

## Welcome to the CU-Boulder Catalog, 2014–15

The 2014–15 *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 2014. 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.

## About the Course Descriptions

The courses listed through the **Courses** tab above are offered on the Boulder campus during the 2014–15 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.

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

### University of Colorado Boulder

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Managing editor Polly Christensen has left the university. Queries should be directed to Jon Leslie, [jon.leslie@colorado.edu](mailto:jon.leslie@colorado.edu).

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Glenn Asakawa, Casey A. Cass, and Patrick Campbell

### Other UCB Catalogs

*School of Law, Summer Session, Continuing Education, CAETE, and*

- 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

**CE/SL**—civic engagement/service learning component

*Independent Learning offer their own catalogs.*

[Main Catalog Archive](#)

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

## 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, political affiliation or political philosophy, 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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## General Information



### University of Colorado 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 received sponsored program awards that include funding from the National Institutes of Health, the National Science Foundation and NASA. Sponsored research within the university system represents annual awards totaling more than \$813 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

[Academic Calendar](#)[Administration](#)[Academic Affairs](#)[Student Affairs](#)[Academic Records](#)[Expenses](#)[Tuition Tables](#)[Financial Aid](#)[Housing](#)[Registration](#)[Campus Policies](#)[Degrees, Majors, and Minors](#)[Glossary of Terms](#)[Campus Map](#)

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 95 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; Tom Cech, winner of the 1989 Nobel Prize in chemistry; and David Wineland, winner of the 2012 Nobel Prize in physics. Eight faculty have received MacArthur Fellowships, the so-called "genius grant." Twenty-five active or retired faculty are members of the National Academy of Sciences; 23 are included in the membership of the American Academy of Arts and Sciences; 17 are members of the National Academy of Engineering; and six are members of the National Academy of 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 99,000, 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 2013 entering freshman class numbered 5,844. Of these, 46 percent were females, 55 percent residents of Colorado, and 23 percent members of minority groups (African Americans, Asian Americans, Hispanics, and Native Americans). Sixty-nine percent enrolled in the College of Arts and Sciences, 12 percent in the Leeds School of Business, 14 percent in the College of Engineering and Applied Science, and 4 percent, combined, enrolled in the Program in Environmental Design, Journalism and Mass Communication Program, 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 2007 who enrolled full time, 42 percent graduated within four years; 61 percent graduated within five years; and 65 percent graduated within six years. Of the students who entered in fall 2012, 82 percent returned for their second fall semester.

## CU-Boulder Academic Programs

The Boulder campus offers more than 3,600 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); 800-626-7440 or 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 37 bachelor's, 19 master's, and five doctoral degrees. The campus enrolls about over 10,000 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 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 \$434 million in sponsored research awards came to University of Colorado Denver in 2013–14.

## 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





## Programs of Study

The University's Programs of Study listed below are organized by School or College; then program name (or major); then degrees, certificates, or minors when available. Names in blue link to the department or program page.

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/OfficialCatalogApprovedDegreesList2014-15.htm](http://www.colorado.edu/pba/degrees/approve/OfficialCatalogApprovedDegreesList2014-15.htm).

CU-Boulder also provides dual-degree, double-degree, concurrent degrees, and interdisciplinary programs. Details may be found through the specific program of study in this catalog or by contacting 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 International Bachelor of Arts degree.

### Arts & Sciences, College of

|  |   |
|--|---|
| <p><b>Actuarial Studies and Quantitative Finance</b></p> <p>Actuarial Studies Certificate<br/>Quantitative Finance Certificate</p>                             | <p>certificate<br/>certificate</p>  |
| <p><b>Anthropology</b></p>   | <p>BA, IBA, MA, MA/MBA, PhD</p>   |
| <p><b>Applied Mathematics</b> <i>(see also College of Engineering &amp; Applied Science below)</i></p>   | <p>MS, PhD, minor</p>   |
| <p><b>Art and Art History</b></p> <p>Art History<br/>Studio Arts</p>   | <p>BA, MA<br/>BA, BFA, MFA</p>  |
| <p><b>Asian Languages and Civilizations</b></p> <p>Chinese<br/>Japanese<br/>South Asian Languages and Civilizations<br/>Middle Eastern and Islamic Studies</p> | <p>MA, PhD,<br/>BA, minor<br/>BA, minor<br/>certificate<br/>certificate</p> |
| <p><b>Asian Studies</b></p>  | <p>BA, minor</p>  |
| <p><b>Astrophysical and Planetary Sciences</b></p>   | <p>(MS), PhD, minor</p>   |

|  |   |
|--|---|
| Astronomy  | BA, IBA   |
| <b>Atmospheric and Oceanic Sciences</b>  | MS, PhD, minor  |
| <b>British and Irish Studies</b>   | certificate   |
| <b>Central and East European Studies</b>   | certificate   |
| <b>Chemistry and Biochemistry</b><br>Biochemistry<br>Chemistry<br>Chemical Physics   | BA, IBA, (MS), PhD, minor<br>BA, IBA, (MS), PhD, minor<br>PhD |
| <b>Classics</b>  | BA, MA, PhD, minor  |
| <b>Cognitive Science Studies</b>   | PhD   |
| <b>Communication</b>   | BA, MA, PhD   |
| <b>Comparative Literature</b>  | MA, PhD   |
| <b>Computer Science</b> <i>(see also Engineering &amp; Applied Science below)</i>  | BA  |
| <b>Distributed Studies</b>   | BA  |
| <b>Ecology and Evolutionary Biology</b>  | BA, IBA, MA, PhD, minor                                       |
| <b>Economics</b>   | BA, (MA), PhD, minor  |
| <b>English</b><br>Creative Writing   | BA, MA, PhD<br>MFA, minor                                     |
| <b>Environmental Studies</b>   | BA, IBA, MS, PhD  |
| <b>Ethnic Studies</b><br>Comparative Ethnic Studies  | BA, minor<br>PhD  |
| <b>Film Studies</b>  | BA, BFA   |
| <b>French and Italian</b><br>French<br>Italian   | BA, MA, PhD, minor<br>BA, minor                               |
| <b>Geography</b>   | BA, IBA, MA, PhD, minor                                       |
| <b>Geological Sciences</b><br>Geology<br>Geophysics  | BA, IBA, MS, PhD, minor<br>PhD                                |
| <b>Germanic and Slavic Languages and Literatures</b><br>German Studies<br>Hebrew Studies<br>Nordic Studies (Scandinavian)<br>Russian Studies | BA, MA, PhD, minor<br>minor<br>BA, minor                      |
| <b>History</b>   | BA, MA, PhD, minor  |
|  |   |

|   |   |
|---|---|
| <b>Humanities</b>   | BA, minor                               |
| <b>Integrative Physiology</b>   | BA, IBA, MS, PhD                        |
| <b>International Affairs</b>  | BA, certificate                         |
| <b>INVST Community Studies</b>  |   |
| <b>Jewish Studies</b><br>Hebrew and Israeli Studies   | BA, minor<br>minor                      |
| <b>Lesbian, Gay, Bisexual, Transgender, and Queer Studies</b>                                     | certificate                             |
| <b>Linguistics</b>  | BA, MA, PhD, minor                      |
| <b>Mathematics</b>  | BA, MA, PhD, minor                      |
| <b>Molecular, Cellular, and Developmental Biology</b>   | BA, IBA, (MA), PhD                      |
| <b>Museum and Field Studies</b><br>Museology  | MS<br>certificate                       |
| <b>Peace and Conflict Studies</b>   | certificate                             |
| <b>Philosophy</b>   | BA, MA, PhD, minor                      |
| <b>Physics</b><br>Engineering Physics ( <i>see also Engineering &amp; Applied Science below</i> ) | BA, IBA, MS, PhD, minor<br>BS           |
| <b>Political Science</b>  | BA, MA, PhD, minor                      |
| <b>Psychology and Neuroscience</b><br>Psychology<br>Neuroscience                                  | BA, IBA, (MA), PhD<br>BA, certificate   |
| <b>Religious Studies</b>  | BA, MA, minor                           |
| <b>Sociology</b>  | BA, (MA), PhD                           |
| <b>Spanish and Portuguese</b><br>Spanish<br>Portuguese  | BA, MA, PhD, minor<br>minor             |
| <b>Speech, Language, and Hearing Sciences</b><br>Audiology  | BA, IBA, MA, PhD<br>AudD                |
| <b>Theatre and Dance</b><br>Theatre<br>Dance  | BA, BFA, MA, PhD<br>BA, BFA, MFA, minor |
| <b>Western American Studies</b>   | certificate                             |
| <b>Western Civilization Studies</b>   | certificate                             |
| <b>Women and Gender Studies</b>   | BA, minor, certificate                  |
| <b>Writing and Rhetoric, Program for</b>  |   |

## Business, Leeds School of

|                                |                                      |
|--------------------------------|--------------------------------------|
| <b>Business Administration</b> | BS, MS, MBA, PhD, minor, certificate |
|--------------------------------|--------------------------------------|

## Education, School of

|   |  |
|---|--|
| <b>Curriculum and Instruction</b>                       | MA, MA + licensure, PhD                    |
| <b>Elementary and Secondary Teacher Education</b>       | undergraduate licensure, post-BA licensure |
| <b>Education</b>  | minor                                      |
| <b>Educational-Psychological Studies</b>                | MA, PhD                                    |
| <b>Research and Evaluation Methodology</b>              | PhD  |
| <b>Social, Multicultural, and Bilingual Foundations</b> | MA, PhD                                    |

## Engineering & Applied Science, College of

|   |                              |
|---|------------------------------|
| <b>Alliance for Technology, Learning, and Society (ATLAS)</b>                     | MS, PhD, minor, certificate  |
| <b>Aerospace Engineering Sciences</b>   | BS, MS, PhD, certificate     |
| <b>Applied Mathematics</b> <i>(see also College of Arts &amp; Sciences above)</i> | BS                           |
| <b>Architectural Engineering</b>  | BS, MS, PhD                  |
| <b>Chemical and Biological Engineering</b>  | BS                           |
| <b>Chemical Engineering</b>   | BS, ME, MS, PhD              |
| <b>Civil Engineering</b>  | BS, MS, PhD                  |
| <b>Computer Science</b> <i>(see also College of Arts &amp; Sciences above)</i>    | BS, ME, MS, PhD              |
| <b>Electrical and Computer Engineering</b>  | BS                           |
| <b>Electrical Engineering</b>   | BS, ME, MS, PhD, certificate |
| <b>Engineering Management</b>   | ME, certificate              |
| <b>Engineering Physics</b> <i>(see also College of Arts &amp; Sciences above)</i> | BS                           |
| <b>Environmental Engineering</b>  | BS                           |
| <b>General Engineering Plus</b>   | BS                           |
| <b>Materials Science and Engineering</b>  | MS, PhD                      |
| <b>Mechanical Engineering</b>   | BS, ME, MS, PhD              |
|   |                              |

|                           |                          |
|---------------------------|--------------------------|
| <b>Telecommunications</b> | ME, MS, PhD, certificate |
|---------------------------|--------------------------|

## Environmental Design, Program in

|  |                           |
|--|---------------------------|
| <b>Environmental Design</b> (Architecture, Landscape Architecture, Design, and Planning) | BEvnd, minor, certificate |
|--|---------------------------|

## Graduate School

Please see the complete degree listing of the Graduate School on their specific [Programs of Study](#) page.

