a racial identity and a social structure. Prereqs., SOCY 1001 and 1021.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-3301 (3) Survey Methods

Teaches quantitative research methods and, particularly, methods of survey research. Topics include sampling, interviewing, schedule construction, data analysis, computer methods, index construction, and statistical analysis. Students participate in a survey project, design, collect data, and prepare a research paper on the basis of collected data. Prereqs., SOCY 1001, 2061, and SOCY 3001 or 3011. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-3314 (3) Violence Against Women and Girls

Focuses on aspects of the victimization of women and girls that are "Gendered" - namely, sexual abuse and intimate partner abuse. Also explores the importance of race, class, and sexuality in gendered violence. Same as WMST 3314.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-3401 (3) Field Methods

Skill development prepares students to conduct qualitative sociological research. Emphasizes ethnographic techniques, including intensive interviewing, direct observation, coding, participant observation, and report writing. Students conceive and execute a field research project with data collection, analysis, and a report. Prereqs., SOCY 1001 and SOCY 3001 or 3011. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-4000 (3) Gender, Genocide, and Mass Trauma

Studies the persistence of genocide and the effects of mass trauma on women and girls. Within the framework of political and social

catastrophe, the course examines cataclysmic world events and the traumatic consequences for women of religious persecution, colonialism, slavery, and the genocides of the twentieth and twenty first centuries. Prereq., SOCY 1016 or WMST 2000. SOCY 4000 and WMST 4010 are the same course.

College of Arts & Sciences | Sociology | Sex and Gender

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## SOCY-4002 (3) Sociology of Aging

Studies present and future roles of the aged in the family, the community, and the larger society. Considers economic, political, and health consequences of various retirement systems. Prereqs., Socy 1001, and Socy 3001 or 3011. Restricted to junior/senior Socy majors.

College of Arts & Sciences | Sociology | Population and Health Issue

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## SOCY-4004 (3) Advanced Topics in Criminology

Variety of courses in criminology. See current departmental announcements for specific content. May be repeated up to 9 total credit hours for different topics. Prereq., SOCY 1001 or 1004. Restricted to junior/senior SOCY majors.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-4007 (3) Global Human Ecology

Examines global environmental issues from sociological perspectives. Focuses on such problems as overpopulation, world hunger and poverty, pollution, resource shortages, environmental impact of technology and population dynamics, public policy, and strategies for change. Credit not granted for this course and SOCY 1002 or SEWL 2000. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | Environment and Society

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## SOCY-4014 (3) Criminology

Scientific study of criminal behavior with special attention to development of criminal law, definition of crime, causes of law violation, and methods of controlling criminal behavior. Prereq., SOCY 1001 or 1004.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-4016 (3) Sex, Gender, and Society 2

Studies status and power differences between the sexes at individual, group, and societal levels. Examines empirically established sex differences, and reviews biological, psychological, and sociological explanations for gender differences. Prereqs., SOCY 1016 or WMST

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2000. Restricted to junior/senior SOCY majors. Same as WMST 4016.

College of Arts & Sciences Sociology Sex and Gender

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## SOCY-4017 (3) Animals and Society

Examines the role of non-human animals in human society. Investigates the social construction of the human/animal boundary. Challenges ideas that animals are neither thinking nor feeling. Examines the many ways humans rely on animals. Considers the link between animal cruelty and other violence. Explores the moral status of animals. Prereq., SOCY 1001.

College of Arts & Sciences Sociology Environment and Society

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## SOCY-4021 (3) Conflict Management in Social Systems

Explores conflict resolution theory and method as applied to interpersonal, intergroup, and interorganization conflict. Prereqs., SOCY 1001, and SOCY 3001 or 3011.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4024 (3) Juvenile Delinquency

Examines the history, incidence and prevalence of delinquent behavior, as well as why children become involved in criminal activity. Prereq., SOCY 1001 or 1004. Approved for arts and sciences core curriculum: contemporary societies. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology Deviance and Criminology

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## SOCY-4027 (3) Inequality, Democracy, and the Environment

Focuses on the structural forces affecting environmental degradation and environmental behavior by examining the relationships between (a) inequality and democratic decision making and (b) undemocratic decision making; U.S. and corporate food and energy policy; and global environmental degradation. The course also focuses on the role that global inequality plays in fostering environmental degradation. Restricted to juniors/seniors. Same as ENVS 4027. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Sociology Environment and Society

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## SOCY-4031 (3) Social Psychology

Studies individuals in social context. Reviews philosophical and sociological treatments of the relation between the individual and society. More specific topics include the socialization process, theories of human development and personality formation, language acquisition, conformity, aggression, sex differences in personality and gender identity, and the relation between attitudes and overt behavior. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors. Prerequisites: Restricted to students with 57-

180 credits (Junior or Senior).

College of Arts & Sciences Sociology General Sociology

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## SOCY-4037 (3) Hazards, Disasters and Society

Explores the societal dimensions of hazards and disasters, emphasizing disaster theory and research, key issues in the sociological study of disasters, social vulnerability, the impacts of disasters in the U.S. and worldwide, and the U.S. Emergency Management System. Prereq., SOCY 2077. Same as SOCY 5037.

College of Arts & Sciences Sociology Environment and Society

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## SOCY-4042 (3) Economic Sociology

Defines relationship between economy and society; sociological approach to study of economic activity and organization; difference from the theoretical and methodological assumptions orienting the discipline of economics; tackles these questions in two ways: studies foundations as established in works of Smith, Marx, Weber, Polanyi, and Schumpeter, and considers current research in economic sociology, focusing on concepts of markets, networks, and embeddedness. Prereq., SOCY 1001. Restricted to sophomore, junior, senior SOCY majors.

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-4047 (3) Topics in Environment and Society

Variety of courses taught by visiting and regular faculty. See current departmental announcements for specific content. May be repeated up to 9 credit hours for different topics.

College of Arts & Sciences Sociology Environment and Society

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## SOCY-4052 (3) Social Inequalities in Health

Focuses on social inequalities in health in both U.S. and international contexts. Reviews the link between health status and various types of social statuses, including but not limited to socioeconomic status, gender, race, and ethnicity. Explanations for the relationships between these factors and various health outcomes are discussed. The class focuses on multiple levels of analysis, from the physician-patient interactions to health care systems and social policies. Students have the opportunity to develop their own specific research interests in this field. Prereq., SOCY 1001. Restricted to junior/senior SOCY majors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-4071 (3) Social Stratification

Studies theories of class, ethnic, sex, and age stratification. Examines social inequality in the United States and analyzes the resulting conflicts. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors. Same as SOCY 5071.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

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## SOCY-4081 (1-3) Sociology of Education

Analyzes the school as a social organization. Among topics considered are power and control in the school; classroom interaction and its relation to learning and personality development in students; roles of educators; and reciprocal relations of school and community.

Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

SOCY

## SOCY-4084 (3) Punishment, Law and Society

Places the current state of punishment in the U.S. in historical and cross national context. It examines key features of penal systems, and key sociological theories about the relationship between punishment and society. Prereqs., SOCY 1001 or 1004. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

[College of Arts & Sciences](#) [Sociology](#) [Deviance and Criminology](#)

## SOCY-4086 (3) Family and Society

Studies the changing relationship between family and social structure. Examines variations in family organization and considers political, social, ideological, demographic, and economic determinants of family formation. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Restricted to junior/senior SOCY majors. Same as WMST 4086.

[College of Arts & Sciences](#) [Sociology](#) [Sex and Gender](#)

## SOCY-4111 (3) Nonviolent Social Movements

Explores theories of democracy and development in relation to movements for nonviolent social change. Focuses on means and ends, spirituality, leadership, decision-making, civil society, cooperative economics, ecology, and decentralized power. Prereqs., SOCY 1001, and 3001 or 3011. Restricted to senior SOCY or PSCI majors. Same as INVS 4402.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

## SOCY-4121 (3) Sociology of Religion

Examines complex interactions between religious and other social structures, such as the economy, government, and the family, and how globalization is affecting religious traditions across the globe. Includes discussion of how various religions are used or misused to justify terrorism and other acts of violence. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4131 (1-3) Advanced Topics in Sociology

Variety of advanced specialty courses taught by visiting and regular faculty designed for upper division sociology majors. See current departmental announcement for specific content. May be repeated up to 9 total credit hours for different topics. Prereq., SOCY 1001. Restricted to junior and senior SOCY majors.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4141 (3) The Social Psychology of Friendships

Studies friendships between individuals and groups, applying social psychological theories of interaction and group processes. Examines the effects of hierarchies of status and power and of norms and social pressure on friendships. Attempts to answer questions like how social categories like gender, race, and class affect friendships, what are the unwritten rules of behavior among friends in different situations, and what happens when we violate them. Prereq., SOCY 1001. Restricted to junior/senior SOCY majors.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4441 (3) Senior Honors Seminar 1

Helps students design and initiate an honors thesis based on original sociological research. Prereqs., SOCY 1001, and SOCY 3001 or 3011, and instructor consent. Restricted to Sociology majors with a minimum grade point average of 3.30. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4451 (3) Senior Honors Seminar 2

Helps students complete an honors thesis based on original sociological research. Emphasizes analyzing data, writing research reports, and presenting results. Prereqs., SOCY 1001, and SOCY 3001 or 3011, and instructor consent. Restricted to Sociology majors with a minimum grade point average of 3.30. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-4461 (3) Critical Studies in Sociology

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Examines a sociological topic in depth, covering such issues as class structure, race relations, gender roles, criminal justice, and political conflict, with an emphasis on writing, reading, and critical thinking. Prereqs., SOCY 1001, and SOCY 3001 or 3011. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-4841 (1-8) Independent Study in Sociology

Upper-division variable credit. May be repeated up to 8 total credit hours. Prereqs., SOCY 1001, and SOCY 3001 or 3011, and instructor consent. Restricted to SOCY majors. Prerequisites: Restricted to Sociology majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-4911 (1-3) Teaching Sociology

Students participate in a teaching seminar under the supervision of a faculty member. Includes pedagogical strategies for implementing concrete educational goals and encouraging higher levels of creativity and analysis in a large, lower-division class. Emphasizes mentorship and personal development. Prereqs., SOCY 1004 and instructor consent. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-4931 (1-6) Internship in Sociology

Provides an academically supervised opportunity for junior and senior sociology majors to work in public or private organizations. Focuses on opportunities in criminal justice system, education, non-profits, health care, etc. May be repeated up to 6 total credit hours. Prereqs., SOCY 1001 and 3001 or 3011. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Sociology (SOCY) majors only.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-5031 (3) Research Design

Principles and practice of social research, including the nature of scientific explanation, the relationship between theory and research, research design, measurement problems, sampling questionnaire construction, interviewing, ethnographic methods, and statistical analysis.

College of Arts & Sciences | Sociology | General Sociology

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## SOCY-5037 (3) Hazards, Disasters and Society

Same as SOCY 4037.

College of Arts & Sciences | Sociology | Environment and Society

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## SOCY-5071 (3) Social Stratification

Same as SOCY 4071.

College of Arts & Sciences Sociology General Sociology

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## SOCY-5111 (3) Data 1: Introduction to Social Statistics

Introduces statistical analysis in the social sciences. Introduces basic techniques of inferential statistics and several bivariate statistical techniques including t-test for the difference in means, chi-square independence, analysis of variance (ANOVA), correlation, and simple regression (OLS). This course prepares students for the required course on multivariate regression techniques (Data 2). Prerequisites: Restricted to Sociology (SOCY) graduate students only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-5201 (3) Graduate Seminar in Sociological Theory

Examines theoretical approaches to core issues and problems in sociology, including the nature of society, the relationship between society and the individual, the role of culture and social structure, the sources of social power, and the conceptual structure of sociological knowledge itself. Prerequisites: Restricted to Sociology (SOCY) graduate students only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-5611 (3) Teaching in Sociology

Learn how to teach sociology more effectively while developing a new content area and a clearer sense of the field. Choose a content area within sociology as the basis for planning a course and developing and practicing different teaching techniques. Prereqs., enrollment in SOCY graduate program.

College of Arts & Sciences Sociology General Sociology

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## SOCY-5841 (1-6) Independent Study in Sociology

Graduate variable credit. May be repeated up to 7 total credit hours. Prereq., instructor consent.

College of Arts & Sciences Sociology General Sociology

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## SOCY-5937 (1-6) Graduate Research Internship in Environmental

# Sociology

Offers the opportunity for sociology graduate students specializing in environmental sociology to work with local governmental or non-profit organizations on research assignments. The research topic, academic reading list, and expectations for the final project will be developed collaboratively with a faculty sponsor and organizational representative.

College of Arts & Sciences | Sociology | Environment and Society

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## SOCY-6004 (3) Topics in Criminology

Variety of courses in criminology to be taught by visiting lecturers. See current departmental announcements for specific content. May be repeated up to 9 total credit hours for different topics. Formerly SOCY 5004.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-6007 (3) Foundations of Environmental Sociology

Provides overview of environmental sociological theory and research including topics such as: public environmental perception, concern, and knowledge; environmentalism as a social movement; environmental justice; energy, technology, and risk; human dimensions of environmental change; and natural hazards and disasters. Same as ENVS 6007. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Sociology | Environment and Society

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## SOCY-6012 (3) Population Issues, Problems, and Policies

Presents contemporary perspectives on relations between population and society. Focuses on mortality, fertility, and migration, the major demographic areas, with reviews of specific demographic phenomena and controversies. Formerly SOCY 5012.

College of Arts & Sciences | Sociology | Population and Health Issue

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## SOCY-6016 (3) Topics in Sex and Gender

Covers diverse specializations of faculty in the area of sex and gender. See current departmental announcements or online Schedule Planner for specific content. May be repeated up to 9 total credit hours for different topics. Formerly SOCY 5016. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences | Sociology | Sex and Gender

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## SOCY-6017 (3) Inequality, Democracy, and the Environment

Focuses on the structural forces affecting environmental degradation and environmental behavior by examining the relationships between a) inequality and democratic decision making and b) undemocratic economic and political decision making, U.S. and corporate food and energy policy; and global environmental degradation. Focus will also be placed on the role that global inequality plays in fostering

environmental degradation. Prereq., graduate standing. Formerly SOCY 5137.

[College of Arts & Sciences](#) | [Sociology](#) | [Environment and Society](#)

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# Courses

Search by College, Department & Category

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**Subject** **Number**

SOCY

## SOCY-6041 (3) Cultural Sociology

Explores "The cultural turn" in sociology and related disciplines. Reviews basic themes in cultural studies--e.g., distinguishing "Cultural" and "Social"; narrative as catalyst between symbols and practices; cultural production processes; self as embodied; culture and power; methods and epistemological issues. Students present their own projects in class and as research papers. Prereq., graduate standing. Formerly SOCY 5041.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

## SOCY-6111 (3) Data 2: Data Analysis

Introduces students to mainstream multivariate regression techniques used in the social sciences. The majority of the course focuses on the Ordinary Least Square model and on the extension of this model to nominal, ordinal, and count dependent variables. Students will analyze data of their choosing with statistical software packages including SPSS, SAS, and STATA. Prereq., SOCY 5111 or equivalent. Formerly SOCY 5021.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

## SOCY-6121 (3) Qualitative Methods

Training in the systematic observation of people in situations, finding them where they are, staying with them in a role acceptable to them that allows intimate observations of behavior. Students report their findings in ways useful to social science but not harmful to those observed. Formerly SOCY 5121. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Sociology](#) [General Sociology](#)

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## SOCY-6821 (2) Graduate Sociology Forum 1

Introduces first-year graduate students to the full range of substantive topics, research programs, and other projects in which graduate sociology faculty are engaged. Provides a forum in which issues of the discipline are presented and discussed. Features weekly presentations by graduate sociology faculty. Restricted to graduate students. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-6831 (1) Graduate Professional Seminar

Offers guidance and instruction on topics related to advanced graduate study and academic life beyond graduation. Discussions will include writing journal articles; creating a vitae; writing dissertations; applying for grants and other sources of funding; the academic job search; and what to expect as a junior faculty member. Restricted to graduate students.