## Journalism & Mass Communication Program

|                                    |               |
|------------------------------------|---------------|
| <b>Journalism</b><br>Communication | BS, MA<br>PhD |
|------------------------------------|---------------|

## Law School

|                              |           |
|------------------------------|-----------|
| <b>Law</b><br>Master of Laws | JD<br>LLM |
|------------------------------|-----------|

## Music, College of

|  |  |
|--|--|
| <b>Music</b><br>Arts in Music<br>Music Education<br>Musical Arts | BMus, MMus, PhD, certificate<br>BAMus, certificate<br>BMusEd, MMusED, certificate<br>DMusA |
|--|--|

## Other Academic Programs

### Continuing Education

**Leadership, Certificate in the Study and Practice of Leadership Residential Academic Program**

### Library Research

### Norlin Scholars Program

### Preprofessional programs

### Presidents Leadership Class

### Reserve Officers Training Corps





## Colleges & Schools



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### Journalism & Mass



### Law School



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## Other Academic Programs

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University of Colorado **Boulder**

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## Admission



### 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 contact:

**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)

[apply@colorado.edu](mailto:apply@colorado.edu)

To find additional undergraduate admission information online, go to [colorado.edu/admissions/undergraduate](http://colorado.edu/admissions/undergraduate).

### Graduate Admission

Graduate School admission is handled by individual academic departments; see the [Graduate School](#) section of this catalog and specific college and school sections for details. For more information, go to [colorado.edu/admissions/graduate](http://colorado.edu/admissions/graduate).

Visiting the Campus

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Transfer Applicants

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Advanced Placement (AP) Credit

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Credit

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# Courses

Search by College, Department & Category

**College/School**

Search by Course Number

**Subject      Number**

## Quick List by College/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.

- [Summer 2014](#)
- [Fall 2014](#)
- [Spring 2015](#)
- [Summer 2015](#)

### Summer 2014

|                |   |
|----------------|---|
| March 1 (Mon.) | Transfer application deadline for summer and fall sessions                |
| May 1 (Wed.)   | Freshman confirmation deadline  |
| May 12 (Mon.)  | Maymester begins  |
| May 26 (Mon.)  | <b>Memorial Day</b> holiday; campus closed                                |
| May 30 (Fri.)  | Final exams for Maymester   |
| June 2 (Mon.)  | Classes begin for terms A, C, and D; 7:30 a.m.                            |
| July 3 (Thurs) | Final examinations for Term A (first five-week term)                      |
| July 4 (Fri.)  | <b>Independence Day</b> holiday; campus closed                            |
| July 8 (Tues.) | Classes begin for term B (second five-week term)                          |
| July 25 (Fri.) | Final examinations for term C (eight-week term)                           |
| Aug. 8 (Fri.)  | Final examinations for terms B and D (second five-week and 10-week terms) |
| Aug. 9 (Sat.)  | Official graduation date. No summer ceremony.                             |

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





## Administration

### Board of Regents

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

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

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

**Glen Gallegos**, District 3; *term expires January 2019*

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

**Irene C. Griego**, District 7; *term expires January 2019*

**Kyle Hybl**, District 5; *term expires January 2019*

**Stephen Ludwig**, At Large; *term expires January 2019*

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

### 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.*

**Kathleen Bollard**, Vice president and academic affairs officer. *BA, Santa Clara University; MA, PhD, University of California, Berkeley; MBA, University of Colorado.*

**Kelly Cronin**, Vice president for advancement. *BA, Texas Tech University; MA, EdD, University of Texas at El Paso.*

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

**Ken McConellogue**, Vice president for communication. *BS, University of Colorado Boulder; MA, University of Northern Colorado.*

**Patrick O'Rourke**, Vice president, university counsel, and secretary to the Board of Regents. *BA, Creighton University; JD, Georgetown University Law Center.*

**E. Jill Pollock**, Vice president, employee and information services. *BBA, Michigan State University; MBA, University of Detroit.*

**Todd Saliman**, Vice president and chief financial officer. *BA, University of Colorado Boulder.*

#### 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 California, Davis; PhD,*

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*Washington State University.*

**Kelly Fox**, Senior vice chancellor and chief financial officer. *BA, University of Nebraska; MA, University of Colorado Denver.*

**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.*

**Steve Thweatt**, Vice chancellor for administration.

**Stein Sture**, Vice chancellor for research. *BS, MS, PhD, University of Colorado Boulder. BS, University of California, Davis; PhD, Washington State University.*

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# Academic Affairs

## On This Page:

- [Academic Advising](#)
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- [Summer Session](#)

## 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.

Note: The university cannot assume responsibility for problems resulting from students failing to follow the policies stated in this catalog

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or from incorrect advice given by someone other than an appropriate staff member of the college.

## Academic Advising Center

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. 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. 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.).

Students with general advising questions are encouraged to visit the Academic Advising Center website at [advising.colorado.edu](http://advising.colorado.edu) to schedule an appointment with their advisor and to find information about the Center for First-year Students and the Center for Students in Transition.

## 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.

Through the Center for First-Year Students, the advising center provides comprehensive advising services to students who are undecided about their major, or who are considering changing their major. First-year advisors are familiar with the courses and degree requirements for all majors offered at CU-Boulder, and assist students in exploring majors related to their interests, aptitudes, and goals. First-year 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.

## Center for Students in Transition (SIT)

Students who, at an advanced stage in their academic career, need assistance to find a new major or choose to change colleges, can receive academic advising support via the Center for Students in Transition. SIT advisors specialize in assisting students changing academic directions after the first year, returning adult learners, veterans, and international students.

## 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 (CUSG), 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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# Academic Records

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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

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the fall and spring semester, and 6 credit hours is considered full time in the summer. For further information, check the Enrollment Grid at the registrar's site.

## Graduate Course Load

### Graduate Students

For financial aid course-load requirements, which are different than those set by the Graduate School, graduate students should consult the Office of Financial Aid at [www.colorado.edu/finaid](http://www.colorado.edu/finaid).

For enrollment verification and academic purposes, full time in the fall and spring semesters is: 5 credit hours of graduate course work, 8 hours of combined graduate/undergraduate course work, 12 hours of undergraduate course work, or any number of thesis hours, depending upon the student's status. Summer course load requirements vary. Consult the Graduate School's website at [www.colorado.edu/GraduateSchool](http://www.colorado.edu/GraduateSchool) for requirements.

Graduate students may apply maximum of 15 credit hours toward a degree during the fall and spring semesters.

### Law Students

Law students should consult the Office of Financial Aid for financial aid course-load requirements at [www.colorado.edu/finaid](http://www.colorado.edu/finaid).

For academic purposes, law students must be enrolled for a minimum of 10 credit hours to be considered full-time in the fall and spring and for 5 credit hours in the summer. For more information, visit [www.colorado.edu/law](http://www.colorado.edu/law).

Law students may apply a maximum of 18 credit hours toward a degree during the fall and spring semesters.

## Satisfactory Academic Progress

Satisfactory academic progress in most undergraduate colleges and schools requires a 2.00 grade point average (GPA). Students should consult their *primary* 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** = withdrew

**\*\*\*** = 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. All standard letter grades (A-F) are included in the GPA, including grades of F earned for courses graded on a pass/fail basis. Grades of I that are not completed within one year are calculated as F grades 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

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 MyCUInfo.

## Official Transcripts

Official transcripts are primarily used to support applications for transfer to other academic institutions and for employment purposes. An official transcript can display the complete academic record of courses taken at all campus locations or divisions of the University of Colorado. It can also display only certain careers chosen when ordering, such as undergraduate, graduate, nondegree, or law. The official transcript has the signature of the registrar and the official seal of the university. Transcripts sent to students are labeled "issued to student."

Official transcripts may be ordered in a variety of ways. Visit [www.colorado.edu/registrar](http://www.colorado.edu/registrar) for detailed ordering information on the *Transcripts* tab. Transcripts can be withheld for ongoing financial obligations to the university or for disciplinary actions.

End-of-term grades appear on transcripts approximately two weeks after final examinations.

## Unofficial Transcripts

Unofficial transcripts also show the complete academic record of courses taken at the University of Colorado. However, academic institutions and potential employers generally do not accept the unofficial transcript as evidence of a student's career at CU-Boulder, as this transcript does not carry the registrar signature or seal of the university or other security features. Unofficial transcripts are primarily used for advising and counseling in offices on campus and at other University of Colorado campuses. Currently enrolled students and alumni who have access to the portal may access an unofficial transcript for free via [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu) and may print the 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.

## Hold

A hold may be placed on a student's record for a number of reasons, including but not limited to financial, advising, scholastic, conduct, and health. A hold prevents a student from registering, returning to school, obtaining an official transcript, or receiving a diploma. Students should resolve holds as quickly as possible by contacting the appropriate campus office. General inquiries may be addressed to the Office of the Registrar. Inquiries on financial holds may be addressed to the Office of the Bursar.

## 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 student education records, to establish the right of students to inspect and review their education records, the right to request an amendment or correction of inaccurate or misleading data through informal and formal hearings, and the right to file complaints with the Family Policy Compliance 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 [www.colorado.edu/registrar/resources/family-educational-](http://www.colorado.edu/registrar/resources/family-educational-)

[rights-and-privacy-act-FERPA](#).

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, address, and phone of the office that administers FERPA is: The Family Compliance Office, U.S. Department of Education, 600 Independence Avenue, SW, Washington, DC 20202-4605, **1-202-260-3887**

The following items of student information have been designated by the University of Colorado Boulder as public or "directory" information: student 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; student employment status (e.g., teaching assistant, GPTI, resident advisor, work-study, tutor, or other); positions held at the university and dates of employment, as well as GPTI/teaching assistant Faculty Course Questionnaire (FCQ) ratings; 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." Students must bring a photo ID to the Office of the Registrar, Regent Hall 105, between 9:00 a.m. and 5:00 p.m., to complete this 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.

## 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 in-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 believe 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 explanation of the Colorado tuition classification statute are available from the Tuition Classification Office, Regent Administrative Center 105, University of Colorado Boulder 20 UCB, Boulder, CO 80309-0020, phone 303-492-0907, fax 303-492-8748, e-mail [tuitclass@colorado.edu](mailto:tuitclass@colorado.edu); or on the website [www.colorado.edu/registrar/state-tuition](http://www.colorado.edu/registrar/state-tuition).

## Basic Requirement for Establishing Colorado Residency

No person may establish domicile in Colorado solely for the purpose of obtaining in-state tuition benefits. An individual who seeks to establish domicile while registered as a student is presumed to establish Colorado domicile solely for tuition purposes unless there is clear and convincing evidence to the contrary.

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/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 at least one year.

## Emancipation

An emancipated student must demonstrate total financial and residential independence. This requirement makes it extremely difficult for most undergraduates who do not have a parent domiciled in Colorado to qualify for classification as a resident student at the University of Colorado Boulder.

## Evidence of Domicile

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

- payment of Colorado state income tax and filing a tax return in Colorado
- Colorado driver's license or Colorado ID card.
- Colorado vehicle registration
- voter registration in Colorado
- ownership and **permanent occupancy** of residential real property in Colorado
- permanent employment or acceptance of future 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 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 circumstance.

## 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 student resides elsewhere. In certain circumstances student may qualify through their parents up to age 23.

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

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 actions.

## In-State Status: Other Circumstances

Exceptions for the one-year domicile requirement exist for the following:

- Colorado National Guard members
- active duty military stationed in Colorado and their dependents in certain circumstances
- honorably-discharged members of the U.S. Armed Forces and their dependents in certain circumstances
- 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 in specific major fields of study
- U.S. citizens who are Colorado high school graduates and attending a Colorado high school for three years immediately preceding enrollment in Colorado. GED holders who reside in Colorado the three years immediately preceding enrollment
- students without lawful status—if the student attended a Colorado high school for at least 3 years after the student graduates from a Colorado high school or earns a GED (other circumstances also apply (see website [www.colorado.edu/registrar/state-tuition](http://www.colorado.edu/registrar/state-tuition)))

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).

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# Expenses

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## College Opportunity Fund (COF)

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).

To receive funds, in-state undergraduate students must request that the COF stipend be applied to their student account to avoid paying full tuition. Students complete the application and an account is created with 145 available undergraduate hours. COF funding for these hours can be used at any participating college in the state of Colorado.

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

## 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.

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## 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 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 2013–14 academic year.