College of Arts & Sciences Sociology General Sociology

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## SOCY-6841 (1-6) Guided Research in Sociology

May be repeated up to 7 total credit hours. Prereq., graduate standing. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-6941 (1) Candidate for Degree for Master's Thesis

College of Arts & Sciences Sociology General Sociology

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## SOCY-6951 (1-6) Master's Thesis

College of Arts & Sciences Sociology General Sociology

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## SOCY-7002 (3) Social Disparities in Health

Presents social disparities in health in their social context. Includes the sociology of health behavior; links between health status and social statuses including gender, race, ethnicity, and socioeconomic status; fundamental causes and other explanations for social disparities in health; environment and health; health insurance disparities; the physician-patient interaction and its consequences. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology Population and Health Issue

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## SOCY-7004 (3) Criminological Theory

Examines the major criminological theories of the 18th through 21st centuries in Europe, Australia, and the U.S. Emphasizes the historical contexts and paradigms of knowledge influencing these theories. Prereq., graduate standing. Formerly SOCY 5114.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-7006 (3) Sociology of Sex and Gender

Theoretical and empirical examination of sex stratification, sex role differentiation, and sex differences in socialization, personality, institutions, and culture. Formerly SOCY 5006.

College of Arts & Sciences | Sociology | Sex and Gender

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## SOCY-7012 (3) The Social Demography of Race

Introduction to relevant, timely research within sociological and social demographic research on race and ethnicity. Specific areas will include conceptual/measurement issues; population size, growth, and migration; health and mortality; marriage, family, and fertility; socioeconomic context; and policy considerations. Course content will be structured around current empirical pieces in sociology literature with emphasis on methodological approach in analyses.

College of Arts & Sciences | Sociology | Population and Health Issue

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## SOCY-7014 (3) Patterns of Criminal Behavior

Overview of the epidemiology of crime. Examines patterns of crime (both offending and victimization), and includes a gender, race/ethnicity, and class analysis. Formerly SOCY 5214.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## SOCY-7017 (3) Population and Environment

Reviews research on human-environment interactions, with a focus on ways in which demographic processes influence, and are influenced by, the environmental context. Specific topics include conceptual and analytical frameworks; methodologies; intervening factors shaping human dimensions of environmental change; and regionally-focused research. Prereq., graduate standing. Formerly SOCY 5117.

College of Arts & Sciences | Sociology | Environment and Society

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## SOCY-7024 (3) Punishment and Social Control

Exploration of sociological perspectives on the criminal justice process. Considers organization of criminal law responses, including enforcing and sentencing. Race, class, gender, and age differences in treatment and sentencing are analyzed. Prereq., graduate standing. Formerly SOCY 5314. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology Deviance and Criminology

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## SOCY-7026 (3) Feminist Research Methods

Epistemological and methodological issues generated by feminist research and students' own projects. Formerly SOCY 5026.

College of Arts & Sciences Sociology Sex and Gender

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## SOCY-7034 (3) Capital Punishment in the United States

Surveys the history and current status of capital punishment in the United States, with a critical examination of arguments both for and against the death penalty. Prereq., graduate standing. Formerly SOCY 5414.

College of Arts & Sciences Sociology Deviance and Criminology

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## SOCY-7036 (3) Feminist Theory

Examines the main schools of feminist thought and their impact upon sociological theories. Also examines current feminist theoretical debates and their relevance to feminist sociology. Prereq., graduate standing. Formerly SOCY 5036. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology Sex and Gender

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## SOCY-7111 (3) Data III---Advanced Data Analysis

Denotes third graduate course in sequence of quantitative methods. Following basic inferential statistics (SOCY 5111) and multivariate regression analysis (SOCY 6111), students study advanced statistical techniques such as event history analysis, multilevel modeling, structural equation modeling, and latent class analysis. May be repeated up to 9 total credit hours when topics vary. Prereqs., SOCY 5111 and 6111 and graduate standing. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Sociology General Sociology

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## SOCY-7121 (3) Qualitative Analysis

Drawing on data gathered through participation, observation, and in-depth interviewing, students focus on developing theoretical analyses and exploring classical and post-modern ethnographic writing formats. Students present and revise their papers as well as review journal articles. Prereqs., graduate standing and Socy 5121 or 6121, or instructor consent. Formerly Socy 5221. Prerequisites: Restricted to Graduate Students only.

## SOCY-7131 (3) Seminar in Social Psychology

Studies the individual in social context. Focuses on theoretical perspectives and substantive issues specific to sociological and social psychology, including socialization, the self, social roles, language, deviance, gender, collective behavior, group processes, attitudes and behavior, social norms, and conformity. Formerly SOCY 5531.

## SOCY-7171 (3) Special Topics

May be repeated up to 9 total credit hours. Prerequisites: Restricted to Graduate Students only.

## SOCY-8991 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

SPAN

## SPAN-1000 (3) Cultural Difference through Hispanic Literature

For freshmen only. Organized around the general topic of cultural differences. Focuses on a related issue such as gender or history articulated in the literature of Spain, Latin America, and the Hispanic United States. Taught in English; students read selected literary texts in English from the various traditions. Does not count towards the Spanish major. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 0-26 credits (Freshmen) only.

[College of Arts & Sciences](#) [Spanish](#) [Spanish](#)

## SPAN-1010 (5) Beginning Spanish 1

Offers students a firm command of Spanish grammar. Grammar is used as a point of departure for development of oral skills. Reading and writing are stressed to a lesser degree. Attendance at the language laboratory may be mandatory. Credit not granted for this course and Span 1150.

[College of Arts & Sciences](#) [Spanish](#) [Spanish](#)

## SPAN-1020 (5) Beginning Spanish 2

Continuation of Span 1010. Attendance at the language laboratory may be mandatory. Prereq., SPAN 1010 (mingrade of C-), or placement. Credit not granted for this course and SPAN 1150.

[College of Arts & Sciences](#) [Spanish](#) [Spanish](#)

## SPAN-2110 (3) Second-Year Spanish 1

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Grammar review. Emphasizes reading, writing, and speaking skills. Attendance at the language laboratory may be mandatory. Prereq., SPAN 1020 (min grade C-), or placement. Credit not granted for this course and SPAN 2150. Meets Maps requirement for foreign language.

College of Arts & Sciences Spanish Spanish

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## SPAN-2120 (3) Second-Year Spanish 2

Grammar review. Emphasizes reading, writing, and speaking skills. Attendance at the language laboratory may be mandatory. Prereq., SPAN 2110 (min grade C- ) or better, or placement. Credit not granted for this course and SPAN 2150.

College of Arts & Sciences Spanish Spanish

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## SPAN-2150 (5) Intensive Second-Year Spanish

Intensive review of grammar and other subjects covered in SPAN 2110 and 2120. Attendance at the language laboratory may be mandatory. Prereq., SPAN 1020 (min grade of C-), or placement and departmental approval. Credit not granted for this course and SPAN 2110 or 2120. Meets MAPS requirement for foreign language.

College of Arts & Sciences Spanish Spanish

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## SPAN-2450 (3) Catalan for Spanish Speakers

Offers an intensive introduction to the Catalan language for those able to speak Spanish. By the end of the course students should be able to communicate well in all language-skills areas: listening comprehension, speaking, reading and writing. Students will also have gained a better understanding and appreciation of the Catalan singularity. Prereq., five semesters of college Spanish or equivalent, or SPAN 3000, or placement, or department approval.

College of Arts & Sciences Spanish Spanish

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## SPAN-3000 (5) Advanced Spanish Language Skills

Transitional course that introduces students to the Spanish major and improves their writing skills. Involves composition, reading, and to a lesser extent, conversation. Prereq., Span 2120 or 2150 (min grade C-), the equivalent, or placement.

College of Arts & Sciences Spanish Spanish

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## SPAN-3001 (3) Spanish Conversation

Emphasizes vocabulary acquisition and speaking fluency. Through structured and carefully monitored individual, group, and class work,

students achieve enduring language growth and meaningful acculturation that otherwise could only be achieved through an extended stay in an Hispanic country. This course is intended for those who are learning Spanish as a second-language. Native speakers of Spanish who have pursued formal education in a Spanish speaking country will not be admitted to the course. Heritage speakers of Spanish (native speakers who have pursued formal education in a non-Spanish speaking setting) as well as students from bi-lingual K-12 programs must meet with the coordinator to determine appropriate class level. Prereqs., SPAN 2120 or 2150 (min grade C-), the equivalent, or placement. Credit not granted for this course and SPAN 3002. Does not count toward the Spanish major.

College of Arts & Sciences Spanish Spanish

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## SPAN-3002 (3) Advanced Spanish Conversation

Designed for Spanish majors, this course focuses on refining fluency in both informal and formal discourse through group discussions, class work, and individual and group presentations with a focus on preparing students for communication in professional settings. To that end, the materials used in the course will emphasize themes and problems relevant to the contemporary Hispanic world. Prereq., SPAN 3000 (min grade C-) or equivalent. Credit not granted for this course and SPAN 3001.

College of Arts & Sciences Spanish Spanish

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## SPAN-3010 (3) Advanced Rhetoric and Composition

Designed to refine expository and argumentative writing in Spanish, this course will center around four main areas of study: culture, linguistics, sociopolitical and economic reality, and literature and criticism. A multi-draft process-based approach will guide the writing and revision of essays. Additionally, there will be a focus on grammar and lexical issues most challenging for students at the third-year level. Prereq., SPAN 3000 (min. grade C-). Similar to SPAN 4010. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Spanish Spanish

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## SPAN-3030 (3) Professional Spanish for Business 1

Includes the study of business vocabulary, business concepts, geographic context, and cultural context. Prereq., SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-3040 (3) Professional Spanish for Business 2

Continuation of SPAN 3030 with more emphasis on interpreting and elementary translation. Some attention is given to the writing of resumes and application letters, as well as to the entire job-search process. Prereqs., SPAN 3000, 3030. Prerequisites: Restricted to Spanish majors with a subplan of International Spanish for Professionals.

College of Arts & Sciences Spanish Spanish

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## SPAN-3050 (3) Spanish Phonology and Phonetics

Designed to teach some of the methods, techniques, and tools of descriptive linguistics as they apply to articulatory phonetics. Students analyze important contrasts between sounds of Spanish and English by means of phonetic transcription. Prereq., SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-3100 (3) Literary Analysis

Students read short stories and other brief narrative texts, critical and creative essays, short plays, and poems to facilitate the acquisition of critical skills in identification of basic ideological and formalistic issues within texts being studied. Prereq., SPAN 3000 or equivalent.

College of Arts & Sciences Spanish Spanish

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## SPAN-3120 (3) Advanced Spanish Grammar

Analysis of texts from morphological and syntactic perspectives. Structural and semantic characteristics of major features of Spanish are studied at the sentence level. Use of these grammatical features is then studied in selected literary texts. Prereq., SPAN 3000 or equivalent.

College of Arts & Sciences Spanish Spanish

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## SPAN-3150 (3) Linguistic Analysis of Spanish

Introduces students to fundamental areas of linguistic analysis with special attention paid to Spanish (and Portuguese). The structural systems of language will be introduced (principles of sound patterns, word formation, meaning, and sentence structure). Different types of language variation will be discussed (historical, social, regional). Prereq., SPAN 3000 or equivalent.

College of Arts & Sciences Spanish Spanish

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## SPAN-3200 (3) Spanish Culture

Examines historical bases of modern Spain's cultural and political currents. Prereq., SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-3210 (3) The Cultural Heritage of Latin America

Examines literary, artistic, and philosophical currents in Latin America beginning with pre-Columbian indigenous cultures and continuing to the present. Prereq., SPAN 3000. Credit not granted for this course and SPAN 3220.

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College of Arts & Sciences Spanish Spanish

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## SPAN-3220 (3) Latin American Culture: Spanish America and Brazil

Examines literary, artistic, and philosophical currents in Spanish America and Portuguese America (Brazil), from pre-Columbian times to the present. Taught in Spanish. Prereq., SPAN 3000. Recommended prereqs., PORT 2110 and 2120. Credit not granted for this course and SPAN 3210. Same as PORT 3220.

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College of Arts & Sciences Spanish Spanish

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## SPAN-3240 (3) Catalan Culture 1: Nation and Art

Introduces students to the literary, artistic, and historical currents of Catalonia, an economically vibrant area of the Iberian Peninsula with 10 million people, its capital Barcelona, and a distinct culture and language. The course examines national identity and major works from renowned Catalan artists, spanning architecture, painting, and literature, like Dali, Gaudi, or Miro. Prereq., SPAN 3000.

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College of Arts & Sciences Spanish Spanish

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## SPAN-3250 (3) Catalan Culture 2: Contemporary Trends and Barcelona

Introduces students to the contemporary social and cultural trends of Catalonia as they take place mainly in its capital Barcelona. The course examines current developments in fields such as theatre, art, fashion, cooking, urban design or architecture. Prereq., SPAN 3000.

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College of Arts & Sciences Spanish Spanish

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## SPAN-3260 (3) Late 19th and 20th Century Argentine Narrative

Considers a series of late 19th and 20th century canonical works from several genres (poetry, short story, essay, and the novel). The student will acquire a very specific knowledge of late 19th and 20th century Argentine literature, its relationship to specific social actors and specific historical processes. This is a faculty sponsored Global Seminar to Rosario, Argentina, offered through the Study Abroad Program. Prereq., SPAN 3000 or equivalent.

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College of Arts & Sciences Spanish Spanish

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## SPAN-3270 (3) Barcelona: Understanding Local and Immigrant Cultures

Explores the history of Barcelona, a cosmopolitan city that is one of the oldest in Europe, from an interdisciplinary, European perspective that emphasizes the city's cultural diversity and pluralism. A range of historical, literary, artistic, and sociological texts will be examined. Taught in Spanish. Offered through the Study Abroad program. Prereq., SPAN 3000. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Spanish Spanish

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## SPAN-3310 (3) 20th Century Spanish Literature

Surveys leading writers of Spain from 1898 until the present. Prereq., SPAN 3100.

College of Arts & Sciences Spanish Spanish

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# Courses

Search by College, Department & Category

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Search by Course Number

**Subject**    **Number**

SPAN

## SPAN-3340 (3) 20th Century Spanish American Literature

Introduces contemporary Spanish American literature. Prereq., SPAN 3100.

College of Arts & Sciences    Spanish    Spanish

## SPAN-3800 (3) Selected Readings: Latin American Literature in Translation

Introduces selected Latin American (Spanish and Portuguese) literature masterpieces. Taught in English. Does not count toward the Spanish major. Approved for arts and sciences core curriculum: literature and the arts.