Tuition and fees for 2014–15 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 2013–14 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. The difference in range depends upon student's major.*

#### Resident Expenses

Tuition and Fees: \$10,498–\$15,082

On-campus Room and Board (*based on double occupancy*): \$12,258

Books and Supplies: \$1,800

On-campus Estimated Total: \$24,556–\$29,140

#### Nonresident Expenses

Tuition and Fees: \$32,266–\$35,412

On-campus Room and Board (*based on double occupancy*): \$12,258

Books and Supplies: \$1,800

On-campus Estimated Total: \$46,324–\$49,470

#### 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 \$64 per credit hour in 2013–14.

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. They range from \$1 to \$375 per fee.

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 2013 through spring 2014 are guaranteed the same tuition rate through summer 2017. 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 (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. Students who do not live in the residence hall for the entirety of the housing contract period or cancel their housing reservations forfeit the deposit.

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 2013–14 ranged from \$1–\$375 per fee. 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 Fees

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. Eligible students are assessed a \$100 late registration fee, which should not be confused with charges assessed for late payments of the university bill.

### Student Health Insurance Requirement and Plans

CU-Boulder has a policy requiring all CU students taking six or more credit hours (one for graduate students) to have health insurance coverage during their time at CU. To help students comply with this policy, all students are automatically enrolled in the university-sponsored Student Gold Health Insurance Plan every fall and charged the semester premium unless the plan is waived or the Wardenburg Campus Care supplemental plan is selected by the semester deadline.

To waive the Student Gold Plan or select the Campus Care Plan, students must be covered by a health insurance plan other than the university's (i.e., through a parent, employer, or an individual insurance plan, etc.). The deadline to waive insurance is September 3, 2014, for fall 2014, and January 21, 2015, for spring 2015. Dates may be subject to change. The health plan selection made for the fall semester automatically extends through the spring/summer 2015 unless another plan is selected during the enrollment period.

Please note: 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.

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 visit [www.colorado.edu/studentinsurance](http://www.colorado.edu/studentinsurance).

Remember, the new Affordable Care Act is available for students without insurance. Colorado students may sign up at [Connect for Health Colorado](#). Non-resident students may sign up through their home state health exchanges or through the national website at <https://www.healthcare.gov>.

## 2013–14 Mandatory Fees per Semester

### **Activity Fee (assessed by CU Student Government)** (Note 1)

#### **Undergraduate Students** (Note 2)

One class of 5 or fewer credit hours: \$52.83

One class of more than 5 credit hours: \$292.79

More than one class (any amount of credit hours): \$292.79

#### **Graduate Students** (Note 2)

Master's, beginning doctoral, doctoral thesis only, and law (status A, B, C, E): \$292.79

Doctoral candidate (status D): \$52.83

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

All students: \$10.00

### **Athletic Fee** (Note 3)

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: \$85.00

Credit hours of 7 or more: \$170.00

### **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

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

International students only: \$22

### **Rec Center Expansion Fee**

One class of five or fewer hours: \$85.18

More than one class with any amount of hours: \$108.54

One class of more than five credits: \$108.54

### **Student Bus and Bike Programs Fee** (Note 4)

All students: \$85.00

### **Student Health Fee**

One class of 5 or fewer credit hours: \$0.00

One class of more than 5 credit hours: \$69.86

More than one class (any amount of credit hours): \$69.86

### **Student Information System Fee**

Mandatory for all students: \$7.00

### **Notes**

1. Undergraduate students: Payment of full Colorado Student Government student fees in the amount of \$292.74 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 \$52.83 are charged.
2. Graduate status is determined by the Graduate School. Additional Graduate Student Fees: Law Students are assessed two additional fees: Graduation Fee (\$40) and Law Student Services Fee (\$150). The United Government of Graduate Students 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](http://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 [www.colorado.edu/registrar](http://www.colorado.edu/registrar).

### 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](http://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 with an appointment of 50 percent or greater may enroll in up to 9 credit hours per year tuition-free, beginning with summer (certain mandatory fees still apply). Faculty and staff can share their hours with an eligible dependent. Enrollment is on a space available basis and must be done no sooner than the day classes begin for fall or spring and the first day of the course session for summer. Only main campus courses are eligible; Continuing Education courses do not qualify for this benefit. Dependents can only use the benefit for courses on the campus where the employee works. (Some restrictions apply.) Faculty, staff, and dependents must be admitted to CU as nondegree or degree-seeking students and meet all deadlines in order to receive the benefit. For details, visit Payroll and Benefits Services at [www.cu.edu/employee-services/benefits/employee-tuition-benefit](http://www.cu.edu/employee-services/benefits/employee-tuition-benefit) and the Bursar's Office at [bursar.colorado.edu/resources+tuition-benefit](http://bursar.colorado.edu/resources+tuition-benefit).

### 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 should 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.
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. Graduate students are assessed graduate tuition rates and if receiving financial aid are considered "independent" once reaching graduate status.

4. The minimum completion of 130 credit hours includes credits taken towards academic load from a student's undergraduate work (which includes classes graded with an *I* or *IP*, as well as in-progress units) and transfer units (including AP credit). 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. Students pursuing a concurrent bachelor's/master's degree will be automatically changed to graduate status after the completion of 130 credit hours (or 145 credit hours for a student in the College of Engineering and Applied Science). The Title IV Higher Education regulations require that an institution determine when a student has progressed from undergraduate to graduate status.

## 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

Bills are only online. Any student who completes registration agrees to pay CU-Boulder according to the payment terms documented at [bursar.colorado.edu](http://bursar.colorado.edu) under "Payments." Once a month, CU-Boulder e-mails students and authorized payers reminding them to view their student account for recent activity and to pay any amount due by the due date. The student account is available online for students and authorized payers to view and print, and it includes all student transactions such as charges and credits for tuition, fees, housing, financial aid, and payment received. No bills are mailed.

Payment methods include:

- Online payment from credit or debit card (nonrefundable 2.75 percent fee applies)
- Online from traditional checking or savings account
- Cash
- Check (personal, certified, cashier's, traveler's, convenience checks, or money orders). Include student's identification number on the check.
- Wire transfer for international students via peerTransfer

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](http://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](http://bursar.colorado.edu). Adjustments made throughout the semester will appear immediately on the student account. Tuition and fee billing information is available at [bursar.colorado.edu](http://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](http://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 account 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 (SDM) department for collection after the end of the semester.
- Past due finance charges of 1 percent continue to accrue monthly as long as the debt is unpaid, and additional collection costs and reasonable attorneys' fees may be assessed.
- Colorado law requires the university to place all delinquent accounts with a third-party collection agency. If your account is referred to a collection agency, you may be responsible for collection costs and reasonable attorneys' fees, as allowed by the laws of the state of Colorado. The collection agency reports all past due accounts to national credit bureaus.
- The SDM department places delinquent accounts after one year, unless payments are being made or there exists a satisfactory repayment agreement with SDM in the Bursar's Office.
- Financial holds remain on your student account until the balance is paid in full. Establishing a repayment agreement does not result in removal of holds.

## Returned Payment Policy

If your payment is returned from the bank for any reason—regardless of the amount—it is considered nonpayment, and nonpayment penalties will be assessed. You are subject to late fees and finance charges, and a financial hold will be placed on your account. You may also be dropped from your classes. Accounts with repeated returned payment transactions will require payment with cash, certified funds, or money orders only. A \$20 returned payment charge is assessed in addition to the amount you owe the university. You may also be responsible for collection costs and reasonable attorneys' fees allowed by the state of Colorado. Specific inquiries regarding returned payments should be directed to the Student Debt Management department in the Bursar's Office at **303-492-5571** or toll free at **800-925-9844**.

## 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/](http://bursar.colorado.edu/billing/tuition-dispute/) or by contacting the Bursar's Office Student Billing 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 during certain deadlines.

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

**Continuing students:** Students who withdraw during the full refund period (or the *full refund of tuition, fees, and confirmation deposit period*) will have their confirmation deposit refunded unless there are 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 [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) 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 automatically credited towardss the withdrawal fee.

After the third Wednesday of instruction, or the first drop deadline, there are three additional assessment periods.

- From the third Wednesday of instruction through the fifth Wednesday, students will only be charged 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) for providing a reason on their withdrawal form.
- After the fifth Wednesday of instruction through the seventh Wednesday, students will be charged 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) for providing a reason on their withdrawal form.
- After the seventh Wednesday of instruction tuition will not be adjusted. In the case of extenuating circumstances (university error, recent medical condition, immediate family emergency, recent unanticipated financial problems, or 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 [www.colorado.edu/registrar](http://www.colorado.edu/registrar) 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 101.

## 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 students, either enrolled or suspended, 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 starting two weeks prior to the first day of class. Written

instructor permission for at least one class must be presented at the time of purchase. The cost of an audit card is equal to the rate for three credit hours at the in-state undergraduate tuition rate in the College of Arts and Sciences. The cost is a flat rate, and with instructor permission, auditors may audit as many classes as desired. 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. 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.

## Senior Auditors Program

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).

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## Tuition Tables

### Tuition per Semester, fall 2013 through spring 2014

(For planning purposes only. Rates for 2014–15 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. These rates apply to the Boulder campus only.

### 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 (\$64 per credit hour for academic year 2013–14). 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 mandatory fees, see [Fees](#).

**For credit hours over 18, add \$64 per credit hour. COF remains the same.**

| Credit Hours | A&S/Other              | Business               | Engineering            | Journalism/Music       |
|--------------|------------------------|------------------------|------------------------|------------------------|
| 1            | \$(1,159) <b>1,095</b> | \$(1,732) <b>1,668</b> | \$(1,534) <b>1,470</b> | \$(1,198) <b>1,134</b> |
| 2            | \$(1,223) <b>1,095</b> | \$(1,796) <b>1,668</b> | \$(1,598) <b>1,470</b> | \$(1,262) <b>1,134</b> |
| 3            | \$(1,287) <b>1,095</b> | \$(1,860) <b>1,668</b> | \$(1,662) <b>1,470</b> | \$(1,326) <b>1,134</b> |
| 4            | \$(1,716) <b>1,460</b> | \$(2,480) <b>2,224</b> | \$(2,216) <b>1,960</b> | \$(1,768) <b>1,512</b> |
| 5            | \$(2,145) <b>1,825</b> | \$(3,100) <b>2,780</b> | \$(2,770) <b>2,450</b> | \$(2,210) <b>1,890</b> |
| 6            | \$(2,574) <b>2,190</b> | \$(3,720) <b>3,336</b> | \$(3,324) <b>2,940</b> | \$(2,652) <b>2,268</b> |
| 7            | \$(3,003) <b>2,555</b> | \$(4,340) <b>3,892</b> | \$(3,878) <b>3,430</b> | \$(3,094) <b>2,646</b> |

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|    |                         |                         |                         |                         |
|----|-------------------------|-------------------------|-------------------------|-------------------------|
| 8  | \$ (3,432) <b>2,920</b> | \$ (4,960) <b>4,448</b> | \$ (4,432) <b>3,920</b> | \$ (3,536) <b>3,024</b> |
| 9  | \$ (3,861) <b>3,285</b> | \$ (5,580) <b>5,004</b> | \$ (4,986) <b>4,410</b> | \$ (3,978) <b>3,402</b> |
| 10 | \$ (4,290) <b>3,650</b> | \$ (6,200) <b>5,560</b> | \$ (5,540) <b>4,900</b> | \$ (4,420) <b>3,780</b> |
| 11 | \$ (4,719) <b>4,015</b> | \$ (6,820) <b>6,116</b> | \$ (6,094) <b>5,390</b> | \$ (4,862) <b>4,158</b> |
| 12 | \$ (5,148) <b>4,380</b> | \$ (7,440) <b>6,672</b> | \$ (6,648) <b>5,880</b> | \$ (5,304) <b>4,536</b> |
| 13 | \$ (5,212) <b>4,380</b> | \$ (7,504) <b>6,672</b> | \$ (6,712) <b>5,880</b> | \$ (5,368) <b>4,536</b> |
| 14 | \$ (5,276) <b>4,380</b> | \$ (7,568) <b>6,672</b> | \$ (6,776) <b>5,880</b> | \$ (5,432) <b>4,536</b> |
| 15 | \$ (5,340) <b>4,380</b> | \$ (7,632) <b>6,672</b> | \$ (6,840) <b>5,880</b> | \$ (5,496) <b>4,536</b> |
| 16 | \$ (5,404) <b>4,380</b> | \$ (7,696) <b>6,672</b> | \$ (6,904) <b>5,880</b> | \$ (5,560) <b>4,536</b> |
| 17 | \$ (5,468) <b>4,380</b> | \$ (7,760) <b>6,672</b> | \$ (6,968) <b>5,880</b> | \$ (5,624) <b>4,536</b> |
| 18 | \$ (5,532) <b>4,380</b> | \$ (7,824) <b>6,672</b> | \$ (7,032) <b>5,880</b> | \$ (5,688) <b>4,536</b> |

## OUT-OF-STATE Tuition

| <b>Group/First Enrolled</b> | <b>A&amp;S/Other</b> | <b>Business</b> | <b>Engineering</b> | <b>Jour/Music</b> |
|-----------------------------|----------------------|-----------------|--------------------|-------------------|
| A-F: spring 2011 or earlier | \$ 14,000            | \$ 15,750       | \$ 15,200          | \$ 14,150         |
| G: summer 2011–spring 2012  | \$ 14,425            | \$ 16,720       | \$ 15,650          | \$ 14,575         |
| H: summer 2012–spring 2013  | \$ 14,976            | \$ 16,731       | \$ 16,245          | \$ 15,129         |
| I: summer 2013–spring 2014  | \$ 15,264            | \$ 16,902       | \$ 16,551          | \$ 15,417         |

## 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

| <b>Credit</b> | <b>A&amp;S/Other</b> | <b>MBA 1st</b> | <b>MBA 2nd</b> | <b>BUSN</b> | <b>ENGR</b> | <b>JOUR/MUSC</b> | <b>LAW 1st or 2nd</b> | <b>LAW 3rd</b> | <b>LAW LLM</b> |
|---------------|----------------------|----------------|----------------|-------------|-------------|------------------|-----------------------|----------------|----------------|
|---------------|----------------------|----------------|----------------|-------------|-------------|------------------|-----------------------|----------------|----------------|

| <b>Hours</b> | <b>Yr.</b> |
|--------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 1-3          | \$1,653    | \$2,730    | \$2,460    | \$2,367    | \$2,160    | \$1,653    | \$4,953    | \$4,914    | \$5,067    |
| 4            | \$2,204    | \$3,640    | \$3,280    | \$3,156    | \$2,880    | \$2,204    | \$6,604    | \$6,552    | \$6,756    |
| 5            | \$2,755    | \$4,550    | \$4,100    | \$3,945    | \$3,600    | \$2,755    | \$8,255    | \$8,190    | \$8,445    |
| 6            | \$3,306    | \$5,460    | \$4,920    | \$4,734    | \$4,320    | \$3,306    | \$9,906    | \$9,828    | \$10,134   |
| 7            | \$3,857    | \$6,370    | \$5,740    | \$5,523    | \$5,040    | \$3,857    | \$11,557   | \$11,466   | \$11,823   |
| 8            | \$4,408    | \$7,280    | \$6,560    | \$6,312    | \$5,760    | \$4,408    | \$13,208   | \$13,104   | \$13,512   |
| 9+           | \$4,959    | \$8,190    | \$7,380    | \$7,101    | \$6,480    | \$4,959    | \$14,859   | \$14,742   | \$15,201   |

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

| <b>Credit Hours</b> | <b>A&amp;S/Other</b> | <b>MBA</b> | <b>BUSN</b> | <b>ENGR</b> | <b>JOUR/<br/>MUSC</b> | <b>LAW JD</b> | <b>LAW LLM</b> |
|---------------------|----------------------|------------|-------------|-------------|-----------------------|---------------|----------------|
| 1-3                 | \$4,452              | \$5,079    | \$5,001     | \$4,857     | \$4,503               | \$6,084       | \$6,099        |
| 4                   | \$5,936              | \$6,772    | \$6,668     | \$6,476     | \$6,004               | \$8,112       | \$8,132        |
| 5                   | \$7,420              | \$8,465    | \$8,335     | \$8,095     | \$7,505               | \$10,140      | \$10,165       |
| 6                   | \$8,904              | \$10,158   | \$10,002    | \$9,714     | \$9,006               | \$12,168      | \$12,198       |
| 7                   | \$10,338             | \$11,851   | \$11,669    | \$11,333    | \$10,507              | \$14,196      | \$14,231       |
| 8                   | \$11,872             | \$13,544   | \$13,336    | \$12,952    | \$12,008              | \$16,224      | \$16,264       |
| 9+                  | \$13,356             | \$15,237   | \$15,003    | \$14,571    | \$13,509              | \$18,252      | \$18,297       |

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

| <b>Credit Hours</b> | <b>A&amp;S/Other</b> | <b>BUSN</b> | <b>ENGR</b> | <b>JOUR/<br/>MUSC</b> |
|---------------------|----------------------|-------------|-------------|-----------------------|
| 1-3                 |                      | \$3,001     | \$2,914     | \$2,702               |
| 4                   |                      | \$4,001     | \$3,886     | \$3,602               |
| 5                   |                      | \$5,002     | \$4,857     | \$4,503               |
| 6                   |                      | \$6,001     | \$5,828     | \$5,404               |
| 7                   |                      | \$7,001     | \$6,800     | \$6,304               |
| 8                   |                      | \$8,002     | \$7,771     | \$7,205               |
| 9+                  |                      | \$9,002     | \$8,743     | \$8,105               |

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

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# Financial Aid

## On This Page:

- [Applying for 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 for 2012–13 was approximately \$329 million and in 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 grants, work-study, and loans, as well as some scholarships. Students must reapply for financial aid every year.

For financial aid for fall 2014, spring 2015, and summer 2015, the 2014–15 FAFSA must be submitted. Students should apply as soon as possible after January 1, 2014, as some funds are first-come, first-served.

The Office of Financial Aid receives the FAFSA results electronically if CU-Boulder is listed on the application (school code 001 370). Students must have been accepted to the university before their financial aid application can be considered.

## Eligibility

Financial aid eligibility is based on the cost to attend CU-Boulder and the amount the family is expected to be able to contribute (also called an EFC). Each year the Office of Financial Aid calculates the cost of attendance using tuition, fees, and local and national cost-of-living data. The EFC (Expected Family Contribution) is a number used by a school to calculate how much financial aid you are eligible to receive and is based on responses you provide in the FAFSA. Your EFC is not the amount of money your family will have to pay for college, nor is it the amount of federal student aid you will receive.

Financial aid is calculated by subtracting a student's EFC from the cost of attendance. View more information and examples at [www.colorado.edu/finaid/determineaid.html](http://www.colorado.edu/finaid/determineaid.html).

## Financial Aid Awards

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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 2014–15 academic year are encouraged to submit their FAFSA applications and any additional documentation requested by March 1, 2014, 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 Subsidized and Unsubsidized Loans.** 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 rates for direct loans are determined annually. 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 an additional amount of unsubsidized loans; freshmen and sophomores, \$4,000; juniors and seniors, \$5,000.

The maximum amount in a loan a graduate student can borrow is \$20,500. The loan is unsubsidized and the interest rate is 5.41 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 6.41 percent. 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.

**For Parents:** Repayment begins within 60 days of full disbursement of the loan. Typically, repayment begins in March for an academic year loan; however borrowers may 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.

**For Grad Students:** Repayment begins 6 months after student graduates, drops below 4 credit hours in a given semester, or withdraws.

## 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 student portal. The student employment office maintains a work-study waitlist for students not awarded work-study. For more information, visit [www.colorado.edu/studentemployment/waitlist.html](http://www.colorado.edu/studentemployment/waitlist.html).

## 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.). For more information, visit [www.colorado.edu/financialaid/grants.html](http://www.colorado.edu/financialaid/grants.html).

## Scholarships

Donations from private individuals, corporations, foundations, and the University of Colorado are all sources for scholarships. Incoming students are automatically considered for some scholarships via their admissions application. For more available scholarship opportunities, visit [www.colorado.edu/scholarships/types](http://www.colorado.edu/scholarships/types).

## CU-Boulder Scholarship Application

Students may apply for scholarships offered by the Office of Financial Aid through the student portal beginning November 1 each year. Your FAFSA must be received no later than March 1 to be considered for scholarships with a financial need requirement. Some

scholarships may have earlier deadlines. For more information, visit [www.colorado.edu/scholarships/cuboulder-scholarship-app](http://www.colorado.edu/scholarships/cuboulder-scholarship-app).

Prospective students do not need to wait for formal acceptance to CU-Boulder before applying for financial aid or scholarships.

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.

## 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

Donors should mail scholarship checks at least one month prior to the bill due date to avoid incurring late and service charges. If a student's scholarship check is not submitted before 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. 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.

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# Housing

## On This Page:

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## 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 5,650 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 center.

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. All of these programs charge additional \$850 fees per academic year. They include:

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**Baker RAP** is designed for freshmen and sophomores in the College of Arts and Sciences interested in the natural sciences and environmental studies.

- **Communication and Society RAP** 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.
- **Farrand RAP** 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.
- **Global Engineering RAP** prepares engineering students for the new global conditions of the engineering professions through experiencing international culture, mastering a second language, and gaining confidence with IT-driven international communication and collaboration.
- **Global Studies 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 is housed in the renovated Arnett 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.
- **Health Professions RAP** proudly took residence in the newly renovated Kittredge West Hall in fall 2013, accommodating approximately 225 students. This community is ideal for students interested in exploring course work and career options in the health professions such as practitioners, researchers, or policymakers. Courses offered will include a mix of natural science, social science, and general education courses appropriate for first- and second-year students interested in study or careers related to health care or health care policy.
- **Honors RAP** is the residential component of the Honors Program of the College of Arts and Sciences. It promotes and sustains academic excellence within a lively community setting. Students take one, onsite, seminar-style 3-hour course each semester. Beyond the classroom, Honors RAP offers a variety of cocurricular and student-led activities that enhance the learning experience. It is open to approximately 335 first-year and continuing honors-qualified students. Participants live in Smith Hall.
- **Leadership RAP** 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)**. Both these programs are housed in Kittredge Central.
- **Leeds Business RAP** (Leeds RAP) is a targeted community that is comprised exclusively of students who are business majors. Leeds RAP seeks to build individuals who are well-rounded, prepared, engaged, and equipped to succeed in 21st century workplaces and take roles as global leaders. Located in Darley South, Williams Village, where students in the program develop supportive relationships with faculty and staff, including an in-house academic advisor, as well as with peer mentors.
- **Libby Arts RAP** (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.
- **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.
- **Sustainable by Design Residential Academic Program** (SbD) offers unique interdisciplinary educational opportunities in a residential community setting. The program will 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, Sustainability and Social Innovation (SSI), 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.
- **Sustainability and Social Innovation** (SSI) 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 SSI focus are available. Open to all majors.

## Living and Learning Communities

Living and Learning Communities (LLCs) 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 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 2013–14 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.
- **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.

## Room and Board Rates per Semester

Residence hall room and board rates per person, per semester, for the 2013–14 academic year were as follows:

19 meals/week and double room: \$6,129

19 meals/week and single room: \$7,062

Different meal plans are available. A modest rate increase should be expected for the 2014–15 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 2014–15) 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's Children's Center provides day care for the children of family housing residents, staff, and faculty. For information on applying: write the Graduate & Family Housing Office, 1350 20th Street, #A10, University of Colorado 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 Housing & Neighborhood Relations

Off-Campus Housing & Neighborhood Relations (a service of CUSG) maintains listings of apartments, houses, and rooms for rent in the Boulder area. Currently enrolled students may view listings and connect with potential roommates on Ralphie's List, CU's rental database at [offcampushousing.colorado.edu](http://offcampushousing.colorado.edu). The office also maintains a detailed list of apartments and property management companies available for download or pickup in the office.