College of Arts & Sciences    Spanish    Spanish

## SPAN-4010 (3) Advanced Rhetoric and Composition.

Designed to improve written expression in Spanish. Offers a detailed study of nuances of grammar points most difficult for students. Gives attention to errors in student compositions and to various styles of written Spanish. Prereqs., SPAN 3100 and 3120 or equivalent. Similar to SPAN 3010.

College of Arts & Sciences    Spanish    Spanish

## SPAN-4060 (3) Problems of Business Translation in Spanish 1

Develops skills in English-Spanish and Spanish-English translation and interpretation. Prereq., SPAN 3040 or equivalent.

College of Arts & Sciences Spanish Spanish

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## SPAN-4070 (3) Problems of Business Translation in Spanish 2

Legal and commercial documents are studied, prepared, and discussed to enable students to perform successfully in real translation situations. Prereq., SPAN 4060 or equivalent. Prerequisites: Restricted to Spanish majors with a subplan of International Spanish for Professionals.

College of Arts & Sciences Spanish Spanish

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## SPAN-4110 (3) Hispanic Women Writers

Discusses the image of women in Spanish literature through the centuries using works by representative female writers. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-4150 (3) Masterpieces of Spanish Literature to 1700

Treats major literary tendencies of Spanish literature from its origins to the end of the Baroque period. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000. Prerequisites: Requires pre-requisite course of SPAN 3100.

College of Arts & Sciences Spanish Spanish

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## SPAN-4160 (3) Masterpieces of Spanish Literature: 1700 to Present

Requires a reading of selected masterpieces and an examination of major movements and figures in the literature of Spain from 1700 to the present. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000. Prerequisites: Requires pre-requisite course of SPAN 3100.

College of Arts & Sciences Spanish Spanish

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## SPAN-4170 (3) Masterpieces of Spanish American Literature to 1898

Examines major works of Spanish American literature from the colonial period to the late 19th century. Emphasizes major figures and their works. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000. Prerequisites: Requires pre-requisite course of SPAN 3100.

College of Arts & Sciences Spanish Spanish

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## SPAN-4180 (3) Masterpieces of Spanish American Literature: 1898 to Present

Examines major works of Spanish American literature from late 19th century to present. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000. Prerequisites: Requires pre-requisite course of SPAN 3100.

College of Arts & Sciences Spanish Spanish

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## SPAN-4220 (1-3) Special Topics in Spanish and/or Spanish American Literature

Examines intensively particular topics or issues concerning Spanish and/or Spanish American literature selected by the instructor. May be repeated up to 7 total credit hours. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-4230 (3) Special Topics in Luso-Brazilian and/or African Literature

Designed to examine intensively particular topics or issues concerning the literatures of Portugal, Brazil, and/or the African countries of Portuguese colonization. Taught in Spanish. May be repeated up to 6 total credit hours. Prereqs., PORT 3230, SPAN 3100, 3120, and an additional course above SPAN 3000. Same as PORT 4230.

College of Arts & Sciences Spanish Spanish

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## SPAN-4430 (3) Special Topics in Hispanic Linguistics

Examines intensively particular topics or issues concerning Hispanic linguistics selected by the instructor. May be repeated up to 9 total credit hours on different topics. Prereqs., SPAN 3100, 3120, and an additional course above 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-4450 (3) Introduction to Hispanic Linguistics

Introduces students to the main areas of inquiry within the field of Hispanic linguistics. Topics to be covered include speech and language, phonetics and phonology, morphology and syntax, semantics, linguistic change and variation, and Spanish spoken in the United States. Prereqs., SPAN 3100, 3120, and an additional course above 3000. Same as SPAN 5450.

College of Arts & Sciences Spanish Spanish

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## SPAN-4500 (3) Methods of Teaching Hispanic Literature and Cultures

Introduces the methodologies associated with teaching Hispanic literature and culture in the secondary schools. Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000. Same as SPAN 5500.

College of Arts & Sciences Spanish Spanish

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## SPAN-4620 (3) Cervantes

Prereqs., SPAN 3100, 3120, and an additional course above SPAN 3000.

College of Arts & Sciences Spanish Spanish

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## SPAN-4650 (3) Methods of Teaching Spanish

Familiarizes students with current methodology and techniques in foreign language teaching. Peer-teaching coupled with opportunity to teach mini-lessons provide students with actual teaching experience in the foreign language classroom. Prereqs., SPAN 3100, 3120, an additional course above SPAN 3000, and admission to the teacher certification program or departmental approval. Same as SPAN 5650.

College of Arts & Sciences Spanish Spanish

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## SPAN-4660 (6) High School Spanish Teaching

Part of supervised secondary school teaching required for state certification to teach Spanish. These hours do not count toward student hours in the major nor in the total departmental hours allowed. The credit is pass/fail only. Prereq., SPAN 4650/5650.

College of Arts & Sciences Spanish Spanish

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## SPAN-4840 (1-3) Independent Study

Departmental approval required. May be repeated up to 7 total credit hours.

College of Arts & Sciences Spanish Spanish

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## SPAN-4930 (1-4) Languages Internship for Professions

Participants interested in public service or management-oriented careers in government or business are able to work as interns in public sector agencies or in private industry, on campus, or abroad. Prereqs., SPAN 3100 and 3200, an additional course above SPAN 3000, and departmental approval. Instructor consent required.

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College of Arts & Sciences Spanish Spanish

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## SPAN-4980 (1) Methods Language Learn/Pedagogy

Required, intensive mini-course for teaching assistants in Spanish and Portuguese. Provides teachers with the opportunity to learn about language learning theory and pedagogy. Prereq., graduate standing or departmental consent.

College of Arts & Sciences Spanish Spanish

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## SPAN-4990 (3) Spanish Honors Thesis

May be repeated up to 7 total credit hours. Prereqs., 18 hours of upper-division Spanish (3.00 GPA overall and 3.50 GPA in Spanish).

College of Arts & Sciences Spanish Spanish

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## SPAN-5120 (1-3) Seminar: Spanish Literature and/or Spanish American Literature

Selected topics in Spanish and/or Spanish American literature. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-5130 (1-3) Seminar: Critical Approaches to Hispanic Literature

Treats various topics and genres, as needs and resources dictate. Gives special attention to theoretical and critical analysis of Hispanic literature with greatest emphasis on contemporary trends. Genres might include narrative, poetry, and theatre. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7130. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-5140 (3) Seminar: Spanish Literature, Medieval Period

Studies medieval works, authors, and themes, with consideration of principal influences from other literatures. Reading in Old Spanish. May be repeated up to 6 total credit hours. Prereq., graduate standing and SPAN 5420 or 7420 or instructor consent. Same as SPAN 7140.

College of Arts & Sciences Spanish Spanish

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

SPAN

## SPAN-5200 (3) Seminar: Spanish Literature, Renaissance and Baroque

Treats various topics, as needs and resources dictate. Special attention to developing historical and current theoretical and critical background of each topic. Representative topics might include Renaissance poetry in Spain, Cervantes, Don Quixote, and Novelas ejemplares, picaresque novel, and the Spanish comedia of the 17th century. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7200. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Spanish](#)
[Spanish](#)

## SPAN-5210 (2-4) Seminar: Spanish Literature, 18th and/or 19th Centuries

Treats various topics, as needs and resources dictate. Gives special attention to developing historical and current theoretical and critical background of each topic. Representative topics might include romantic prose, poetry and theatre, realism and naturalism (prose narrative), 19th century poetry, and 19th century theatre. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7210. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
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## SPAN-5220 (1-3) Seminar: Spanish Literature, 20th Century

Treats various topics, as needs and resources dictate. Gives special attention to developing historical and current theoretical and critical background of each topic. Representative topics might include the generation of 1898, poetry of the 20th century, theatre of the 20th century, pre-Civil War novel, and post-Civil War novel. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7220. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#)
[Spanish](#)
[Spanish](#)

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## SPAN-5300 (2-4) Seminar: Spanish American Literature, Colonial Period and/or 19th Century

Treats various topics, as needs and resources dictate. Gives special attention to developing historical and current theoretical and critical background of each topic. Representative topics might include pre-Columbian literature, colonial prose and narrative, colonial poetry, romantic novel, the realist and naturalist novel and short story, 19th-century poetry, and gaucho literature. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7300. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-5320 (1-3) Seminar: 20th Century Spanish American Literature

Treats various topics, as needs and resources dictate. Gives special attention to developing historical and current theoretical and critical background of each topic. Representative topics might include modernism, theatre, the essay, the regional novel, the novel of the Mexican Revolution, the modern novel, contemporary theatre, and contemporary poetry. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or department consent. Same as SPAN 7320. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-5400 (2-4) Seminar: Spanish Phonology

Topics within Spanish phonology are treated, as needs and resources dictate. Gives special attention to different schools and contemporary theoretical developments. Representative topics might include generative phonology applied to Spanish, Spanish phonology for college teaching, and different schools of Spanish phonology. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7400.

College of Arts & Sciences Spanish Spanish

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## SPAN-5410 (2-4) Seminar: Spanish Syntax

Treats topics within Spanish syntax, each requiring a semester's study, as needs and resources dictate. Gives special attention to different schools and contemporary theoretical developments. Representative topics may include generative/transformational grammar applied to Spanish, fundamental problems in Spanish syntax, and different schools of Spanish syntax. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7410.

College of Arts & Sciences Spanish Spanish

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## SPAN-5420 (2-4) Seminar: History of the Spanish Language

Treats topics within the history of the Spanish language, as needs and resources dictate. Concerned with linguistic evolution of Spanish from neo-Latino to its present status as a world language; considers important historic, linguistic, literary, and cultural currents. Representative topics might include a diachronic study of Spanish linguistic forms, the extension of Spanish to the New World, and linguistic and literary texts in Old Spanish. May be repeated up to 7 total credit hours. Prereq., graduate standing in Span or Departmental Consent. Same as SPAN 7420.20.

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College of Arts & Sciences Spanish Spanish

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## SPAN-5430 (1-3) Seminar: Hispanic Linguistics

Studies a major topic from an area such as phonology, syntax, history of the Spanish language, Hispanic linguistics and literature, or applied Hispanic linguistics. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7430.

College of Arts & Sciences Spanish Spanish

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## SPAN-5440 (3) Seminar: Trends in Hispanic Linguistics

Provides an overview of major trends and issues in Hispanic linguistics, including phonology, syntax, dialectology, sociolinguistics, discourse analysis, text linguistics, semiotics, history of the Spanish language, language acquisition, and applied linguistics. May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental consent. Same as SPAN 7440. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-5450 (3) Introduction to Hispanic Literature Linguistics

Same as Span 4450.

College of Arts & Sciences Spanish Spanish

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## SPAN-5460 (3) Topics in Spanish Applied Linguistics

Treats topics within the scope of Spanish first and second language acquisition and the speech of bilinguals. Other topics include contrasting linguistics, interlingual stages of learning, and code switching as they relate to language acquisition. Prereq., graduate standing or instructor consent. Same as Span 7460.

College of Arts & Sciences Spanish Spanish

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## SPAN-5500 (3) Seminar: Methods of Teaching Hispanic Literature and Cultures

Same as SPAN 4500.

College of Arts & Sciences Spanish Spanish

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## SPAN-5650 (3) Methods of Teaching Spanish

Same as SPAN 4650.

College of Arts & Sciences Spanish Spanish

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## SPAN-6840 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental approval.

College of Arts & Sciences Spanish Spanish

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## SPAN-6940 (1) Master's Degree Candidate

Prereq., graduate standing in Spanish or departmental approval.

College of Arts & Sciences Spanish Spanish

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## SPAN-6950 (1-6) Master's Thesis

Prereq., graduate standing in Spanish or departmental approval.

College of Arts & Sciences Spanish Spanish

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## SPAN-7120 (1-3) Seminar: Spanish Literature and/or Spanish American Literature

Same as SPAN 5120. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7130 (1-3) Seminar: Critical Approaches to Hispanic Literature

Same as SPAN 5130. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7140 (3) Seminar: Spanish Literature, Medieval Period

Same as SPAN 5140. May be repeated up to 6 total credit hours.

College of Arts & Sciences Spanish Spanish

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## SPAN-7200 (3) Seminar: Spanish Literature, Renaissance and Baroque

Same as SPAN 5200. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7210 (2-4) Seminar: Spanish Literature, 18th and/or 19th Centuries

Same as SPAN 5210. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7220 (1-3) Seminar: Spanish Literature, 20th Century

Same as SPAN 5220. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7300 (2-4) Seminar: Spanish American Literature, Colonial Period and/or 19th Century

Same as SPAN 5300. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7320 (1-3) Seminar: 20th Century Spanish American Literature

Same as SPAN 5320. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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# Courses

Search by College, Department & Category

College/School

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Search by Course Number

Subject Number

SPAN

## SPAN-7400 (2-4) Seminar: Spanish Phonology

Same as SPAN 5400.

College of Arts & Sciences Spanish Spanish

## SPAN-7410 (2-4) Seminar: Spanish Syntax

Same as SPAN 5410.

College of Arts & Sciences Spanish Spanish

## SPAN-7420 (2-4) Seminar: History of the Spanish Language

Same as SPAN 5420.

College of Arts & Sciences Spanish Spanish

## SPAN-7430 (1-3) Seminar: Hispanic Linguistics

Same as SPAN 5430.

College of Arts & Sciences Spanish Spanish

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## SPAN-7440 (3) Seminar: Trends in Hispanic Linguistics

Same as SPAN 5440. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Spanish Spanish

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## SPAN-7460 (3) Topics in Spanish Language Acquisition and Applied Linguistics

Same as SPAN 5460.

College of Arts & Sciences Spanish Spanish

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## SPAN-8840 (1-3) Independent Study

May be repeated up to 7 total credit hours. Prereq., graduate standing in Spanish or departmental approval.

College of Arts & Sciences Spanish Spanish

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## SPAN-8990 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prereq., graduate standing in Spanish or departmental approval.

College of Arts & Sciences Spanish Spanish

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**   **Number**

SWED

## SWED-1010 (4) Beginning Swedish 1

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Swedish](#)

## SWED-1020 (4) Beginning Swedish 2

Prereq., SWED 1010 (min grade of C-).

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Swedish](#)

## SWED-1900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Swedish](#)

## SWED-2110 (4) Second-Year Swedish Reading and Conversation 1

Prereq., SWED 1020 (min grade C-). Meets MAPS requirement for foreign language. Fulfills the arts and sciences language requirement for the BA and BFA degrees.

[College of Arts & Sciences](#) [Germanic & Slavic Languages & Literature](#) [Swedish](#)

## SWED-2120 (4) Second-Year Swedish Reading and Conversation 2

Prereq., SWED 2110 with a grade of C- or better.

College of Arts & Sciences Germanic & Slavic Languages & Literature Swedish

## SWED-3900 (1-6) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Germanic & Slavic Languages & Literature Swedish

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## Courses

Search by College, Department & Category

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Subject Number

TBTN

### TBTN-1010 (4) Beginning Colloquial Tibetan I

Provides a thorough introduction to colloquial forms of Tibetan. This course focuses on conversation practice, the acquisition of basic vocabulary and grammar in colloquial usage, learning the alphabet, and training in the skills of pronunciation, spelling and handwriting.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Tibetan](#)

### TBTN-1020 (4) Beginning Colloquial Tibetan II

Provides a thorough introduction to colloquial forms of Tibetan. This course continues the development of vocabulary and grammar begun in Tibetan I and expands the range of conversation topics. While students focus on oral and aural skills, they begin to learn to read and write modern Tibetan to produce an overall knowledge of the language. Prereq., TBTN 1010 (min. grade C) or instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Tibetan](#)

### TBTN-2010 (4) Intermediate Colloquial Tibetan I

Aims at increasing students' proficiency in colloquial forms of Tibetan. This course expands knowledge of the vocabulary and grammar of spoken Tibetan and engages in more advanced conversation topics while also continuing to develop reading knowledge of modern Tibetan. Prereq., TBTN 1010 and 1020 (min. grade C) or instructor consent.

[College of Arts & Sciences](#) [East Asian Languages & Civilizations](#) [Tibetan](#)

### TBTN-2020 (4) Intermediate Colloquial Tibetan II

Aims at increasing students' proficiency in colloquial forms of Tibetan. This course expands knowledge of the vocabulary and grammar of colloquial Tibetan and also continues to develop knowledge of reading and writing modern Tibetan. Prereq., TBTN 2010 (min. grade C) or instructor consent.

College of Arts & Sciences East Asian Languages & Civilizations Tibetan

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## TBTN-3210 (4) Beginning Literary Tibetan 1

Provides a thorough introduction to literary and colloquial forms of Tibetan. This course focuses on the grammatical foundation of the language, the acquisition of basic vocabulary, and training in the skills of pronunciation, conversation, handwriting and spelling.

College of Arts & Sciences East Asian Languages & Civilizations Tibetan

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## TBTN-3220 (4) Beginning Literary Tibetan 2

Continuation of TBTN 3210. Provides a thorough introduction to literary and colloquial forms of Tibetan. This course continues the grammar and vocabulary work begun in Tibetan 1 by studying actual Tibetan text and moving to more advanced conversation topics. Students develop oral, aural, and written skills to produce an overall knowledge of the language. Prereq., TBTN 3210 (min grade C-).

College of Arts & Sciences East Asian Languages & Civilizations Tibetan

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## TBTN-4210 (4) Intermediate Literary Tibetan 1

Aims at increasing students' proficiency in literary and colloquial forms of Tibetan. This course expands knowledge of the grammar and vocabulary of literary Tibetan through translating texts in a variety of genres and also continues to develop knowledge of spoken modern Tibetan. Prereqs., TBTN 3210 and 3220 (min grade C-).

College of Arts & Sciences East Asian Languages & Civilizations Tibetan

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## TBTN-4220 (4) Intermediate Literary Tibetan 2

Continuation of TBTN 4210. Aims at increasing students' proficiency in literary and colloquial forms of Tibetan. This course expands knowledge of the grammar and vocabulary of literary Tibetan through translating texts in a variety of genres and also continues to develop knowledge of spoken modern Tibetan. Prereq., TBTN 4210 (min grade C-).

College of Arts & Sciences East Asian Languages & Civilizations Tibetan

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

THTR

## THTR-1003 (3) Acting for Nonmajors

Teaches the basic principles of acting for those withno previous acting experience, focusing on relaxation, concentration, improvisation, use of imagination, actions, objectives, initial monologue and scene work, and basic terms and concepts of process work for the actor.

[College of Arts & Sciences](#) | [Theater & Dance](#) | [Performance](#)

## THTR-1009 (3) Introduction to Theatre

Introduces the varieties of theatrical art, past and present, contributions of the various theatrical artists to the total production, and the place of theatre art in today's society. Designed for nonmajors. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) | [Theater & Dance](#) | [Special Courses in Theatre](#)

## THTR-1011 (3) Development of Theatre 1: Forms of Classical Theatre and Drama

Examines the interaction of dramatic literature and performance in classical forms of European and Asian theatre, including Greek, Roman, Indian, Japanese, Medieval, and Renaissance European. Approved for arts and sciences core curriculum: literature and the arts.

[College of Arts & Sciences](#) | [Theater & Dance](#) | [History/Dramaturgy/Directing](#)

## THTR-1019 (3) Theatre Foundations: Text Analysis and Practice for the

## Theatre Arts

Introduces fundamental methods of text analysis for the stage, presents common vocabulary and concepts of the theatre event as an art form and how it works, and what playmaking means to those who do it. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) Theatre (THTR or TBFA) majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Special Courses in Theatre](#)

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## THTR-1105 (3) Stage Technologies

Introduces technical production elements and procedures, including materials, organizations, methods and equipment to realize theatrical scenery, properties, lighting and sound. Credit not granted for this course and THTR 1065 or 1075.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-1115 (3) Costume Technologies

Introduces technical production elements and procedures including materials, organizations, methods and equipment to realize theatrical costuming and make-up. Credit not granted for this course and THTR 1065 or 1075. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-2003 (3) Acting 1

Emphasizes principles of acting, focusing on exercises in relaxation, talking and listening, actions and objectives, and basic concepts of process work. Prerequisites: Restricted to Theatre (THTR, TBFA) Dance (DNCE, DBFA), Film or Arts and Sciences Open Option majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

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## THTR-2013 (3) Performance of Literature

Students learn to perceive literary form and content and to translate that perception into classroom performances of selected modern plays and stories. Performances, both solo and ensemble, embody literary texts diverse in terms of gender and ethnicity. Prereqs., 15 credit hours and THTR 1003, 2003 or 2043.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

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## THTR-2021 (3) Development of Theatre 2: Forms of Modern Theatre and Drama

Examines the interaction of dramatic literature and performance in European theatre from 1800 to present, with attention to innovators

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like Ibsen, Strindberg, Stanislavsky, Meyerhold, Pirandello, Brecht, Beckett, and Churchill.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-2035 (3) Design Fundamentals

Introduces principles and techniques relevant to the expression of dramatic mood and idea through visual elements of the theatre, giving practice in concept development, style selection, and rendering techniques in scenery and costume design.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-2043 (3) Voice and Movement for the Stage

Natural resources of the human voice and body are studied as artistic resources for the performing artist. Designed to examine both the process and products of vocal and physical craft work. Prerequisites: Restricted to Theatre (THTR, TBFA) or Dance (DNCE or DBFA) majors only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-2059 (3) Open Topics in Theatre and Drama

Covers topics not otherwise listed in the curriculum. Topics for each semester are specified in the online schedule planner.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-2105 (3) Introduction to Theatre Design

Introduces the process and procedures of Theatrical Stage Design, including scenery, costumes, lighting and sound design. Course requires project work and graphic skill development. Students learn through hands-on activities and observation.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-2849 (1-3) Independent Study

May be repeated up to 3 total credit hours.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-3005 (3) Costume Design 1

Study and application of the principles of design as applied to stage costume, emphasizing texts in analysis and interpretation. Presented in a studio format and project driven. Explores concept development, style selection, and extensive practice in a variety of media and techniques for costume rendering. Prereq., THTR 1115 or instructor consent.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-3011 (3) Development of the American Musical Theatre

Studies the American musical theatre heritage and its relation to the continually changing social milieu. Examines productions, their creators, and performers. Recommended prereq., 3 credits in THTR, DNCE, or MUSC. Approved for arts and sciences core curriculum: literature and the arts. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Arts and Sciences, Leeds School of Business, College of Music or School Journalism and Mass Communication students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-3013 (3) Studio 1: Building a Character

Students learn to deepen and develop their proficiency with specific acting techniques. Explores the craft elements of acting, as well as text analysis. Prereq., THTR 2003. Restricted to BFA program in acting or instructor consent. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) Theatre (TBFA) majors only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-3015 (3) Scene Design 1

Examines the process of theatrical scene design from early conception to realization. Course work is project-based. Students are introduced to the crafts of script analysis, conceptualization, design expression, drafting, and 3-D model building.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-3023 (3) Studio 2: Creating a Role

Continued development of acting technique and tools for play analysis, with particular emphasis on scene study. Special attention will be given to the Master Teachers of Acting and their pedagogies. Prereq., THTR 3013 or instructor consent. Prerequisites: Restricted to Theatre (TBFA) majors only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-3031 (3) Development of Theatre 3: 20th Century International Drama

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Introduces 20th century international drama. Discusses selected plays by major African, Asian, and European authors and explores different dramatic traditions and their increasing interactions throughout the 20th century.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-3033 (1-3) Production Research and Practicum: Acting

Allows students to undertake an acting project, either within the major season or approved departmental production. Requires detailed preparational research, rehearsal commitments, and public presentation of theories and concepts in practice. Following the performance, students present written reports and evaluations. May be repeated up to 3 total credit hours. Prereq., THTR 2003 or 2043.

College of Arts & Sciences Theater & Dance Performance

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## THTR-3035 (1-2) Production Practicum

Practical production projects within a designated area of technical theatre, design, stage management, normally related to the department's season. May be repeated up to 8 total credit hours. Prereqs., THTR 1105 and 1115.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-3037 (2-3) Shakespeare Practicum

Students are assigned to work with production artisans of the Colorado Shakespeare Festival. While there are many possible areas, production designs for each season determine the number of available positions. May substitute for two credits of THTR 3035. Prereq., THTR 1105 or 1115.

College of Arts & Sciences Theater & Dance Shakespearean Production

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## THTR-3043 (3) Advanced Voice for the Stage

Continues the work begun in THTR 2043. Studies advanced vocal techniques with the goal of integrating these skills into the working process of the performing artist. Prereqs., THTR 2043 or instructor consent. Prerequisites: Restricted to Theatre (THTR or TBFA) majors only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-3045 (3) Stage Management

Covers stage management from the inception of a production concept through the process of mounting a production, focusing on the interrelationships of the various artists involved, management and scheduling of time, and the psychology of handling a wide range of personalities. Prereq., THTR 1105 or instructor consent.



## Courses

Search by College, Department & Category

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THTR

### THTR-3053 (3) Acting 2

Continuation of the techniques introduced in the beginning acting courses (THTR 1003 and 2003). Emphasis is placed on monologues and scene study of contemporary plays. Basic techniques in developing a character are explored. Prereq., THTR 1003 or 2003.

Prerequisites: Restricted to Theatre, Music, Music Arts or Film Majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

### THTR-3055 (3) Stage Lighting Design 1

Introduces the craft of stage lighting design through experimental lighting labs, lecture/demos, hands-on production experience, and theoretical projects. Subject matter includes aesthetics of light, colortheory, lighting for performance, design graphics, and basic lighting technology. Prereq., THTR 1105 or instructor consent.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

### THTR-3075 (3) Sound Design

Study and application of the principles of sound technology and design, emphasizing concepts of electricity, acoustics, equipment, and their application to the stage. Prereq., THTR 1105 or instructor consent.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

### THTR-3085 (3) History of Western Fashion

Surveys topics in western dress from ancient civilizations to contemporary time: the garments, accessories, materials, and technologies of

personal adornment in the context of philosophical, political, social, and technological change. Priority given to majors. Replaces THTR 2085.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-3149 (2) Professional Orientation: Exploring Professional Potentials for Theatre Majors

To explore and identify a wide range of professional opportunities connected to personal strengths and interests in theatre by studying current professional practices, trends and cross-disciplinary connections. Instructor will: provide information/learning needed from representative professionals; open avenues to find/create employment opportunities (including those not limited to theatre related fields) towards internship consideration/post-graduation; and mentor structured self-assessment/professional development. Prereq., THTR 1019. Recommended prereqs., THTR 1105 or 1115.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-3849 (1-3) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-4005 (3) Costume Design 2

Advanced studio course building on experiences and techniques studied in THTR 3005, with additional emphases on portfolio quality rendering technique and costume production technology as it affects and is affected by the designer. Prereq., THTR 3005.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-4013 (3) Studio 3: Acting Shakespeare

In-depth study of Shakespearean texts from the perspective of their demands on the actor, including the conventions and performance styles of Elizabethan theatre. Prereqs., THTR 3013 and 3023, or instructor consent. Prerequisites: Restricted to Theatre (TBFA) majors only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-4015 (3) Scene Design 2

Advanced projects in theatrical scene design. Provides intensive practice in sketching, rendering, drafting and model-building. Emphasizes portfolio development and preparing the student designer for graduate training or professional work. Prereq., THTR 3015 or

instructor consent.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

## THTR-4021 (3) Development of Theatre 4: American Theatre and Drama

Explores issues in American theatre and drama in the 19th through 20th centuries. Prereqs., junior or senior standing and at least 12 hours of THTR course work. Similar to THTR 4001. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Theatre (THTR or TBFA) majors only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

## THTR-4023 (3) Studio 4: Playing with Styles

Studies selected styles of theatre performance such as Greek Drama, Comedy of Manners, Commedia Dell'art, Modern Realism, Theatre of Absurd, and Non-Western Theatre, including vocal and physical style elements. Prereq., THTR 3013, 3023, and 4013, or instructor consent.

College of Arts & Sciences Theater & Dance Performance

## THTR-4029 (1-12) Cu-Boulder Touring Company

Participation in departmental touring dance company. By audition. May be repeated up to 12 total credit hours. Prereqs., DNCE 2021, 3041, or 4061. Full-year course; course consecutive fall and spring semesters required. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

## THTR-4033 (3) Advanced Movement for the Stage

Continues the work begun in THTR 2043. Studies the advanced physical techniques with the goal of integrating these skills into the working processes of the performing artist. Prereqs., THTR 2043 or instructor consent.

College of Arts & Sciences Theater & Dance Performance

## THTR-4035 (3) Scene Painting

Introduces the craft of scene painting through practical projects. Sessions are in a studio format. Students are trained in traditional methods of scenic art, including layout, representational painting, trompe l'oeil, faux finishing, and related skills. Students are taught about proper tool use and care, paint products, and the profession.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-4039 (3) Musical Theatre Repertory

Developed around the learning of complete scenes, songs, and dances that are representative of the major periods and styles within musical comedy from the 1920s to the present. Emphasizes in-class performance. Admission by audition. May be repeated up to six total credit hours. Same as THTR 5039. Prerequisites: Restricted to Theatre (THTR or TBFA) or Dance (DNCE or DBFA) Majors only.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-4041 (3) Women and Theatre of the 20th and 21st Centuries

Explores a body of 20th and 21st century dramatic literature central to the study of women and theatre as well as the study of 20th and 21st century cultural history from a cross-national and multiracial feminist perspective. Major playwrights, particularly women from Asia, Africa, and Europe, are read and discussed. Recommended prereq., THTR 3031. Same as THTR 5041 and WMST 4041.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-4047 (3) Shakespeare Behind the Scenes

Detailed study of script analysis, directing concepts, staging and criticism of the plays being produced by the Colorado Shakespeare Festival.