The department has a staff attorney available on Tuesdays and Fridays to advise students about leases, security deposits, maintenance issues, and roommate and landlord conflicts.

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 [offcampushousing.colorado.edu](http://offcampushousing.colorado.edu). Office hours are 8:00 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](#) in this catalog or on the registrar's website ([www.colorado.edu/registrar](http://www.colorado.edu/registrar)) 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.

[Academic Calendar](#)[Administration](#)[Academic Affairs](#)[Student Affairs](#)[Academic Records](#)[Expenses](#)[Tuition Tables](#)[Financial Aid](#)[Housing](#)**[Registration](#)**[Campus Policies](#)[Degrees, Majors, and Minors](#)[Glossary of Terms](#)[Campus Map](#)

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 [MyCUInfo.colorado.edu](http://MyCUInfo.colorado.edu). Students can also check their assigned registration date and time in MyCUInfo and check for any holds that may prevent registration (see Holds).

New freshmen and transfer students in most schools and colleges receive their registration information at orientation. Continuing students are notified via e-mail each semester of times and requirements for registration.

Registration instructions, including a step-by-step video, are available at [www.colorado.edu/registrar/registration-grades/how-register-courses](http://www.colorado.edu/registrar/registration-grades/how-register-courses).

## Bill Distribution

Bills are online before each semester begins, depending on when students have registered. For more information, visit [www.colorado.edu/bursar](http://www.colorado.edu/bursar) and in the *Summer Session Catalog*. Students access their online student account 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 [www.colorado.edu/registrar](http://www.colorado.edu/registrar).

## Drop/Add Deadlines

Specific drop and add deadlines for each fall and spring semester are listed on the registrar's website. Summer deadlines appear in the *Summer Session Catalog*.

- Students can add courses via MyCUInfo through a certain date each term without needing approval. See [www.colorado.edu/registrar/calendars-schedules/academic-calendar](http://www.colorado.edu/registrar/calendars-schedules/academic-calendar) to find out this date for the current term. After this, students must contact the instructor or the instructor's department to add a class. In addition, near the end of the fall or spring semester, students must get the dean's permission to add a class in addition to the instructor's. This date is also posted on the registrar's academic calendar.
- Students can drop courses without approval via MyCUInfo through Friday of the tenth week of the fall and spring term (summer dates vary). However, tuition and fees are assessed for courses dropped after the third Wednesday of the fall or spring semester, and a grade of W will appear on the transcript. See the registrar's academic calendar at [www.colorado.edu/registrar/calendars-schedules/academic-calendar](http://www.colorado.edu/registrar/calendars-schedules/academic-calendar) for specific dates and details.
- After the tenth-week drop deadline, the instructor's and dean's signatures are required to drop a course. Some colleges may require additional approval or processes, such as petitioning the dean (students should check with their school or college). Course drops are generally not approved after this date except in extraordinary circumstances.
- Students dropping all of their courses should refer to the Withdrawal Procedures (*see below*) 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. 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 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** 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 or the *Summer Session Catalog* for variable-credit hour ranges for particular courses.

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

The Time-Off Program is a planned-leave program for 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 Time-Off 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.

The Time-Off Program 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 Time-Off application can be obtained from the Office of the Registrar, Regent Administrative Center 105, or at the registrar's website at [www.colorado.edu/registrar/withdrawals/time-off](http://www.colorado.edu/registrar/withdrawals/time-off). A nonrefundable \$50 program fee is required at the time of application to Time-Off.

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

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

This program gives certain benefits to eligible degree-seeking undergraduate students who are taking leave from the university for up to three consecutive semesters (including the summer semester) that 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 websites at [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university), or [www.colorado.edu/registrar/withdrawals/stay-connected-program](http://www.colorado.edu/registrar/withdrawals/stay-connected-program).

## Withdrawal Procedures

Students may officially withdraw from the university by the following methods:

- fill out a withdrawal form and submit it to the Office of the Registrar, Regent Administrative Center 105;
- mail a withdrawal form to the Office of the Registrar, University of Colorado Boulder, 20 UCB, Boulder CoO 80309-0020;
- fax a withdrawal form to **303-492-8748**;
- e-mail a withdrawal form to [withdraw@colorado.edu](mailto:withdraw@colorado.edu); or
- using **ONLY** the student's official colorado.edu e-mail account, students may e-mail a request to withdraw (no need for the form) if no signatures are required.

Students should include their full name and identifying information (student ID number), semester or semesters for which they are withdrawing, 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 [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) 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 [www.colorado.edu/registrar](http://www.colorado.edu/registrar), 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**.

Students who withdraw and then wish to return to the university will have three semesters from their last graded semester, to return to the university without having to reapply for admission. Details are available at [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) under the Taking a Leave of Absence section.

**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 [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) 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 automatically credited towards the withdrawal fee.

After the third Wednesday of instruction, or the first drop deadline, there are three additional assessment periods.

- From the third Wednesday of instruction through the fifth Wednesday, students will only be charged 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)
- After the fifth Wednesday of instruction through the seventh Wednesday, students will be charged 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 tuition will not be adjusted. In the case of extenuating circumstances (university error, recent medical condition, immediate family emergency, recent unanticipated financial problems, or 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.

## Retroactive Withdrawal

In certain situations, colleges, schools and programs accept petitions for retroactive withdrawals from one or more semesters. Students must clearly demonstrate that they experienced *extenuating circumstances beyond their control* that prevented them from withdrawing by the established deadline. Such petitions deal with only the most serious cases of injury, illness and emotional distress and require specific and detailed documentation from appropriate licensed professionals in order to be considered. The retroactive withdrawal process may take several months; students should continue with their education without anticipating approval since such petitions are rarely granted. If the petition is approved, grades of *W* will be recorded for all courses taken in the semester, irrespective of the original grade. Students who believe they have encountered life events that may make them eligible for a retroactive withdrawal should meet with their academic advisor before taking any action.

Withdrawing students who have received [financial aid](#) should review the Office of Financial Aid's [withdrawal policy](#). Please also review [www.colorado.edu/registrar/how-withdraw/financial-concerns-tuition-assessment](http://www.colorado.edu/registrar/how-withdraw/financial-concerns-tuition-assessment) on the Registrar's web page.

## Other Registrations

### Concurrent Registration

Boulder-campus students who cannot 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. Participating students must be enrolled for at least one course on the Boulder campus. Application forms and registration are handled by the home campus. Graduate students should check with the Graduate School for exceptions to the home-campus registration requirement and limitations on credit hours at the host campus. Courses taken at the other CU campus 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 [www.colorado.edu/registrar/registration-grades/registration-programs](http://www.colorado.edu/registrar/registration-grades/registration-programs) or at the Office of the Registrar, Regent Administrative Center 101.

Concurrent students will not be registered in courses at the host campus until the first day of classes at the host campus and must adhere to the add/drop deadlines of that 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**, or visit [www.colorado.edu/registrar](http://www.colorado.edu/registrar).

## Registration for Faculty and Staff

Full-time permanent employees with an appointment of 50 percent or greater may enroll in up to 9 credit hours per year tuition-free, beginning with summer (certain mandatory fees still apply). Faculty and staff can share their hours with an eligible dependent. Enrollment is on a space available basis and must be done no sooner than the day classes begin for fall or spring and the first day of the course session for summer. Only main campus courses are eligible; Continuing Education courses do not qualify for this benefit. Dependents can only use the benefit for courses on the campus where the employee works. (Some restrictions apply.) Faculty, staff, and dependents must be admitted to CU as nondegree or degree-seeking students and meet all deadlines in order to receive the benefit. For details, visit Payroll and Benefits Services at [www.cu.edu/employee-services/benefits/employee-tuition-benefit](http://www.cu.edu/employee-services/benefits/employee-tuition-benefit) and the Bursar's Office at [bursar.colorado.edu/resources+tuition-benefit](http://bursar.colorado.edu/resources+tuition-benefit).

## Commencement

Students must apply for graduation online through their MyCUInfo portal before they intend to graduate. Step-by-step instructions for applying are available at [www.colorado.edu/registrar](http://www.colorado.edu/registrar), as well as important deadlines. 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 a degree 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 can also access the current semester's ceremony information at [commencement.colorado.edu](http://commencement.colorado.edu).

Only doctoral graduates receive their diplomas at commencement. Diplomas are mailed to all other students approximately two months after the ceremony. Standard diploma size is 10 x 8 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 hold on the student's record. This hold 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 of student loan department in the Bursar's Office at **303-492-5571**, TTY **303-492-3528**.

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# Campus Policies

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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 [honorcode.colorado.edu](http://honorcode.colorado.edu).

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

## Cheating

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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 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 Policies

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.

In compliance with the federal Drug Free Schools and Communities Act, the University of Colorado Boulder prohibits the unlawful manufacture, dispensation, possession, use, or distribution of a controlled substance (illicit drugs and alcohol) of any kind and in any amount. These prohibitions cover any individual's actions that are part of any university activities, including those occurring while on university property or in the conduct of university business away from the campus.

Information on policies, penalties, health effects, and resources available to students and staff regarding alcohol and other drugs can be found online at [aod.colorado.edu](http://aod.colorado.edu). These policies are also described by various university offices in several publications:

- **Campus housing:** *A Guide to Residence Hall Living*, available at the Department of Housing. Contact Residence Life, **303-492-7260**. See also [housing.colorado.edu/policies-procedures/residence-hall-handbook](http://housing.colorado.edu/policies-procedures/residence-hall-handbook).
- **Student Conduct Code:** *Students' Rights and Responsibilities Regarding Standards of Conduct and Alcohol and Drug Policy*, available in the Office of Student Conduct, **303-492-5550**. See also the [Student Conduct Policies and Procedures](#) handbook.
- **Safety:** *Annual Security and Fire Safety Report*. See [www.colorado.edu/clery](http://www.colorado.edu/clery).
- **Student life:** *The Guide to Student Life*, distributed to new and continuing students. Resources online at [www.colorado.edu/audience/students](http://www.colorado.edu/audience/students).

Individual and group counseling for students with substance abuse concerns is available through Wardenburg Health Center (**303-492-5654**) or Counseling and Psychological Services (**303-492-6766**).

## Colorado Creed

The Colorado Creed, developed by students in 2003, is a code of conduct, a lifestyle, by which 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 [www.colorado.edu/creed](http://www.colorado.edu/creed).

## Copyright and Fair Use

The University of Colorado Boulder community respects the intellectual property of others, regardless of the medium by which it is transmitted. This is a cornerstone of academic integrity. We prohibit the use of unauthorized distribution of copyrighted material, which is subject to both civil and criminal penalties as well as university procedures.

Distributing copyrighted materials using peer-to-peer or file-sharing programs is illegal and the university uses technological solutions to deter this activity. Still, the university regularly receives notices of copyright violations and is required by law to take action. Common consequences include loss of network access and referral to the Office of Judicial Affairs. Guidance on campus fair use and copyright issues is provided at [ucblibraries.colorado.edu/copyright](http://ucblibraries.colorado.edu/copyright).

## Diversity

"At the University of Colorado Boulder we are committed to building a campus community in which diversity is a fundamental value. People are different and the differences among us are what we call diversity—a natural and enriching hallmark of life. Diversity includes, but is not limited to, ethnicity, race, gender, age, class, sexual orientation, religion, disability, political viewpoints, veteran status, gender identity/expression, and health status. A climate of healthy diversity is one in which people value individual and group differences, respect the perspectives of others, and communicate openly.