College of Arts & Sciences Theater & Dance Shakespearean Production

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## THTR-4049 (1-4) Problems in Theatre

Opportunity for students to explore, upon consultation with the instructor, areas in theatre that the normal sequence of offerings may not allow. May be repeated up to 9 total credit hours. Same as THTR 5049.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-4051 (3) Playwriting

Introductory course in craft of playwriting; primary focus on technique of developing short plays. Instructor consent required. May be repeated up to 6 total credit hours.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-4055 (3) Stage Lighting Design 2

Assumes a basic knowledge of stage lighting; concentrates on advanced technology, processes, and design projects. Prereq., THTR 3055.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-4059 (3) Open Topics in Theatre and Drama

Covers topics not otherwise listed in the curriculum. Topics for each semester are specified in the online Schedule Planner. May be repeated up to 9 total credit hours.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-4061 (3) Directing

Theory and practice of directing for the stage. Prereqs., THTR 1003 or 2003; THTR 1105 and 1115, and two semesters of THTR 3035.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-4063 (3) Audition Techniques

Prepares students for the demands of the acting profession. Trains students in various audition techniques including general auditions, prepared auditions, cold readings, on-camera auditions, and commercial auditions. Shows how to prepare and perfect audition material in a professional and exemplary way. Discusses agents, casting directors, and the process of becoming a professional actor.

College of Arts & Sciences Theater & Dance Performance

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## THTR-4073 (3) Performing Voices of Women

Explores theories underlying the "Feminine voice," varied perspectives in prose and poetry, ways of embodying these voices and perspectives in performance forms, and ultimately the students' own voices through creation of autobiographical performance pieces (some to be presented for student audiences). Open to both men and women. Prereq., instructor consent. Same as WMST 4073.

College of Arts & Sciences Theater & Dance Performance

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## THTR-4081 (3) Senior Seminar

Intellectual and conceptual capstone course for departmental majors with separate sections for theatre and dance students. Course promotes integration of ideas regarding history, criticism, and theory in performance and production. All inquiry throughout the semester

relates to the theme of creative process.

[College of Arts & Sciences](#) [Theater & Dance](#) [History/Dramaturgy/Directing](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

THTR

## THTR-4085 (3) Theatre Management

Concentrates on theory and practice of management aspects of the performing arts, emphasizing theatre and dance. Includes marketing, budgeting, house and stage management, audience development, grant writing, unions, and season development. Includes practical experience. Prereqs., THTR 1105 and 1115. Credit not granted for this course and THTR 3065. Same as THTR 5085.

[College of Arts & Sciences](#)
[Theater & Dance](#)
[Theatre Design and Technology](#)

## THTR-4095 (1-3) Special Topics in Theatre Design and Technology

Intensive study of specialized topics in theatre technology and design. Topics and credits specified in the online Schedule Planner. May be repeated up to 12 total credit hours within a term.

[College of Arts & Sciences](#)
[Theater & Dance](#)
[Theatre Design and Technology](#)

## THTR-4103 (3) Acting for the Camera

Introduces fundamental tools of acting for the camera. Students learn basic film terminology, specific camera acting techniques, and the demands placed on an actor when shooting a film. Uses exercises, scenes, monologues, and readings to provide a solid understanding of how to create a character, analyze a text, utilize important vocabulary, and perform effectively on camera. Prereq., THTR 1003 or 2003 or instructor consent.

[College of Arts & Sciences](#)
[Theater & Dance](#)
[Performance](#)

## THTR-4135 (3) Technical Production

Examines the process of and technology for producing theatrical scenery on a limited production timeline. Prereq., THTR 3035. Recommended prereq., THTR 3015 or 3055.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-4145 (3) Colloquium in Advanced Design

An advanced theatre design course that emphasizes the collaborative process and advanced design presentation methods. Course work includes completion of several "mock" design projects, with students often working in collaborative teams.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-4149 (1-3) Theatre Internship

Provides opportunities for theatre majors to explore career opportunities in theatre fields other than, or in addition to, those with performance emphasis. Students apply knowledge and skills developed in their major studies to a practical work experience. Maybe repeated up to 6 total credit hours. Prereq., 30 credit hours in THTR.

[College of Arts & Sciences](#) [Theater & Dance](#) [Special Courses in Theatre](#)

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## THTR-4193 (3) Studio 5: Creating an Ensemble

Students create an ensemble piece utilizing collaborative approaches. Emphasizes training actors in weaving personal, social, political, and cultural threads into an enactment. Prereqs., THTR 3013, 3023, 4013, 4023, or instructor consent.

[College of Arts & Sciences](#) [Theater & Dance](#) [Performance](#)

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## THTR-4555 (1-2) Production Studio

Requires participation in a Theatre department production assignment in the areas of design, technology, or management, as well as participation in a semester portfolio review. May be repeated up to 6 total credit hours. Restricted to TBFA majors. Credit not granted for this course and THTR 4065 or 4075. Prerequisites: Restricted to Theatre (TBFA) majors only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-4849 (1-3) Independent Study

May be repeated up to 6 total credit hours.

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College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-5011 (3) Seminar: Theory and Criticism

Studies theories and criticisms of drama and theatrical performances from Plato to post-modernism. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5025 (3) Costume Patterning and Construction

Includes techniques for the patterning and construction of contemporary and period costumes. Hands-on format covers techniques, materials, and equipment particular to theatrical production. Prereqs., THTR 1105 and 1115. Formerly THTR 4025.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-5031 (3) Russian Theatre

Studies Russian theatre history and the development of Russian drama from the 18th century to the present. Taught in translation.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5039 (3) Musical Theatre Repertory

Same as THTR 4039.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-5041 (3) Women and Theatre of the 20th and 21st Centuries

Same as THTR 4041. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5049 (1-4) Problems in Theatre

Same as THTR 4049. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-5051 (3) Special Topics in Theatre History

Detailed study of a particular topic in theatre history (e.g., an era, a style, a country, or an organization). Topic specified in the online Schedule Planner. May be repeated up to 9 total credit hours on different topics. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5061 (3) Seminar: Asian Performance

Study of live performance forms, theory, and literature throughout Asia: performance history, production styles, and social functions of performance. Background in theatre, dance, or Asian studies recommended. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5071 (3) Perspectives on Directing

Advanced study of theory and practice of stage directing through examination of the work of leading directors, analysis of texts, and classroom exercises. Prereq., previous directing course work and/or directing experience.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-5085 (3) Theatre Management

Same as THTR 4085.

College of Arts & Sciences Theater & Dance Theatre Design and Technology

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## THTR-5849 (1-3) Independent Study

May be repeated up to 6 total credit hours.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-6003 (1-3) Production Research and Practicum: Acting

Allows students to undertake an acting project, normally within the major theatre season, that requires detailed preparatory research, testing of ideas, and public presentation. Students work under faculty supervision and prepare a written report and evaluation of the research, rehearsal, and performance process. Prereqs., advanced studies in acting and advisor approval. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Performance

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## THTR-6005 (1-3) Production Research and Practicum: Designing

Allows students to undertake a design project, normally within the theatre season, that requires detailed preparatory research, testing of ideas, and public presentation of theories and concepts in practice. Students work under faculty supervision, and prepare a documented written report and evaluation of the research, design, and realization process, as well as fully rendered designs and/or plots. Projects may be in costumes, lights, or scenery. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Theatre Design and Technology](#)

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## THTR-6007 (3) Colorado Shakespeare Festival Dramaturgy

Students work as production dramaturgs for the Colorado Shakespeare Festival, developing detailed textual, historical, and critical research for CSF productions, participating in education and outreach programs, and writing production-related articles for publication. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Theater & Dance](#) [Shakespearean Production](#)

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## THTR-6009 (1) Research Strategies and Techniques

Examines research methodologies appropriate to the performing arts, particularly theatre and dance. Projects are aimed at familiarizing graduate students with the library and other resources, and the development of thesis and dissertation prospectuses. Same as DNCE 6009. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [Special Courses in Theatre](#)

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## THTR-6011 (3) Global Ancient and Classical Theatre

Studies classical and neoclassical drama in performance, with particular attention to 20th century productions and the critical and scholarly responses to these productions.

[College of Arts & Sciences](#) [Theater & Dance](#) [History/Dramaturgy/Directing](#)

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General Information

Programs of Study

Colleges & Schools

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Courses

## Courses

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Subject Number

THTR

### THTR-6021 (3) On-Stage Studies: English Renaissance Drama

Studies Elizabethan and Jacobean dramatic texts as playscripts for performance, with particular attention to contemporary Shakespeare criticism and landmark Shakespeare productions over the last two centuries.

[College of Arts & Sciences](#) [Theater & Dance](#) [History/Dramaturgy/Directing](#)

### THTR-6031 (3) On-Stage Studies: American Theatre

Studies American drama in performance, with particular attention to critical and scholarly responses to landmark productions of American classics. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Theater & Dance](#) [History/Dramaturgy/Directing](#)

### THTR-6041 (3) On-Stage Studies: Modern Theatre

Studies European theatre from 1600 to 1950, with particular attention paid to critical and scholarly responses to landmark productions of classics from the period.

[College of Arts & Sciences](#) [Theater & Dance](#) [History/Dramaturgy/Directing](#)

### THTR-6051 (1-3) Production Research and Practicum: Directing

Allows students to undertake a production project, normally within the major theatre season, that requires detailed preparatory research, testing of ideas, and public presentation. Students work under faculty supervision and prepare a documented written report and evaluation of the research, rehearsal, and performance process. Prereqs., advanced course work in directing and advisor approval.

Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-6071 (3) Seminar: Perspectives on Acting

Art of acting is examined through study of acting theories and practices developed during major periods of theatre history. Examines the variety of theories about acting that remain today.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-6081 (3) Seminar in American Theatre: Lesbians and Gays

Studies the portrayal of lesbians and gays in mainstream American theatre during the 20th and 21st centuries, as well as the contributions of gay and lesbian theatre artists during the same period.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-6091 (1-3) Production Research and Practicum: Dramaturgy

Students undertake a dramaturgical project, normally within the major season, requiring detailed preparatory research, testing of ideas, and public presentation of theories and concepts in practice. Students work under faculty supervision and prepare a documented written report of their project. Prereqs., advanced course work in dramatic literature and advisor approval.

College of Arts & Sciences Theater & Dance History/Dramaturgy/Directing

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## THTR-6849 (1-3) Independent Study

May be repeated up to 6 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-6949 (1) Master's Candidate

College of Arts & Sciences Theater & Dance Special Courses in Theatre

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## THTR-6959 (1-6) Master's Thesis

May be repeated up to 6 total credit hours.

## THTR-8999 (1-10) Doctoral Dissertation

All doctoral students must register for not fewer than 30 hours of dissertation credit as part of the requirements for the degree. For a detailed discussion of doctoral dissertation credit, refer to the Graduate School section. Prerequisites: Restricted to Graduate Students only.



## Courses

Search by College, Department & Category

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TLEN

### TLEN-5010 (3) Network Economics and Finance I

Introduces students to the fundamental theoretical framework and tools used by economists to examine decision making under scarcity. Reviews mathematical economics and models. Examines consumer choice and firm supply. These two aspects of the market are brought together to examine how price and output are determined in competitive and imperfectly competitive markets. Introduces financial economics, network effects and public goods. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) [Telecommunications](#)

### TLEN-5020 (3) Economics of Competition Policy in Network Industries

Develops methods to evaluate investments to account for uncertainty and dynamics. Examines approaches such as real options methodology, useful in a wide variety of applications including stock and project valuations, capital budgeting, and strategic planning. Prereq., TLEN 5010 or instructor consent.

[College of Engineering & Applied Science](#) [Telecommunications](#)

### TLEN-5050 (3) Leadership and Management

One year work experience is required. Same as EMEN 5050. Prerequisites: Restricted to Leeds School of Business or College of Engineering graduate students only.

[College of Engineering & Applied Science](#) [Telecommunications](#)

### TLEN-5106 (3) International Telecommunications

Examines the theoretical and practical identification, evaluation, and alternative strategies to establish a telecommunications venture in developed and developing countries. A semester-long project will develop and present a business plan to a potential investor. Class topics include cultural issues, partnerships, pricing, marketing, operations, financial structure, and risk. National approaches to licensing, pricing, spectrum, interconnection, and competition law are emphasized. Prereq., TLEN 5010. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5130 (3) Telecommunications Business Strategy

Covers concepts, strategies, and practical implementation of market oriented business strategy in the telecom industry grounded with real world examples. Topics include positioning, segmentation/ targeting, technology adoption, advertising/outreach, communication strategies, product management, sales process and business intelligence. Prereq., TLEN 5010. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5140 (3) IT and Business Strategy

Although some companies are very successful in discovering and cultivating innovative technology-enabled business strategies, many fail in the process. Combines theories and frameworks with practical approaches to provide students with the skills required to help companies identify business opportunities, find appropriate information related technologies, and lead adoption efforts to success. Prereq., TLEN 5010. Same as OPIM 4040/5040 and MGMT 4090.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5150 (1) Managing Effectively in a Changing Telecommunications Environment

Provides students with an opportunity to join international managers and policy makers from around the world in an intensive seminar focused on the challenges of managing in a telecommunications environment in an era of technological change. Guest lecturers provide an effective overview of the cutting-edge issues managers face in telecom and technology companies around the world. TLEN 5150 and ATLS 5150 are the same course.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5160 (3) Information Technologies and Communications

Provides a perspective of the basic and relevant issues of the communications and information technologies (CIT) industry, while gaining a wide picture overview of its main problems and trends. Students learn the technical, economic, management, and regulatory perspectives of CIT. The fundamental concepts and terminology associated with the communications industry is included in the course content. Recommended prereq., TLEN 5010.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5190 (3) Standardization and Standards Wars

Examines current issues and strategy in the standardization of telecommunications and information technologies. Covers topics on the importance of standards, government and private sector perspectives, and impact of information age technologies on standards development. Introduces students to relevance of antitrust and intellectual property law to the topic.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5206 (3) International Telecommunication Policy and Best Practices

Addresses networking and telecommunication policy issues faced by countries around the world. Subjects include financing projects, service for underdeveloped/under served areas, managing spectrum effectively, licensing new service providers, and complying with international treaty obligations. Recommended prereqs., TLEN 5010 and 5210. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5210 (2) Principles of Telecommunications Policy

Learn the key issues and principles that guide the decisions of policy makers with respect to the regulatory treatment of voice, video, and data communications. Engage in critical debate, and develop instincts for anticipating the likely regulatory models that may be applied to new technologies. This introductory course covers technical, economic, legal, political, and institutional considerations. Prereq., TLEN 5010. Same as CSCI 4143.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5230 (3) Spectrum Management and Policy

Studies how spectrum policy is developed and implemented. A general framework is developed for understanding telecommunications law and regulatory objectives. Course specifically analyzes international and domestic dimensions of spectrum policy. It also considers how economics, administrative processes, and innovative technologies affects management of the spectrum.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5240 (3) Telecommunications Law and Policy

May be repeated up to 6 total credit hours. Same as LAWS 7241. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5245 (3) Introduction to Intellectual Property Law

Provides an overview of our nation's intellectual property laws, including patent, copyright, trademark, trade secret, and also discusses other assorted matters related to intellectual property, including licensing, competition policy issues, and remedies. Same as LAWS 6301.

College of Engineering & Applied Science Telecommunications

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## TLEN-5250 (2-4) Technology Law and Policy Clinic

Features technology law advocacy before administrative and legislative bodies. The mission of TLPC is: 1) to train and produce students equipped to conduct thoughtful analysis, and 2) provide unbiased assistance in the public interest concerning technology issues to regulatory entities, courts, legislatures and standard setting bodies. Recommended prereqs., LAWS 6301, 6318 or 7241. LAWS 7809 and TLEN 5250 are the same course.

College of Engineering & Applied Science Telecommunications Practice:Clinical & Simulation

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## TLEN-5255 (3) Computer Crime

Explores legal issues that judges, legislators, prosecutors, and defense attorneys confront as they respond to recent explosions in computer-related crime. Includes the Fourth Amendment in cyberspace, the law of electronic surveillance, computer hacking and other computer crimes, encryption, online economic espionage, cyberterrorism, First Amendment in cyberspace, federal/state relations in enforcement of computer crime laws, and civil liberties online. Formerly TLEN 5535. Same as LAWS 6321.

College of Engineering & Applied Science Telecommunications

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## TLEN-5265 (3) Copyright

Examines state and federal laws relating to the protection of works of authorship ranging from traditional works to computer programs. Studies the 1976 Copyright Act as well as relevant earlier acts. Gives attention to state laws, such as interference with contractual relations, the right of publicity, moral right, protection of ideas, and misappropriation of trade values, that supplement federal copyright. Same as LAWS 7301. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5300 (1-3) Telecommunications Theory and Applications

Examines the mathematical and physical theory of telecommunications. Deals with the fundamental concepts related to a wide range of topics including physical units, numbering systems, trigonometric functions, logarithms, indices, decibels, complex numbers, calculus, elementary probability, and power circuit analysis. May be repeated up to 3 credit hours. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5310 (3) Telecommunications Systems

Reviews fundamental technical concepts and terminology in telecommunications. Topics of focus include: decibels, noise analysis, transmission lines, electronic signals, radio spectrum characteristics, link budgets, AM modulation, angle modulation, digital modulation, multiplexing, sampling and digital encoding, detection, and similar physical layer concepts. Systems for analysis include CATV, cellular wireless, WLAN, satellite systems, internet networking and related voice and data networks. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5330 (3) Data Communications 1

Provides a comprehensive technical survey of data and computer communications including Wireless, LAN, MAN, and WAN systems and standards. Covers packet switching, internetworking, addressing, routing, transport layers, TCP/IP internet, wired and wireless LAN technologies, congestion control and flow control schemes. Prereq. or coreq., TLEN 5310. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5340 (3) VOIP Network Design

Focuses on VoIP network design and optimization. The emphasis is on the convergence of VoIP, PSTN and cell phone networks and signaling. Topics include voice processing as well as IP and SS7 signaling. In addition there will be a review of ISDN, DSL, Sonet, ATM, SIP and MPLS. There will be a case problem for sizing a VoIP network using silence suppression. Coreq., TLEN 5310. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5350 (3) Satellite Communication Systems

Aimed at a high level fundamental understanding of broadcasting, communication and navigation satellite systems. Topics include orbital mechanics, orbit selection, spacecraft subsystems, spacecraft and earth station configurations, propagation issues, link budgets, modulation and multiplexing techniques, multiple access schemes (FDMA, TDMA, CDMA), error control coding, satellite network architecture, and economic, regulatory and business issues in Geo, Meo, and Leo systems. Co-req., TLEN 5330. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5370 (3) IP Routing Protocols

Breaks IP routing technologies into two fundamental pieces: an in-depth study of interior and then exterior gateway protocols. Prereq., TLEN 5330. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5390 (3) Applied Java Programming

Provides a comprehensive overview of basic programming concepts, the Java programming language using an object-oriented approach, and the software development life cycle for students with little to no previous programming experience. Prerequisites: Restricted to Leeds School of Business or College of Engineering graduate students only.

[College of Engineering & Applied Science](#) [Telecommunications](#)

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## TLEN-5410 (3) Network Management and Operations

Offers students a hands-on experience programatically managing network hardware and essential network services such as DHCP, DNS, ARP, FTP, Telnet, HTTP, SSH, SMTP, TFTP, and SNMP through the use of cross-platform scripting. Students with little or no programming experience will learn scripting by replicating functionality provided in common management suites such as HP OpenView, Nagios, Zennos, IBM Netview and others. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#) [Telecommunications](#)

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## Courses

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**Subject**    **Number**

TLEN

### TLEN-5430 (3) Data Communications 2

Provides a detailed technical study of Internet and Internet-related protocols following a top-down approach through the protocol stack. Bit-level analysis of a large number of Internet and Internet-related protocols, including the study of classic protocol suite principles. Covers real time and near real-time data streaming, IP mobility, IPV6, and an introduction to Internet security. Prereq., TLEN 5330 or instructor consent. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

### TLEN-5440 (3) Multimedia Networking

Covers the co-evolution of traditional multimedia services (such as telephony and television) and traditional data services onto a common network infrastructure: representation and compression for speech, audio, images, and video; media transport using Real time Transport Protocol (RTP); quality of service. Prereq., TLEN 5330. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

### TLEN-5460 (3) Telecommunication Systems Laboratory

Provides direct experience with telecommunications functions and equipment through experiments and demonstrations. Student teams learn the fundamental techniques of signal transmission and impairment measurement, voice and data switching, and systems administration, and the fundamental functions of data networking and services. Each experiment is designed to focus on some particular aspect of system management, development, or maintenance for either enterprise telecommunications customers or telecommunication service providers. Procedures require the use of actual commercial equipment, services, observation, reporting of behavior, and performance, compared to specified requirements. Student teams and laboratory periods for the semester are established during the first class lecture meeting. Prereqs., TLEN 5310 and 5330. Credit not granted for this course and CSCI 4123. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

[College of Engineering & Applied Science](#) | [Telecommunications](#)

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## TLEN-5462 (3) Advanced Telecommunications Lab

Presents advanced networking techniques through experiments with network measurement equipment, switches, routers, and management interfaces. Each experiment focuses on some particular aspect of system management, development, or maintenance. Procedures require the use of actual commercial equipment, services, observation, reporting of behavior, and performance, compared to specified requirements. Prereq., TLEN 5460. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5470 (3) Signaling Protocols

Signaling in this context is the exchange of information associated with the establishment and control of a connection. Students will gain an understanding of modern signaling protocols and differences among these protocols. Students will gain an appreciation of actually implementing signaling protocols in the Internet Protocol environment. Prereqs., TLEN 5330 and C/C++. Recommended prereq., Java programming.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5480 (3) Introduction to Optical Fiber Communications

Provides the student with a description of optical fibers, lasers, and detectors at a level that allows them to analyze and design optical fiber communication systems. Prereq., TLEN 5310. Same as ECEN 4116. Prerequisites: Restricted to Leeds School of Business or College of Engineering graduate students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5485 (2) Optical Circuits Laboratory

2-credit hour senior level lab. Experiments cover analog and digital information transmission on free space and guided wave optical carriers. Automated data acquisition and computer analysis of data are used to investigate transmission efficacy. Same as ECEN 4696.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5490 (3) Network Programming

Exposes students to Unix/Linux systems and network programming with an emphasis on practical programming problems and experience. Covers the unique challenges of programming distributed systems including resolving synchronization, threads, pipes, sockets, and other constructs for building TCP/IP network servers and clients.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5510 (3) Wireless and Cellular Communications

Presents in detail the technologies and architectures employed in cellular and other modern wireless systems and discusses regulatory and other industry issues. Major topics include radio technology, multiple access techniques, analog and digital cellular telephony, and personal communications systems. Prereq., TLEN 5310 or instructor consent. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5520 (3) Wireless Local Area Networks

Examines small-scale wireless networks particularly personal and local area networks. Covers licensed and unlicensed spectrum, indoor and small-scale radio propagation, modulation techniques, network topologies, ad hoc and infrastructure networks, protocol design, TCP/IP-wireless interactions, and protocol standards. Prereq., TLEN 5330. Recommended prereq., TLEN 5430.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5530 (3) Applied Network Security

Examines the critical aspects of network security. a technical discussion of threats, vulnerabilities, detection, and prevention is presented. Issues addressed are cryptography, firewalls, network protocols, intrusion detection, security architecture, security policy, forensic investigation, privacy, and the law. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5540 (3) Network Security Laboratory

Applies what students have learned in computer and network security foundations in a simulated network environment. Topics to be covered include: system hardening, firewalls, intrusion detection, vulnerability assessment, and investigation. Prereqs., TLEN 5530. Recommended prereq., operating system experience. Credit not granted for this course and CSCI 4133.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5550 (3) Computer and Network Security

Studies methods to protect information, and the ability to process and move information, from theft, misuse, tampering, destruction, and unauthorized access. Introduces foundational topics of computer and network security, including security models, cryptography, and authentication protocols. Prereqs., significant experience in coding (C or C++); some experience in networks; familiarity with TCP/IP, UDP, and ICMP. Recommended prereq., CSCI 5273. Same as CSCI 6268. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5560 (3) Wireless Systems Laboratory

Serves as hands-on exploration of wireless communication systems. The course is designed to complement TLEN 5510 and TLEN 5520 by taking several subjects to greater depth. Students will work with and in some cases build radio frequency test equipment, transmitters, receivers, antennas, and wireless communication systems. Prereq., TLEN 5310. Coreq., either TLEN 5510 or 5520. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5570 (3) IP Network Design

Implement fundamentals of IP Routing Protocols and apply them directly to design based networking problems. Design scenarios will incorporate physical and logical design, financial analysis, and laboratory configuration. Prereq., TLEN 5370. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5580 (3) Energy Communication Networks

Studies the role of communication and networking in creating efficient, extensible, and resilient energy networks. Describes existing networking technologies and standards such as SCADA and IEC61850 and upcoming technology developments. Cyber security, regulatory requirements, and the industry economic framework are discussed. Provides the tools to choose and design networking technologies for the smart grid. Recommended prereq., ECEN 5007. Co-reqs., TLEN 5310 and 5330. Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5600 (1) Telecommunications Seminar

Provides a series of weekly lectures with questions and discussion. Many of the speakers are nationally known experts in telecommunications. Fall and spring seminars are for 1 credit hour each, and attendance is required. May be repeated up to 4 total credit hours. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5700 (2) Research Methods

Develop basic concepts and methods for pursuing quantitative and qualitative research. Students will develop a research proposal that will be completed in TLEN 5710 or as a Master's Thesis. Writing skills test required. Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science Telecommunications

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## TLEN-5750 (3) Research Techniques in Engineering Management

Same as EMEN 5900.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5830 (1-6) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5831 (3) Special Topics

Prerequisites: Restricted to Graduate Students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-5920 (1-6) Independent Study

Prerequisites: Restricted to students with 87-180 credits (Senior) or graduate students in the College of Engineering or Leeds School of Business only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-6940 (1) Candidate for Degree

Prerequisites: Restricted to Leeds School of Business or College of Engineering graduate students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-6950 (1-6) Master's Thesis

Prerequisites: Restricted to Leeds School of Business or College of Engineering graduate students only.

College of Engineering & Applied Science | Telecommunications

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## TLEN-6960 (1-4) Telecommunications Project

College of Engineering & Applied Science | Telecommunications

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# Courses

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TLEN

## TLEN-7000 (1-6) Current Topics in Telecommunications

Studies research topics of current interest in telecommunication and networking. May be repeated up to 8 total credit hours.

Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#)
[Telecommunications](#)

## TLEN-8990 (1-10) Doctoral Dissertation

Investigates specialized topic or field in the area of telecommunications. Approved and supervised by faculty members. Prerequisites: Restricted to Graduate Students only.

[College of Engineering & Applied Science](#)
[Telecommunications](#)



# Courses

Search by College, Department & Category

**College/School**

All

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**Subject**    **Number**

TMUS

## TMUS-4403 (1-3) Special Studies

Offers advanced studies in specific areas or special projects in selected areas. For undergraduate majors only. See current online Schedule Planner for specific course number. May be repeated for additional credit. Restricted to College of Music majors only.

Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Thesis Music](#)

## TMUS-4493 (1-3) Special Studies

Offers advanced studies in specific areas or special projects in selected areas. For undergraduate majors only. See current online Schedule Planner for specific course number. Numbered TMUS 4403--4493. May be repeated for additional credit. Restricted to College of Music majors only. Prerequisites: Restricted to College of Music undergraduate students only.

[College of Music](#) [Thesis Music](#)

## TMUS-5504 (1-3) Special Studies

Offers graduate studies in specific areas or special projects in selected areas. For master's degree students only. See current online Schedule Planner for specific course number. May be repeated for additional credit. Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Thesis Music](#)

## TMUS-5594 (1-3) Special Study-Omnibus

Offers graduate studies in specific areas or special projects in selected areas. For master's degree students only. See current online Schedule Planner for specific course number. Numbered TMUS 5504--5594. May be repeated for additional credit.

College of Music | Thesis Music

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## TMUS-5605 (1-3) Special Studies

Offers advanced graduate studies in specific areas or special projects in selected areas. For doctoral degree students only. See current online Schedule Planner for specific course number. May be repeated for additional credit. Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-5695 (1-3) Special Study-Omnibus

Offers advanced graduate studies in specific areas or special projects in selected areas. For doctoral degree students only. See current online Schedule Planner for specific course number. Numbered TMUS 5605--5695. May be repeated for additional credit.

College of Music | Thesis Music

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## TMUS-6947 (1) Candidate for Master of Music

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-6956 (2) Master's Thesis

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-6957 (2) Master's Thesis 2

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8019 (1) Precandidate for Doctor of Musical Arts

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8029 (1) Candidate for Doctor of Musical Arts

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8119 (1-4) Composition Project 1

Students compose works in a variety of genres, totaling at least 30 minutes of music. Students meet weekly with a composition teacher to discuss and develop their works. Restricted to DMA composition students. Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8129 (1-4) Composition Project 2

Students compose works in a variety of genres, totaling at least 30 minutes of music. Students meet weekly with a composition teacher to discuss and develop their works. Prereq., TMUS 8119. Restricted to DMA composition students. May be repeated up to 4 total credit hours. Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8219 (3) Dissertation Project 1 (Solo Recital, Choral Concert, Composition)

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8229 (3) Dissertation Project 2 (Solo Recital, Choral Concert, Composition, Vocal Pedagogy)

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8239 (3) Diss Proj 3 (Chamber Music Recital, Vocal Pedagogy Project, Choral Project, Composition Recital)

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8249 (3) Diss Proj 4 (Chamber Music Recital, Choral Project, Composition Recital, Wind/Percussion Practicum).

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8259 (3) Dissertation Project 5 (Research Lecture)

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8269 (3) Dissertation Project 6 (Research Lecture)

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8279 (1-3) Performance Research Document 1

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8289 (1) Performance Research Document 2

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8299 (1) Performance Research Document 3

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8309 (1) Performance Research Document 4

Prerequisites: Restricted to Graduate Students only.

College of Music | Thesis Music

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## TMUS-8319 (3) Repertoire Project

Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Thesis Music](#)

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## TMUS-8329 (2-6) Document/Pedagogy Project

Prerequisites: Restricted to Graduate Students only.

[College of Music](#) [Thesis Music](#)

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# Courses

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TMUS

## TMUS-8339 (3-6) Major Composition

Prerequisites: Restricted to Graduate Students only.

[College of Music](#) | [Thesis Music](#)

## TMUS-8998 (1-10) PhD Thesis

Prerequisites: Restricted to Graduate Students only.