"Diversity is a key to inclusive excellence in education. A diverse learning environment better prepares all students for the world that awaits them. CU-Boulder is committed to enriching the lives of our students, faculty, and staff by providing a diverse campus where the exchange of ideas, knowledge, and perspectives is an active part of learning." —from the *Guidelines for Diversity Planning*

## 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.

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(s) scheduled on that day. When students have two final exams scheduled to meet at the same time, they are entitled to arrange an alternative examination time for the later course offered that day or week. Such arrangement must be made by the deadline to drop the course without dean and instructor permission in the tenth week of the semester. Students should make arrangements with the instructor of the affected course and are expected to provide evidence of these situations 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.
6. The submission deadline of all grades for each semester is 90 hours after the conclusion of the final exam, minus Sundays and official designated university holidays.

## 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 Clery Act, students and employees receive (at the start of the fall semester) information on campus security policies and programs, including crime statistics. The *Annual Security and Fire Safety Report* can be viewed at [www.colorado.edu/clery](http://www.colorado.edu/clery). 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 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). For information on crime alerts, trends, and safety tips, see the CU Police social media pages at [www.twitter.com/cuboulderpolice](https://www.twitter.com/cuboulderpolice) and [www.facebook.com/cuboulderpolice](https://www.facebook.com/cuboulderpolice).

## Smoking Policies

For student health and the health of our community, smoking is prohibited in all campus buildings and on all campus grounds except in a limited number of officially designated exterior smoking areas away from public activity. Campuswide smoking regulations are not intended to deny smokers their prerogatives, but rather to limit the potential adverse effects of smoking on others.

At this time, the use of smoking products of any sort shall be prohibited on all university-owned and operated campus grounds both

indoors and outdoors. This smoking ban does not apply to public rights-of-way (sidewalks, streets) on the perimeter of the campus.

"Smoking," as used in this policy, means smoking any substance, including but not limited to, tobacco, cloves, or marijuana. "Smoking Products" include, but are not limited to, all cigarette products (cigarettes, bids, kreteks, e-cigarettes, etc.) and all smoke-producing products (cigars, pipes, hookahs, etc.). University-owned and operated campus grounds include, but are not limited to: all outdoor common and educational areas; all university buildings; university-owned on-campus housing; campus sidewalks; campus parking lots; recreational areas; outdoor stadiums; and university-owned and leased vehicles (regardless of location). In keeping with university policy, the sale, distribution, and sampling of all tobacco products and tobacco-related merchandise is prohibited on all university-owned and operated property and at university-sponsored events. Littering campus with remains of smoking products is prohibited.

This policy applies to all employees, students, visitors, contractors and externally affiliated individuals or companies renting university-owned space on university-owned and operated property campus grounds.

Those employees who wish to stop smoking may call the Employee Assistance Program (**303-492-3020**) 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 [www.colorado.edu/oit/email](http://www.colorado.edu/oit/email).

## 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* handbook, 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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## Degrees, Majors, and Minors

Students offered admission at CU-Boulder are admitted to one major and one degree program. After enrollment they may consider pursuing a double degree, double major, or minor.

### Double Degrees

A double degree is two different degrees within a college/school (e.g., a BA and BFA from the College of Arts and Sciences), **or** two degrees from different schools or colleges (e.g., a BA from the College of Arts and Sciences and a BS from the College of Engineering and Applied Science). Enrolled students who wish to add a double degree program are encouraged to speak with their current academic advisor and an academic advisor in the degree program they wish to add in order to determine requirements and procedures for adding a double degree. After January 14, 2013, the requirements for CU-Boulder double degree programs have been revised to make it easier to earn some double degrees in less time with less cost. In order to earn a double degree from two colleges or schools:

- students must meet all individual degree requirements as currently written
- students must receive signoff approval from the academic adviser for each degree area
- both degrees must be confirmed at the same graduation date. (The degrees must be awarded concurrently; they cannot be awarded sequentially.)

### Dual Degrees

Dual degrees are combined degree programs such as the BA/MA or the BS/MS combined five year degree programs. These programs are designed as a single integrated curriculum, not stand alone degrees; but the student is earning two different degrees—such as a baccalaureate and a master's degree—in a single integrated program of study.

### Double Majors

Students pursuing a bachelor's degree in their school or college 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.

### Minors

Students earning their bachelor's degree may decide to participate in a minor program. These optional programs are offered in a number of undergraduate departments and programs including: College of Arts and Sciences, College of Engineering and Applied Science, and Leeds School of Business.

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## Glossary of Terms

The following are terms students commonly encounter throughout their time at CU-Boulder.

**Academic advisor** (*see departmental advisor*).

**Bursar's Office** Coordinates the billing, payments, and refunds from student accounts, 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 editions of the *University of Colorado Boulder Catalog* 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 into the course, to reserve enrollment in that course the next time it's offered. ([www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university))

**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.

**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 (BA) degree in the College of Arts and Sciences, with a major in sociology.

**Degree audit** A web-based tool that displays a student's progress toward graduation. It tracks students' various degree 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.

**Disability Services (DS)** Provides students with disabilities the tools, reasonable accommodations, and support services to

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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 a college or school (e.g., a BA and a BFA from the College of Arts and Sciences) or from two degrees earned from different schools or colleges (e.g., a BA from the College of Arts and Sciences and a BS from the College of Engineering and Applied Science). As of January 2013, requirements for double degrees have changed. See [Degrees, Majors, and Minors](#) for more information.

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

**Drop/add** Period after registration during which 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 choose to take out of interest. Elective hours are credit hours that students need toward graduation that are not used to fulfill other requirements.

**Enrollment Appointment (registration time)** Designated time for a student to start registering for courses. Generally designed so that seniors register first, followed by juniors, sophomores, and freshmen. Students can locate their enrollment appointment time on the 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.

**Final exams** Students may find the final exam schedule on the registrar's office website each fall and spring semester. Most 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))

**"Full-time" status** To be considered a full-time student, undergraduate students must be registered for a minimum of 12 credit hours in a single fall or spring 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 (such as the College of Arts and Sciences or Leeds School of Business) 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 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 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))

**IdentiKey** Automatically assigned to all incoming students, an IdentiKey account consists of a student's 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 or upper division** Courses numbered 1000–2999 are lower division. Courses numbered 3000–4999 are upper division.

**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 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 and the College of Engineering and Applied Science for lower-division students who have not yet declared a major.

**Pre-law** If a student is thinking about attending law school after graduating from CU, the pre-law advisor at the Pre-Professional Advising Office can help them achieve their goals. 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 are 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 and offers services such as transcript distribution, enrollment verification, and withdrawal. ([www.colorado.edu/registrar](http://www.colorado.edu/registrar))

**SID (student identification number)** SIDs are assigned to all students. SIDs are system-generated and unique, and they are used as the 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 the course instructor that lists course requirements, grading criteria, course content, expectations, and other relevant course information.

**Upper division or lower division** Courses numbered 1000–2999 are lower division. Courses numbered 3000–4999 are upper division.

**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 wait list. As spaces open in a course, students may be automatically enrolled in the class. Students are responsible for monitoring if they have been enrolled in a course from the wait list. If a student does not attend a course in which they have been enrolled, they will receive an *F* grade 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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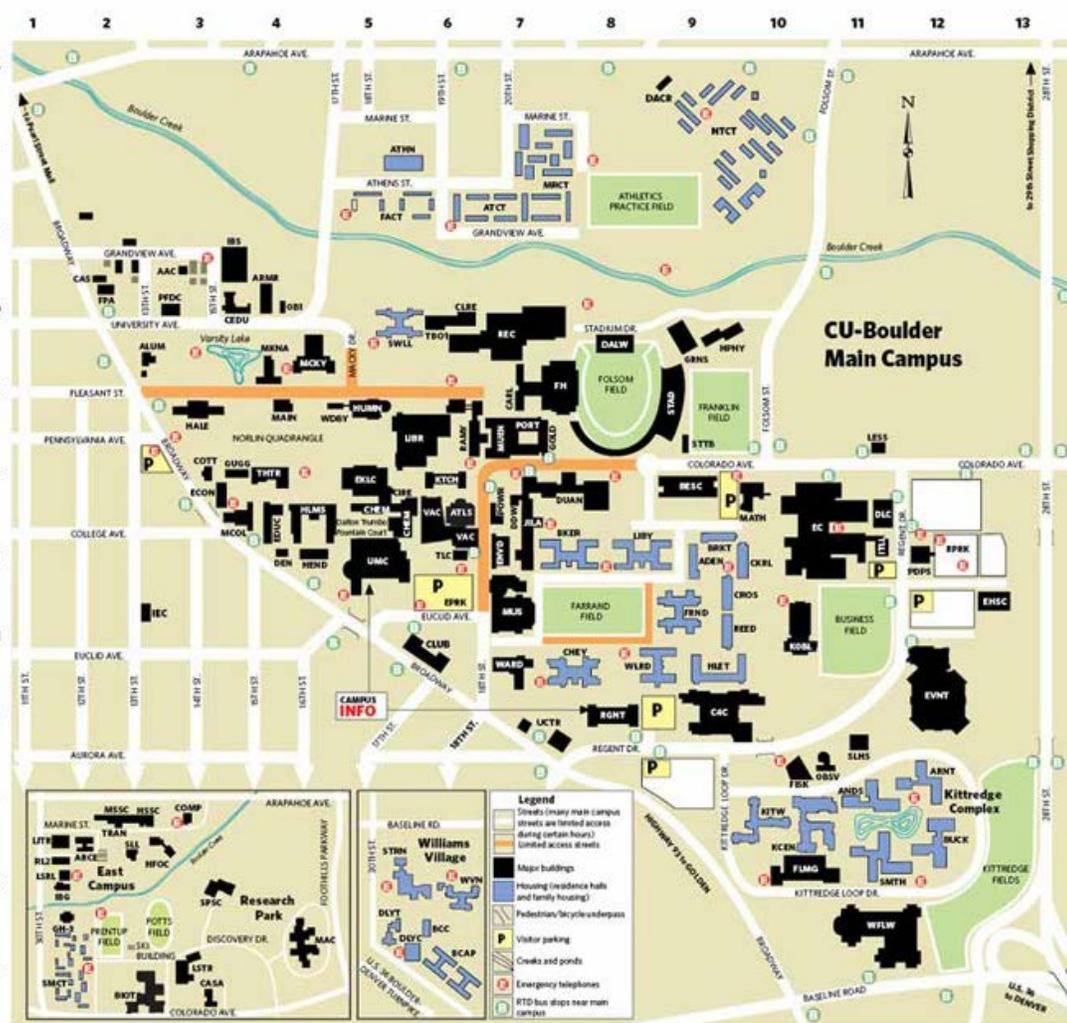
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**University Buildings & Facilities**

**AAC** Academic Advising Center: SIT (Students in Transition) **C-3**  
**ARCE** Administrative and Research Center (East Campus) **J-2**  
**ARMR** Armory **D-4**  
**FPA** Arts and Sciences Finance and Payroll Administration **D-2**  
**OBI** Arts and Sciences Office Building 1 **D-4**  
**ATLS** ATLAS Center, Roser (Alliance for Technology, Learning, and Society) **G-6**  
**FH** Balch Fieldhouse **E-7**  
**BESC** Benson Earth Sciences **F-9**  
**BIOT** Biotechnology Building, Jennie Smoly Caruthers **L-2**  
**MCOL** Bruce Curtis Building (Museum Collections) **G-3**  
**CARL** Carlson Gymnasium **E-7**  
**CAS** Center for Asian Studies **D-2**  
**CASA** Center for Astrophysics and Space Astronomy **L-3**  
**C4C** Center for Community **I-9**  
 • Charlotte York Irey Theatre (in University Theatre Building) **F-4**  
**DACR** Children's Center: Main Offices **A-9**  
**CIRE** CIRES (Cooperative Institute for Research in Environmental Sciences) **F-5**  
**CLRE** Clare Small Arts and Sciences **D-6**  
**COMP** Computing Center **J-3**  
**CEDU** Continuing Education Building **D-4**  
**EVNT** Coors Events/Conference Center / Basketball-Volleyball Practice Facility **I-12**  
**CHEM** Cristol Chemistry and Biochemistry **G-5**  
**DALW** Dal Ward Athletic Center **D-8**  
**DEN** Denison Arts and Sciences **G-4**  
**DLC** Discovery Learning Center **F-11**  
**DDW** Duane D-Wing **F-7**  
 • Duane Physical Laboratories (includes Duane Physics and Astrophysics, Duane D-Wing, Gamow Tower, and JILA) **F-7**  
**DUAN** Duane Physics and Astrophysics **F-7**  
**HUMN** Eaton Humanities Building **E-5**  
**ECON** Economics Building **F-3**  
**EDUC** Education Building **G-4**  
**EKLC** Ekeley Sciences Building **F-5**  
**EC** Engineering Center **F-11**  
**ENVD** Environmental Design **G-7**  
**EHSC** Environmental Health and Safety Center **H-13**  
**EPRK** Euclid Avenue AutoPark **G-6**  
**FISK** Fiske Planetarium and Science Center **J-10**  
**FLMG** Fleming Building **K-10**  
 • Folsom Field **E-8**  
 • Gamow Tower (in Duane Physics and Astrophysics) **F-7**  
**COTT** Gates Woodruff Women's Studies Cottage **F-3**  
**GOLD** Gold Biosciences Building (MCD Biology) **E-7**  
**GRNS** Grounds and Service Center **D-9**  
**GUGG** Guggenheim Geography **F-3**  
**HALE** Hale Science **E-3**  
**HPHY** Health Physics Laboratory **D-9**  
**HLMS** Helms Arts and Sciences (includes Mary Rippon Outdoor Theatre) **G-4**  
**HEND** Henderson Building (Museum of Natural History) **G-4**  
**HSMC** Housing System Maintenance Center **K-3**  
**HSSC** Housing System Service Center **J-2**  
**MUS** Imig Music Building **H-7**  
**IBG** Institute for Behavioral Genetics **K-1**  
**IBS** Institute of Behavioral Science **C-3**  
**ITLL** Integrated Teaching and Learning Laboratory **G-11**  
**IEC** International English Center **G-2**  
 • Jennie Smoly Caruthers Biotechnology Building (see Biotechnology Building) **L-2**  
**JILA** JILA **G-7**  
**KTCH** Ketchum Arts and Sciences **F-6**  
**KOBL** Koebel Building (Business, Leeds School of) **H-10**  
**ALUM** Koenig Alumni Center **E-2**  
**LSTR** LASP Space Technology Research Center **L-3**  
**LESS** Lesser House **F-11**  
**LSRL** Life Science Research Laboratory, RL4 **K-1**  
 • Life Sciences Laboratories Complex (includes Gold Biosciences, Muenzinger Psychology, Porter Biosciences, and Ramaley Biology) **E-7**  
**MAC** MacAllister Research Center **L-4**  
**MCKY** Macky Auditorium **D-4**  
**MSSC** Marine Street Science Center, Research Laboratory, RL6 **J-2**  
 • Mary Rippon Outdoor Theatre (at Helms Arts and Sciences) **G-4**

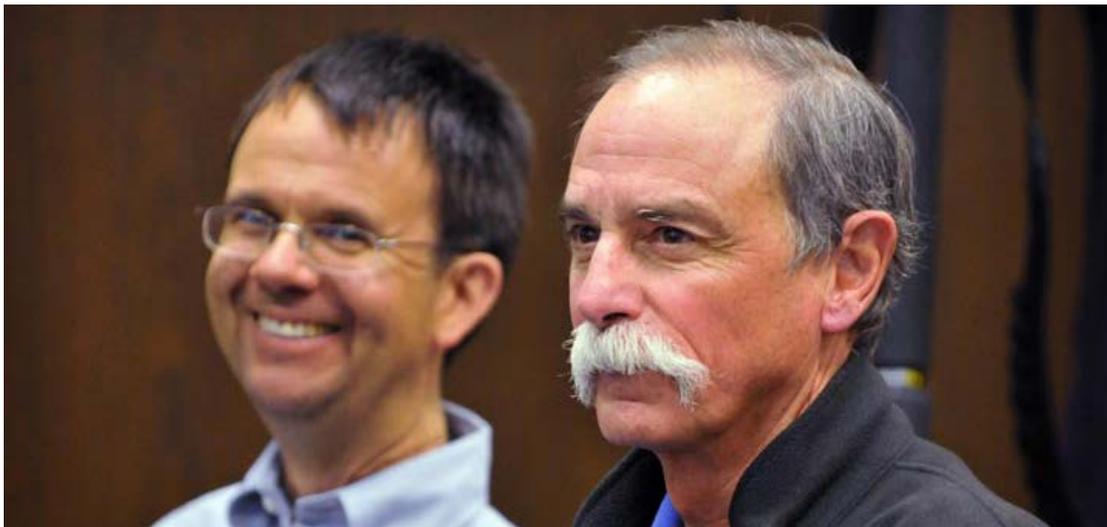
**MATH** Mathematics Building **F-10**  
**MKNA** McKenna Languages **E-4**  
**MJEN** Muenzinger Psychology **E-7**  
**LIBR** Norlin Library **E-6**  
**MAIN** Old Main **E-4**  
**PFDC** Page Foundation Center **D-3**  
**PDPS** Police and Parking Services **G-12**  
**PORT** Porter Biosciences **E-7**  
**POWR** Power House **F-6**  
**RAMY** Ramaley Biology **E-6**  
**RGNT** Regent Administrative Center **I-8**  
**RPRK** Regent Drive AutoPark **G-12, J-9**  
**RL2** Research Laboratory, RL2 **K-1**  
**GH-3** Research Park Greenhouse **K-1**  
**LITR** Rose Litman Research Laboratory, RL1 **J-1**  
 • Roser ATLAS Center (see ATLAS Center) **G-6**  
**OSBV** Sommers-Bausch Observatory **I-11**  
**SLL** Science Learning Laboratory **K-2**  
**SPSC** Space Science **K-3**  
**SLHS** Speech, Language, and Hearing Sciences **I-11**  
**STAD** Stadium Building **E-8**  
**STTB** Stadium Ticket Building **F-9**  
**REC** Student Recreation Center **D-7**  
**TLC** Technology Learning Center **G-6**  
**TB01** Temporary Building No. 1 **D-6**  
**TRAN** Transportation Center **J-2**  
**UCTR** University Administrative Center and Annex **I-7**  
**CLUB** University Club **H-6**  
**UMC** University Memorial Center **G-5**  
**THTR** University Theatre Building (includes Charlotte York Irey Theatre) **F-4**  
**VAC** Visual Arts Complex **G-6**  
**WARD** Wardenburg Health Center **H-7**  
**WFL** Wolf Law Building **L-11**  
**WDBY** Woodbury Arts and Sciences **E-5**

**University Housing**

**ADEN** Aden Hall (Engineering Quad) **G-9**  
**ANDS** Andrews Hall (Kittredge Complex) **J-11**  
**ARNT** Arnett Hall (Kittredge Complex) **J-12**  
**ATCT** Athens Court **C-7**  
**ATHN** Athens North Hall **B-6**  
**BKER** Baker Hall **G-7**  
**BCAP** Bear Creek Apartments (near Williams Village) **L-6**  
**BCC** Bear Creek Commons (Williams Village) **L-5**  
**BRKT** Brackett Hall (Engineering Quad) **G-9**  
**BUCK** Buckingham Hall (Kittredge Complex) **K-12**  
**CHEY** Cheyenne Arapaho Hall **H-7**  
**CKRL** Cockerell Hall (Engineering Quad) **G-10**  
**CROS** Crosman Hall (Engineering Quad) **G-10**  
**DLYC** Darley Commons (Williams Village) **L-6**  
**DLYT** Darley Towers (Williams Village) **K-5**  
 • Engineering Quad (includes Aden, Brackett, Cockerell, and Crosman Halls)  
**FACT** Faculty Staff Court **C-5**  
**FRND** Farrand Hall **H-9**  
**HLET** Hallett Hall **H-9**  
 • Kittredge Complex (includes Andrews, Arnett, Buckingham, Kittredge Central, Kittredge West, and Smith Halls)  
**KCEN** Kittredge Central Hall (Kittredge Complex) **J-11**  
**KITW** Kittredge West Hall (Kittredge Complex) **J-10**  
**LIBY** Libby Hall **G-8**  
**MRCT** Marine Court **B-7**  
**NTCT** Newton Court **B-9**  
**REED** Reed Hall **H-10**  
**SWLL** Sewall Hall **D-5**  
**SMCT** Smiley Court **L-1**  
**SMTH** Smith Hall (Kittredge Complex) **K-11**  
**STRN** Stearns Towers (Williams Village) **K-6**  
**WLRD** Willard Hall **H-8**  
 • Williams Village (includes Darley Commons, Darley Towers, Stearns Towers, and Williams Village North Hall)  
**WVN** Williams Village North Hall (Williams Village) **K-6**



## 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 & 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.

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Faculty: Arts & Sciences

Business

Education

Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- Educate citizens who can think for themselves, understand the rapidly changing world, and make wise choices within a democratic system.
- 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.

**University Catalog 2014-2015**

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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 3.75 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 3.75 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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## Residential Academic Programs (RAPs)

### On This Page:

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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, mountain climbing, backpacking, a cave tour, a day of cross-country skiing, and a spring service-oriented activity emphasizing environmental conservation. Guest lecturers are invited to speak about scientific or

Arts & Sciences

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Programs of Study

Faculty: Arts & Sciences

Business

Education

Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

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 Exploring Good and Evil Through Film, 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 Arnett 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, political science, 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 Arnett 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 (HPRAP) will proudly 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 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.

HPRAP provides highly desirable introductory courses taught by expert teachers in a supportive atmosphere where each individual is valued. HPRAP students will take at least one course offered by the program each semester. Courses are taught onsite within the hall, with an average of only 20 students per class. Courses range from basic science to courses on bioethics, global health policy, writing, and the social sciences. As part of the HPRAP experience, faculty provide co-curricular activities to enhance the learning environment and integrate the health professions theme through experiences such as field trips and guest speakers.

The Health Professions RAP faculty and staff work at providing meaningful experiences that will prove valuable as students move toward 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 the 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, and course offerings, visit [hrap.colorado.edu](http://hrap.colorado.edu), or contact [hrap@colorado.edu](mailto:hrap@colorado.edu) or **303.492.4537**.

## 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 335 honors-qualified first-year and continuing honors-qualified students. Participants live in Smith Hall. Students of other colleges are welcome to participate although the curriculum may not lend itself as well to their requirements.

The Honors RAP promotes and sustains academic excellence within a lively community setting. Students take one onsite 3-hour seminar-style course each semester. Each semester the program offers a variety of honors courses, the great majority of which 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 and a variety of co-curricular activities that enhance the learning experience, Honors RAP fosters a variety of student-led activities, including evening social events each week and a 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. Responsibilities for community building, fostering a culture of academic success, and for the planning and implementation of programming consistent with our Honors mission are shared among the student leaders, faculty, and staff. The associate director who supervises Honors RAP's daily functioning maintains an office in Smith Hall for academic advising and acts as liaison to the rest of campus. There is a faculty in residence for Honors RAP who 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 the upper 10 percent of all admitted College of Arts and Sciences 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 RAP on a first-come, first-served basis, determined by date of receipt of the online housing application. Students who wish to participate in Honors RAP beyond the first year must maintain a University of Colorado GPA of 3.30 or above. As with participants in all other residential academic programs, Honors RAP members pay a participation fee in addition to the standard charges for tuition, fees, and room and board. Students eligible for financial aid may request their budget be adjusted to include the program fee.

For more information about the program, program fee, application process, course offerings, and more, visit [honorsrap.colorado.edu](http://honorsrap.colorado.edu) or contact [hrap@colorado.edu](mailto:hrap@colorado.edu) or **303-492-3695**.