[College of Music](#) | [Thesis Music](#)



# Courses

Search by College, Department & Category

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WMST

## WMST-1006 (3) The Social Construction of Sexuality

Same as SOCY 1006. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Womens Studies](#) [Sociology](#)

## WMST-1016 (3) Sex, Gender, and Society 1

Same as SOCY 1016. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Womens Studies](#) [Sociology](#)

## WMST-1260 (3) Introduction to Women's Literature

Same as ENGL 1260. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#) [Womens Studies](#) [English](#)

## WMST-2000 (3) Introduction to Feminist Studies

Introduces students to the field of Women & Gender Studies. Examines gender issues in the United States from interdisciplinary, multicultural, and feminist perspectives. Covers such topics as sexuality, beauty ideals, women's health, violence against women, work, the economy, peace and war, and the environment. Meets MAPS requirement for social science: general. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Womens Studies

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## WMST-2020 (3) Femininities, Masculinities, Alternatives

Examines contemporary experiences of people around the world as they negotiate dominant and subversive understandings of gendered identities. Focuses on the ways in which the material and discursive circumstances of people's lives shape their opportunities for resistance and creative construction. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Womens Studies

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## WMST-2030 (3) Introduction to Lesbian, Gay, Bisexual, and Transgender Studies

Same as LGBT 2000. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Womens Studies LGBT Studies

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## WMST-2050 (3) Gender, Sexuality, and Popular Culture

Explores diverse cultural forms such as film, popular fiction and non-fiction, music videos, public art, websites, blogs and zines which are shaped by, and in turn shape popular understandings of gender at the intersections of race, class, ability, religion, nation, and imperialism. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Womens Studies

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## WMST-2100 (3) Women in Ancient Greece

Approved for arts and sciences core curriculum: human diversity. Same as CLAS 2100.

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College of Arts & Sciences Womens Studies Classics

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## WMST-2110 (3) Women in Ancient Rome

Same as CLAS 2110. Approved for arts and sciences core curriculum: human diversity.

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College of Arts & Sciences Womens Studies Classics

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## WMST-2200 (3) Women, Literature, and the Arts

Introduces the contributions of women to literature and the performing arts from a historical and cross-cultural perspective. Emphasizes the cultural contexts in which artworks are created, as well as representations of gender and sexuality. Stresses issues of structure, content, and style, along with the acquisition of basic techniques of literary and arts criticism. Prereq., WMST 2000. Approved for arts and sciences core curriculum: human diversity or literature and the arts.

College of Arts & Sciences Womens Studies

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## WMST-2290 (3) Philosophy and Women

Same as PHIL 2290. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Philosophy

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## WMST-2400 (3) Women of Color and Activism

Studies the history of social activism in the United States by women of color, with an emphasis on modes of social activism, issues that have organized specific communities of color, issues that have crossed ethnic/racial boundaries, and the interaction of women from different ethnic/racial groups, including women of color and white women. Recommended prereq., WMST 2000 or 2600. Same as HIST 2636. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences Womens Studies

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## WMST-2600 (3) Gender, Race, and Class in a Global Context

Examines the positionality of women in terms of gender, race, ethnicity, class, and power relations in a global context. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences Womens Studies

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## WMST-2700 (3) Psychology of Contemporary American Women

Surveys psychological theory and research concerning contemporary American women. Deals with such issues as masculine bias in American culture, sex difference in cognitive functioning and personality, psychological conflict for women between career and home, and, finally, specific areas pertaining to women's mental health. Prereq., WMST 2000 or PSYC 1001. Same as PSYC 2700. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies

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## WMST-2800 (3) Women and Religion

Same as RLST 2800. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences | Womens Studies | Religious Studies

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## WMST-3000 (3) Gender, Work and Public Policy

Provides an analytical framework for understanding the roles gender, sexuality, race and class play in defining the work worlds of women and men in society. Prereq., WMST 2000 or 2050.

College of Arts & Sciences | Womens Studies

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## WMST-3004 (3) Women in Education

Same as HONR 3004. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences | Womens Studies | Honors

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## WMST-3012 (3) Women and Development

Restricted to students with 57-180 credits (Junior or Senior) Womens Studies (WMST) majors only. Same as SOCY 3012. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Womens Studies (WMST) majors only.

College of Arts & Sciences | Womens Studies | Sociology

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## WMST-3016 (3) Marriage and the Family in the United States

Restricted to junior/senior WMST majors. Approved for arts and sciences core curriculum: United States context. Same as SOCY 3016.

College of Arts & Sciences | Womens Studies | Sociology

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## WMST-3020 (3) Methods of Inquiry in Gender, Race, Class, and Sexuality

Examines various research methods and approaches in women's and gender studies. Students will gain practical experience to be able to write a proposal for a significant research project, informed by course readings and discussions. Prereqs., WMST 2000, 2600.

Recommended prereqs., WMST 2200 or 2400.

College of Arts & Sciences | Womens Studies

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## WMST-3044 (3) Race, Class, Gender, and Crime

Same as SOCY 3044.

[College of Arts & Sciences](#) [Womens Studies](#) [Sociology](#)

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## WMST-3046 (3) Topics in Sex and Gender

Same as SOCY 3046.

[College of Arts & Sciences](#) [Womens Studies](#) [Sociology](#)

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## WMST-3090 (3) Critical Thinking in Feminist Studies

Analyzes the concepts, ideas, arguments, and assumptions that inform major texts in feminist theory through close reading, class discussion, and writing papers. Emphasizes developing reading and writing skills to interpret theoretical arguments. Prereqs., WMST 2000 and junior or senior standing. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Womens Studies](#)

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## WMST-3100 (3) Feminist Theories

Explores a variety of alternative systematic accounts of, and explanations for, gender inequities. Social norms of both masculinity and femininity are analyzed in relation to other axes of inequality such as class, sexuality, race/ethnicity, neocolonialism, and the domination of nonhuman nature. Prereq., WMST 2000. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Womens Studies](#)

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## WMST-3110 (3) Feminist Practical Ethics

Explores a variety of personal and public policy issues in light of basic feminist commitment to opposing women's subordination. Provides students not only with a deeper understanding of the specific issues discussed but also with a sense of the ways in which a principled commitment to feminism may influence and be influenced by prevailing interpretations of contemporary ideals and values (such as freedom, equality, and community). Provides an opportunity to develop skills of critical analysis useful in a wide range of contexts. Prereq., WMST 2000 or 2290, and junior or senior standing. Same as PHIL 3110. Approved for arts and sciences core curriculum: ideals and values. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#) [Womens Studies](#)

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# Courses

Search by College, Department & Category

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WMST

## WMST-3135 (3) Chicana Feminisms and Knowledges

Provides insight into the present socioeconomic condition of Chicanas and the concept of feminismo through interdisciplinary study of history, sociology, literary images, and film portrayals. Prereq., ETHN 2001 or 2536 or equivalent. Same as ETHN 3136. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#)
[Womens Studies](#)
[Chicano Studies](#)

## WMST-3200 (3) Religion and Feminist Thought

Examines the origin of patriarchal culture in the theology and practices of Judaism and Christianity. Explores attitudes and beliefs concerning women as Judeo-Christian culture impacts gender roles and gender stratification through reading and discussion. Women's religious experience is studied from the perspective of feminist interpretations of religiosity. Prereq., WMST 2000 or WMST/RLST 2800. WMST 3200 and JWST 3200 are the same course.

[College of Arts & Sciences](#)
[Womens Studies](#)

## WMST-3208 (3) Women in Nordic Society: Modern States of Welfare

Examines the role and status of women and marginalized social classes in the Nordic countries, whose societies have been heralded as egalitarian models since the twentieth century. Texts include a variety of media, from literature to sociological works to artifacts of political and popular culture. Same as SCAN 3208. Approved for arts and sciences core curriculum: human diversity.

[College of Arts & Sciences](#)
[Womens Studies](#)
[Nordic \(Formerly Scandinavian\)](#)

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## WMST-3210 (3) American Indian Women

Explores the experiences, perspectives, and status of American Indian women in historical and contemporary contexts. Examines representations of Indigenous women in mainstream culture. Emphasizes the agency of American Indian women-their persistence, creativity, and activism, especially in maintaining Indigenous traditions. Prereq., WMST 2000, 2600 or ETHN 2001 or 2003. Same as ETHN 3213. Approved for arts and sciences core curriculum: human diversity. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Womens Studies

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## WMST-3220 (3) Women in Islam

Examines the historical and contemporary relation between women, gender and Islamic cultures in different parts of the world. We will consider the role and rights of women in Islam, historical and literary representations of Muslim women, and the historically changing constructions of gender and sexuality in Muslim societies. In addition, we will critically explore the construction of Muslim women in western discourses, including liberal feminist discourse, and ask whether the representation of Muslim women in these discourses achieves or undermines ends that we might consider "Feminist". In attending to the wide range of Muslim women's lived experiences in Islamic communities and cultures, as well as the self-representations of Muslim women themselves, our readings will urge US to reexamine our presumptions about piety, secularism, modernity and feminism. Prereq., WMST 2000, 2050 or 2600.

College of Arts & Sciences Womens Studies

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## WMST-3267 (3) Women Writers

Same as ENGL 3267. .

College of Arts & Sciences Womens Studies English

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## WMST-3300 (3) Gender, Sexuality and U.S. Law

Contemporary and historic overview of U.S. courts' treatment of sex and gender. Using the case method, examines policy issues including, but not limited to: same sex marriage and civil unions; privacy; affirmative action; abortion; reproductive technologies; and discrimination based on sex and sexual orientation in education and in the workplace. Prereq., WMST 2000 or PSCI 1101. Same as PSCI 3301. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Political Science

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## WMST-3302 (3) Facilitating Peaceful Community Change

Students gain knowledge and skills that enable them to become effective facilitators of community goals. Focuses on understanding the processes of community building with a multicultural emphasis. Students are encouraged to apply concepts to life experiences and to examine themselves as potential change agents. Theory and summer experience are integrated. Same as INVS 3302.

College of Arts & Sciences Womens Studies

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## WMST-3311 (3) Gender and U.S. Politics: Protest, Polls and Policy

Provides an overview and critical examination of women as political actors within the United States. Students will examine the gendered components of citizenship, election, political office, and public policy. Furthermore, students will explore the ways in which gender intersects with class, race, ethnicity, sexual orientation, and other identities in U.S. politics. Same as PSCI 3311.

College of Arts & Sciences Womens Studies

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## WMST-3314 (3) Violence Against Women and Girls

Focuses on aspects of the victimization of women and girls that are "Gendered" - namely, sexual abuse and intimate partner abuse. Also explores the importance of race, class, and sexuality in gendered violence. Prereq., WMST 2000. Same as SOCY 3314.

College of Arts & Sciences Womens Studies

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## WMST-3400 (3) Gender, Personality, and Culture

Explores the relationship among gender, culture, and personality. Brings together the disciplines of psychology and sociology in the study of gender and personality formation through investigation of psychoanalytic theory and the social environment. Prereqs., WMST 2000 or 2700, and junior or senior standing.

College of Arts & Sciences Womens Studies

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## WMST-3500 (3) Global Gender Issues

Introduces global gender issues, such as the gendered division of labor in the global economy, migration, women's human rights, environmental issues, gender violence in war, women in the military, nationalism and feminism, and the representation of the Third World in the United States. Offers students the opportunity to broaden their perspectives beyond the borders of the United States. Prereq., WMST 2000, 2050 or 2600. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Womens Studies

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## WMST-3505 (3) Historical and Contemporary Issues of African American Women

Explores the social, economic, political, historical, and cultural role of African American women from an interdisciplinary perspective. Special emphasis is placed on African American women's rich oral and literary tradition. Prereq., WMST 2000 or ETHN 2001 or 2002 or equivalent. Same as ETHN 3502.

College of Arts & Sciences Womens Studies

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## WMST-3600 (3) Latinas: History, Culture, and Social Activism

Drawing from work produced by and about Latinas, discusses the social and cultural construction of race and ethnicity, the function of nationalism, the politics of migration and citizenship, Latina literary production and theory, historiographical trends, Latina feminist theory, activism and the academy, and Latina/o political organizing. Prereq., WMST 2000 or 2600.

College of Arts & Sciences Womens Studies

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## WMST-3601 (3) German Women Writers

Taught in English. Same as GRMN 3601. Approved for arts and sciences core core curriculum: human diversity.

College of Arts & Sciences Womens Studies German

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## WMST-3650 (3) Women and Politics in Latin America

Examines ways Latin American women have engaged in politics and their participation in social movements, war, peace processes and elections. Focuses on why women "Do politics" in certain ways, the role of the State in women's politics, the (dis)advantages of various political strategies, and how political, economic and social changes have affected women's political opportunities and interests. Prereq., WMST 2000 or instructor consent. Recommended prereqs., WMST 2400, 2600, 3600 or 3730. Restricted to juniors/seniors. Same as PSCI 3052. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Womens Studies Political Science

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## WMST-3670 (3) Immigrant Women in the Global Economy

Critical examination of immigrant women's participation in the global economy. Focuses on the relationship between larger social forces and the role of women in migration and the labor force. Emphasis on Latinas and Asian immigrant women. Restricted to juniors/seniors or instructor consent. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Ethnic Studies

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## WMST-3672 (3) Gender and Global Economy

Same as GEOG 3672. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Geography

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## WMST-3700 (3) Topics in U.S. Gender and Sexuality Studies

Examines selected topics in women, gender, and sexuality in the US context. May be repeated up to 6 total credit hours for different topics. Prereq., WMST 2000 or 2600. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

College of Arts & Sciences Womens Studies

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## WMST-3710 (3) Topics in Global Gender and Sexuality Studies

Content varies by semester and reflects relevant issues in global feminist scholarship. May be repeated up to 6 total credit hours. Prereq., WMST 2000 or 2600. Restricted to sophomores/juniors/seniors.

College of Arts & Sciences Womens Studies

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## WMST-3730 (3) Third World Women and the Politics of International Development

Examines the history, characteristics, problems, status and role of Third World women in development itself. Includes the interrelationships between development and population growth, transnational economics, migration, education, agriculture, health, urbanization, development policy and planning, and their impact on women and men in urban and rural areas in Africa, Latin America, the Caribbean, Asia, and Melanesia. Prereq., WMST 2000 or 2600. Restricted to juniors/seniors.

College of Arts & Sciences Womens Studies

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## WMST-3800 (3) Advanced Writing in Feminist Studies

Offers expository writing and training in analytical and descriptive skills, structures or argument, critical thinking, the rhetoric of persuasion, and the development of a personal voice. Readings and papers focus on basic issues in gender studies. Prereq., WMST 2000. Restricted to juniors/seniors. Approved for arts and sciences core curriculum: written communication.

College of Arts & Sciences Womens Studies

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## WMST-3900 (3) Asian American Women: Historical and Contemporary Issues

Drawing from work produced by and about Asian American women, examines historical and contemporary issues including representation of Asian American women, identity politics, feminism, coalition building, and activism for social change. Prereq., WMST 2000 or 2600, or ETHN 1025, 2001, or 2004. Restricted to sophomores/juniors/seniors. Same as ETHN 3905. Approved for arts and sciences core curriculum: United States context.

College of Arts & Sciences Womens Studies

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## WMST-3919 (1-3) Service Learning Practicum

Under faculty supervision, students participate in a service learning project correlated with the academic subject. May be repeated up to 6 total credit hours.

[College of Arts & Sciences](#) [Womens Studies](#) [English](#)

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## WMST-3930 (1-6) Women and Gender Studies Internship

Provides field experience in local and national government and non-governmental agencies focusing on women and gender-related issues. Supervision by approved field instructors. Students must relate their academic experience to their field work experience through a portfolio and a final paper. Prereq., 6 hours of course work in Women and Gender Studies and 30 cumulative credit hours. Prerequisites: Restricted to students with 27-180 credits (Sophomore, Junior or Senior) only.

[College of Arts & Sciences](#) [Womens Studies](#)

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# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

WMST

## WMST-3940 (1) Practicum in Women and Gender Studies

Enriches the academic experience of majors and minors within the Women and Gender Studies program. This course usually will combine readings from books with lectures and discussions, community outreach and in-house publications spanning the interdisciplinary focus of the program. May be repeated up to 4 total credit hours. Restricted to WMST majors or minors.

[College of Arts & Sciences](#)
[Womens Studies](#)

## WMST-4000 (3) Advanced Topics in Gender and Sexuality Studies

Provides an advanced interdisciplinary course organized around a specific topic, problem, or issue relating to gender and sexuality. Course work includes discussion, reading, and written projects. May be repeated up to 6 total credit hours for different topics. Restricted to students with 57-180 credits (Junior or Senior). Prereq., WMST 2000. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

[College of Arts & Sciences](#)
[Womens Studies](#)

## WMST-4010 (3) Gender, Genocide, and Mass Trauma

Studies the persistence of genocide and the effects of mass trauma on women and girls. Within the framework of political and social catastrophe, the course examines cataclysmic world events and the traumatic consequences for women of religious persecution, colonialism, slavery, and the genocides of the twentieth and twenty first centuries. Prereq., SOCY 1016 or WMST 2000. SOCY 4000 and WMST 4010 are the same course.

[College of Arts & Sciences](#)
[Womens Studies](#)
[Sex and Gender](#)

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## WMST-4016 (3) Sex, Gender, and Society 2

Studies status and power differences between the sexes at individual, group, and societal levels. Examines empirically established sex differences, and reviews biological, psychological, and sociological explanations for gender differences. Prereqs., SOCY 1016 or WMST 2000. Restricted to sophomores/juniors/ seniors. Same as SOCY 4016.

College of Arts & Sciences   Womens Studies   Sociology

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## WMST-4041 (3) Women and Theatre of the 20th and 21st Centuries

Same as THTR 4041.

College of Arts & Sciences   Womens Studies   Theatre

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## WMST-4063 (3) Women in Victorian England

Same as HIST 4063.

College of Arts & Sciences   Womens Studies   History

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## WMST-4073 (3) Performing Voices of Women

Same as THTR 4073.

College of Arts & Sciences   Womens Studies   Theatre

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## WMST-4086 (3) Family and Society

Restricted to junior/senior WMST majors. Same as SOCY 4086.

College of Arts & Sciences   Womens Studies   Sociology

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## WMST-4277 (3) Topics in Women's Literature

Same as ENGL 4277.

College of Arts & Sciences   Womens Studies

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## WMST-4287 (3) Studies in Lesbian, Gay, Bisexual, and Transgender Literature

Examines selected British, American, and French literary representations of lesbian and gay identity from the early 16th century to the present. Discusses the changing status of homosexuality as a literary and cultural topos, including how same-sex desire is defined, and the rhetorical and ideological difficulties involved in its representation. Specific topics vary each semester. May be repeated up to 9 total credit hours. Restricted to juniors and seniors. Same as ENGL/LGBT 4287.

College of Arts & Sciences Womens Studies

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## WMST-4300 (3) Sex, Power, Politics: International Perspectives

Studies the commercial trade of sexual labor in the global economy, examining theories and assumptions about sexual-economic exchanges and gendered and racialized relations of power in the sex trade. Emphasizes prostitution. Recommended prereq., WMST 2600 or 3100. Restricted to juniors and seniors. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Womens Studies

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## WMST-4301 (3) Gender, Race and Immigration in Germany and Europe

Introduces students to debates surrounding migration and race in contemporary Germany. Emphasis on reading texts in context using tools of cultural studies, integrating analyses of gender, race, nation, and sexuality. Texts may include film, literature, television, magazine images, etc. Topics include questioning "multiculturalism," self-representation, integration, Islam, citizenship, violence, public space, youth culture, racism and nationalism. Same as GRMN 4301/5301. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies German

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## WMST-4331 (3) Gender, Race, Class, and Sexuality in Popular Culture

Studies the construction, interconnections, and replications of gender, race, class, and sexuality in popular culture and how these constructs become cultural norms and mores. Uses critical methods with a focus on producing responsible viewers and readers. Same as JOUR 4331.

College of Arts & Sciences Womens Studies

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## WMST-4471 (3) Women in 20th Century Russian Culture

Same as RUSS 4471 and GSSL 5471. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Russian

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## WMST-4500 (3) Gender Politics and Global Activism

Addresses the problems and challenges women face around the world and the ways in which women have mobilized to address them. Explores political activism at the local, national, regional, and global levels. Focuses on different forms of activism, including strategies aimed at working with and within governmental institutions, as well as outside and against them. Recommended prereq., WMST 2000 or WMST 2600.

College of Arts & Sciences Womens Studies

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## WMST-4614 (3) Women and Society in Industrial Europe

Same as HIST 4614.

College of Arts & Sciences Womens Studies History

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## WMST-4616 (3) History of Women in the United States to 1890

Same as HIST 4616.

College of Arts & Sciences Womens Studies History

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## WMST-4619 (3) Women in Asian History

Same as HIST 4619.

College of Arts & Sciences Womens Studies History

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## WMST-4626 (3) History of Women in the United States since 1890

Same as HIST 4626.

College of Arts & Sciences Womens Studies History

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## WMST-4636 (3) Lesbian and Gay History: Culture and Politics and Social Change in the U.S.

Considers current theoretical approaches to the history of sexuality and traces the changing meaning of same-sex sexuality in the U.S. through investigation of lesbian and gay identity formation, community development, politics, and queer cultural resistance. Prereqs., WMST 2000 and 2600, and junior or senior standing. Same as HIST 4636/5636. Prerequisites: Restricted to students with 57-180 credits

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(Junior or Senior).

College of Arts & Sciences Womens Studies

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## WMST-4640 (3) Women, Gender and War

Same as HIST 4640.

College of Arts & Sciences Womens Studies History

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## WMST-4769 (3) Gender Studies in Early Modern Visual Culture

Same as ARTH 4769. Approved for arts and sciences core curriculum: human diversity.

College of Arts & Sciences Womens Studies Art and Art History

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## WMST-4800 (3) Senior Colloquium in Feminist Studies

Provides students with the opportunity to actively reflect on their education and to complete a research project that incorporates an interdisciplinary and feminist approach to the study of gender, class, race, ethnicity, and sexuality. Offered each spring. Prereq., WMST 3020. Prerequisites: Restricted to students with 87-180 credits (Senior, Fifth Year Senior) Womens Studies (WMST) majors only.

College of Arts & Sciences Womens Studies

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## WMST-4840 (1-6) Independent Study

May be repeated up to 7 total credit hours.

College of Arts & Sciences Womens Studies

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## WMST-4950 (3) Honors Research

For qualified WMST majors working on the research phase of departmental honors. Prereq., junior/senior standing and 3.30 overall GPA. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior).

College of Arts & Sciences Womens Studies

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## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject** **Number**

WMST

### WMST-4999 (1-3) Senior Honors Thesis

Qualified Women and Gender Studies majors may write an honors thesis, an in-depth research paper, on a topic of choice. Thesis hours available to majors only after successfully completing the research phase.

[College of Arts & Sciences](#) [Womens Studies](#)

### WMST-6090 (3) Feminist Theories

Explores how feminist theorists have understood gender and how it interrelates to our understandings of race, ethnicity, sexuality, embodiment and knowledge. Meets the requirements for the WGST certificate.

[College of Arts & Sciences](#) [Womens Studies](#)

### WMST-6190 (3) Feminist Methodology

Explores feminist methodology across a range of disciplines. Themes include experience and interpretation, the social position of the researcher, language and argument structure, knowledge and power, bias and objectivity, and the ethics and politics of research. Meets the requirements for the WGST certificate. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Womens Studies](#)

### WMST-6290 (3) Special Topics in Gender and Sexuality Studies

Offers interdisciplinary feminist perspectives on different special topics such as gender and war, gender and globalization, women's social movements, gender and citizenship, gender and collective memory, and cultural representations of gender and sexuality. May be

repeated up to 6 total credit hours. Meets the requirements for the WGST certificate. Prerequisites: Restricted to Graduate Students only.

[College of Arts & Sciences](#) [Womens Studies](#)

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## Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

WRTG

### WRTG-1100 (4) Extended First-Year Writing and Rhetoric

Extended version of WRTG 1150 that carries an additional hour of credit and is intended for students desiring more preparation and practice in college writing. Meets the same goals as WRTG 1150. Features one extra hour of small group work out of class. Focuses on critical analysis, argument, inquiry, and information literacy. Taught as a writing workshop, the course places a premium on invention, drafting, and thoughtful revision. For placement criteria, see the arts and sciences advising office. May be repeated up to 8 total credit hours. Meets MAPS requirement for English. Approved for arts and sciences core curriculum: written communication.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

### WRTG-1150 (3) First-Year Writing and Rhetoric

Rhetorically informed introduction to college writing. Focuses on critical analysis, argument, inquiry, and information literacy. Taught as a writing workshop, the course places a premium on invention, drafting, and thoughtful revision. For placement criteria, see the arts and sciences advising office. May be repeated up to 6 total credit hours. Meets MAPS requirement for English. Approved for arts and sciences core curriculum: written communication.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

### WRTG-1250 (3) Advanced First-Year Writing and Rhetoric

Advanced version of WRTG 1150 intended for more experienced writers, this course meets the same goals as WRTG 1150 but at a more challenging level. Taught as a writing workshop, the course places a premium on invention, drafting, and thoughtful revision. For placement criteria, see the arts and sciences advising office. May be repeated up to 6 total credit hours. Meets MAPS requirement for English. Approved for arts and sciences core curriculum: written communication.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

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## WRTG-1840 (1-3) Independent Study in Writing

May be repeated up to 8 total credit hours.

College of Arts & Sciences Program in Writing & Rhetoric

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## WRTG-2020 (3) Introduction to Creative Nonfiction

Explores from both the reader's and writer's perspectives the forms of creative nonfiction, including personal essay and memoir. Students will read and write extensively within this genre, develop skill in revision and peer critique, and learn how to submit work for publication.

Prereq., WRTG 1150 or equivalent (completion of lower-division writing requirement).

College of Arts & Sciences Program in Writing & Rhetoric

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## WRTG-2090 (3) Electives in Writing

Explores a variety of academic and professional writing genres, ranging from research to technical writing, in intensive workshops.

Students read and write extensively across genres. Check with program for semester offerings. May be repeated up to 6 total credit hours if the topics are different. Designed for self-motivated students in all majors. Does not fulfill core requirements. Prereq., WRTG 1150 or equivalent.

College of Arts & Sciences Program in Writing & Rhetoric

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## WRTG-3007 (3) Writing in the Visual Arts

Enables studio art and art history majors to improve their writing skills through organization, presentation, critique, and revision. Writing assignments include formal writing (analysis and argument), informal writing, and grant proposals. Credit not granted for this course and FINE 3007. Approved for arts and sciences core curriculum: upper-division written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Art History (AAAH), Film Studies Concurrent Degree (C-FILM), Film (FILM or FMST) or Studio Arts (AASA or AASF) majors only.

College of Arts & Sciences Program in Writing & Rhetoric

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## WRTG-3020 (3) Topics in Writing

Through sustained inquiry into a selected topic or issue, students will practice advanced forms of academic writing. The course emphasizes analysis, criticism, and argument. Taught as a writing workshop, the course places a premium on substantive, thoughtful revision. May be repeated up to 6 total credit hours. Same as NRLN 3020. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Arts and Sciences students only.

College of Arts & Sciences Program in Writing & Rhetoric

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## WRTG-3030 (3) Writing on Science and Society

Through selected reading and writing assignments, students consider ethical and social ramifications of science policy and practice. Focuses on critical thinking, analytical writing, and oral presentation. Taught as a writing workshop, the course addresses communication with professional and non-technical audiences. May be repeated up to 6 total credit hours. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits Engineering, MCDB, EBIO, GEOL, ASTR, IPHY, PHYS, ENVS, MATH, ECON, BCHM, CHEM or PSYC majors only.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

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## WRTG-3035 (3) Technical Communication and Design

Rhetorically informed introduction to technical writing that hones communication skills in the context of technical design activities. Treats design as a collaborative, user-oriented, problem-based activity, and technical communication as a rhetorically informed and persuasive design art. Taught as a writing workshop emphasizing critical thinking, revision, and oral presentation skills. Focuses on client-driven design projects and effective communication with multiple stakeholders. May be repeated up to 6 total credit hours. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) College of Engineering, MCDB, EBIO, GEOL, ASTR, IPHY, ENVS, MATH, ECON, BCHM, CHEM, PHYS, ENVD, PLAN, DSGN or ARCH majors only.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

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## WRTG-3040 (3) Writing on Business and Society

Through selected reading and writing assignments, students examine ethical and social issues in the context of business decision-making processes. Focuses on critical thinking, analytical writing, and oral presentation. Taught as a writing workshop, the course emphasizes effective communication with professional and non-technical audiences. May be repeated up to 6 total credit hours. Approved for arts and sciences core curriculum: written communication. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Leeds School of Business (BUSN), Economics (ECON), International Affairs (IAFS) or Spanish (SPPR) majors only.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

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## WRTG-3090 (1-3) Open Topics in Writing: Advanced

Advanced topics course providing intensive, specialized writing instruction in selected topics. Check with the program for semester offerings. May be repeated up to 6 total credit hours if the topics are different. Prereqs., WRTG 3020, or 3030, or 3040, or 3035, or instructor consent required.

[College of Arts & Sciences](#) [Program in Writing & Rhetoric](#)

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## WRTG-3840 (1-3) Independent Study

May be repeated up to 6 total credit hours.

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## WRTG-5050 (3) Graduate Studies in Writing and Rhetoric

Special topics and methods course in composition theory, research, and pedagogy. Topics vary by semester. May be repeated up to 9 total credit hours. Prereq., instructor consent. Prerequisites: Restricted to Graduate Students only.

## WRTG-5840 (1-3) Independent Study-Writing & Rhetoric

Independent study. May be repeated up to 6 total credit hours. Prereqs., graduate standing and instructor consent. Prerequisites: Restricted to Graduate Students only.



# Courses

Search by College, Department & Category

**College/School**

All

Search by Course Number

**Subject**    **Number**

YIDD

## YIDD-1010 (4) Beginning Yiddish 1

Introduces students to speaking, listening, reading, and writing skills in the historic language of Ashkenazic Jewry. Uses grammar as point of departure for development of oral skills.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Yiddish](#)

## YIDD-1020 (4) Beginning Yiddish 2

Continuation of YIDD 1010. Prereq., YIDD 1010 (min. grade C-) or placement.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Yiddish](#)

## YIDD-2010 (4) Intermediate Yiddish 1

Review and continuation of skills begun in the first year: reading, writing, speaking, and oral comprehension. Provides an intensive introduction to cultural and literary texts of central and eastern European Jewish culture. Prereq., YIDD 1020 (min. grade C-) or placement.

[College of Arts & Sciences](#)
[Germanic & Slavic Languages & Literature](#)
[Yiddish](#)