## Leadership Residential Academic Program

This Leadership RAP is located at Kittredge Central 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 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, University of Colorado Boulder, 406 UCB, Boulder, CO 80309-0406, 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 (Libby RAP or LRAP) fosters individual creativity and personal expression to prepare students for success in a wide variety of fields. The curriculum is designed for students who consider study in the arts to be a valuable complement to a major in the humanities, social sciences, natural sciences, business, or engineering, or who have an interest in the arts as a major. Prior art experience is not required for any Libby RAP class.

Libby RAP classes satisfy either core, major, or elective requirements and are taught in Libby Hall by faculty with demonstrated excellence in teaching. Class sizes are limited to approximately 18 students. Courses are offered in dance, acting, drawing, painting, writing, film criticism and theory, digital art, art history, music history, and media studies. A range of popular core curriculum classes are also offered each year in disciplines such as economics, math, and nutrition. Libby RAP classes require a healthy curiosity and the willingness to be creative.

With students taking several classes together and living in the same residence hall, LRAP fosters a small community within the larger university setting.

Libby RAP also exposes students to the diversity of the arts through co-curricular activities, experiential learning opportunities, and community events. Students are offered numerous chances to explore the breadth of the performing and visual arts, to investigate creativity and how it is applied outside the arts, and to expand their social and cultural awareness. Other activities build a sense of community within Libby Hall and address social responsibility in the community at large. Activities regularly occur on and off campus, in the Denver metro area, and even include travel to the Telluride Film Festival and to New York City.

Students enrolling in the program are required to take at least one course in the hall each semester. The LRAP faculty director and professional staff are located in Libby Hall and provide academic assistance to students. There is an annual non-refundable fee for participation and there are a limited number of scholarships available. Students who are eligible for financial aid may request that their budget be adjusted to include the LRAP program fee.

To learn more, visit [libbyrap.colorado.edu](http://libbyrap.colorado.edu), or contact [libbyrap@colorado.edu](mailto:libbyrap@colorado.edu) or **303-735-4211**.

## Sewall Residential Academic Program

The Sewall Residential Academic Program (SRAP) is a program for first- and second-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 [rap.colorado.edu](http://rap.colorado.edu); or call the SRAP office at **303-492-6004**.

## Sustainability and Social Innovation Residential Academic Program

The Sustainability and Social Innovation (SSI) RAP is an experiential 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 college on campus. Students in the Sustainability and Social Innovation RAP are housed in the only LEED Platinum residence hall on campus, Williams Village North. The program is uniquely multidisciplinary, seeking a critical engagement of students interested in identifying sustainable solutions to diverse global challenges including resource depletion and conservation, climate change, poverty, environmental protection, and economic instability. Our teaching faculty includes professors in architecture, engineering, political science, writing, biology, psychology, anthropology, business, and sociology. Courses offered in the residence hall for RAP students vary each term but always include core curriculum courses from the College of Arts and Sciences, as well as other campus offerings.

Sustainability and Social Innovation 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 usually 19-23 students, and through RAP activities and events (e.g., using a state-of-the-art kitchen, computer lab, facilities and grounds at Williams Village, visiting speakers, field trips) students develop a strong knowledge base, entrepreneurial savvy, communications skills, technology literacy, teamwork skills, and compassionate understanding. SSI is one of the few RAPs with its own faculty-in-residence and 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. SSI students work closely with their peers in the Sustainable by Design (SbD) RAP, also located at Williams Village North.

Enrollment in the program includes an additional fee. Please contact [wrraps@colorado.edu](mailto:wrraps@colorado.edu) or call **303-735-1330**.

The Sustainability and Social Innovation RAP provides students from across all academic disciplines study of a variety of practices that foster social innovation and sustainability.





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# Programs of Study

## Degrees

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| <a href="#">Anthropology</a>                         | BA, IBA, MA, PhD |
| <a href="#">Applied Mathematics</a>                  | BS, 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          |
| <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>            | PhD              |
| <a href="#">Communication</a>                        | BA, MA, PhD      |
| <a href="#">Comparative Literature</a>               | MA, PhD          |
| <a href="#">Computer Science</a>                     | BA               |
| <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, PhD          |

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[Asian Studies](#)

[Astrophysical and Planetary Sciences](#)

[Atmospheric and Oceanic Sciences](#)

[Biological Sciences](#)

[British and Irish Studies](#)

[Central and East European Studies](#)

[Chemistry and Biochemistry](#)

[Classics](#)

[Cognitive Science Studies](#)

[Communication](#)

[Comparative Literature](#)

[Computer Science](#)

[Distributed Studies Program](#)

[Ecology and Evolutionary Biology](#)

[Economics](#)

[English](#)

[Environmental Studies](#)

[Ethnic Studies](#)

|  |                       |
|--|-----------------------|
| Film Studies                                   | BA, BFA               |
| French and Italian                             | BA, MA, PhD           |
| Geography                                      | BA, IBA, MA, PhD      |
| Geological Sciences                            | BA, IBA, MS, PhD      |
| Germanic and Slavic Languages and Literatures  | BA, MA, PhD           |
| History  | BA, MA, PhD           |
| Humanities                                     | BA                    |
| Integrative Physiology                         | BA, IBA, MS, PhD      |
| International Affairs                          | BA                    |
| Jewish Studies                                 | BA                    |
| Linguistics                                    | BA, MA, PhD           |
| Mathematics                                    | BA, MA, MS, PhD       |
| Molecular, Cellular, and Developmental Biology | BA, IBA, MA, PhD      |
| 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           |
| Speech, Language, and Hearing Sciences         | AuD, BA, IBA, MA, PhD |
| Theatre and Dance                              | BA, BFA, MA, MFA, PhD |
| Women and Gender Studies                       | BA                    |

|  |
|--|
| 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                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
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| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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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| Education  |
| Engineering & Applied Science                          |

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- Sewall RAP
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and Literatures

Global Studies RAP

History

Honors

Honors RAP

Humanities

INVST Community

Integrative Physiology

International Affairs

Jewish Studies

Lobby RAP

Linguistics

Mathematics

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Program (MASP)

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Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious Studies

Sewall RAP

Sustainability and Social Innovation  
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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 new innovation economy requires—and rewards—richer knowledge, sharper skills and a global mindset. Ultimately the edge belongs to those who bring inspiration and purpose to their work.

Within this climate, the **Leeds School of Business** embarks on an innovation agenda designed to leverage our unique assets: the intellectual capital of Leeds faculty, our focus on the 'whole student' experience, our strong network of alumni and industry partners, and our stunning and dynamic location.

Leeds holds accreditation by the Association to Advance Collegiate Schools of Business (AACSB-International). Leeds awards four types of degrees: the bachelors 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.

World-class faculty provide the foundation for breakthrough thinking—creating knowledge from research, disseminating knowledge through teaching, and applying knowledge in collaboration with the business community. Faculty discoveries are frequently published in prestigious academic journals, which enhance the school's reputation for inspiring innovation.

From orientation to graduations, Leeds faculty and staff guide students to discover and optimize their potential. Through an array of targeted services, students create an individualized journey that maximizes the impact of their experience. Ethics and social responsibility are hallmarks of a Leeds education, and the school's commitment to professional development is unrivalled.

Leeds alumni and industry partners stand united to offer a meaningful level of engagement with students, faculty, and other key stakeholders that is uncommon among business schools. Alumni provide the support and resources that ensure graduates are poised for maximum impact. Corporate partners infuse relevance to Leeds' curriculum innovation, supporting new programs and providing the

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school access to professional talent.

Beyond its breathtaking vistas, Leeds joins the University of Colorado and the Boulder community to provide inspiration that generates extraordinary opportunities for students. Cross-campus collaborations with fields like engineering and science link Leeds faculty and students with more resources to put innovation into action. And Boulder, the nation's hotbed for thriving start-up companies, contributes intellectual energy through a high concentration of advanced technology industries.

Together, these assets make Leeds uniquely qualified to deliver on our mission of educating principled, innovative leaders who drive value.

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## Facilities & Research Activities

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The Leeds School of Business houses resources for the specific needs of business students. The facilities include: the Burrige 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, MAD Greens, 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). 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 businesses, government and nonprofits with information to help them make better-informed business and policy decisions, the division specializes in economic and fiscal analysis, market research, and custom research projects. It also prepares a Colorado leading economic indicator series, the *Leeds Business Confidence Index*. 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.

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.

## 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 Center for Education on Social Responsibility (CESR), and the Center for Business Integration.

### The Robert H. and Beverly A. Deming Center for Entrepreneurship

As part of the Leeds School of Business, the Deming Center for Entrepreneurship's mission is to inspire and empower students, community, alumni, faculty and staff through entrepreneurship education and partnership with the community. The Deming Center does this in part by educating, engaging and partnering, and focusing on student experience.

**Cutting-edge Curriculum.** Our progressive curriculum and interdisciplinary programs include:

- courses in entrepreneurial finance, marketing, and business planning
- interdisciplinary programs in engineering, business, law, and environmental studies
- undergraduate business minor with a Certificate of Entrepreneurship for students across campus
- undergraduate Certificate of Entrepreneurship for Leeds students
- MBA concentration in entrepreneurship
- world renowned PhD program in entrepreneurship

The Deming Center supports the entrepreneurial curriculum and advances the Leeds School's leadership agenda through our collaborative initiatives across campus and in the business community in these key areas:

- **Education.** Our entrepreneurship students have access to a world class entrepreneurship faculty. The faculty are involved in collecting, curating and making available the latest research and thinking on entrepreneurship in the world. These faculty are inspiring and directing new research and thought leadership in entrepreneurship and constantly working with thought leaders to develop and stay ahead of the latest trends and tools for entrepreneurship education.
- **Real World Experience.** Our entrepreneurship students are challenged to turn accepted thinking on its head—in the classroom, in real-world industry projects, and by the business innovators serving as student mentors and advisors. The center

helps connect students with projects, advisors, and internships that challenge them to use their new skills creatively.

- **Student Experience.** Staff and faculty at Deming are focused on delivering an outstanding student experience. Deming promotes the development of entrepreneurial thinkers and doers. Entrepreneurial thinkers and doers are optimistic, resilient, resourceful, persistent, calculated risk-takers, efficient, creative problem solvers, and effective workers. These are teachable skills any student is capable of learning.
- **The Community.** Boulder is consistently named one of the best places in the country to launch a startup. The center connects students to industry leaders via the Deming Network—an active group of world-class entrepreneurs and innovators who are accessible and hands-on. CU-Boulder is also a top research university. Across campus, the Deming Center helps students access opportunities in technology transfer and the engineering, law, biofrontiers, and environmental science programs

## 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)

**Ethics are discovered, not taught.** Even routine decisions can have tremendous and often unseen potential to do harm or good—to colleagues, society, even the whole planet. Often, the most consequential decisions and actions seem routine at the time they're made—just another day at the office.

That's why CESR has redefined ethics and social responsibility education. They make it personal. They don't simply offer a class to teach rules handed down from philosophers or case studies about CEOs who lost their way.

CESR delivers an ongoing values development and self-discovery experience. It's infused in all subject areas. It's internalized by students through an ongoing process of action learning and unconventional classroom techniques. This applied approach is built into core curricula throughout the business school, highly unusual in academia.

Self-discovered values are more resilient than those that come from books. Once students discover their values, CESR illustrates how to protect and apply them. That requires critical thinking, every day. It requires constantly asking the right questions—stepping out of routine actions to anticipate consequences for colleagues, customers, organizations and society, and to create opportunities to do good.

Asking those questions is a constantly engaged risk management skill that's highly valuable to business. Equally important, it's a constantly-engaged mechanism for setting sights higher than compliance. And that often spurs creativity and innovation that creates social value as well as competitive advantage and financial returns for business.

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 infusion of values and social responsibility discussions throughout the undergraduate and graduate curricula at the Leeds School of Business. As part of the central mission at Leeds, CESR creates pedagogies that are national models and plays a leadership role carrying out the school's commitment to developing leaders of conscience. Although CESR's primary focus is on excellence in curriculum development and delivery, the center also undertakes a broad spectrum of initiatives including a certificate program, student organizations, conferences, and other extracurricular offerings. CESR also provides funding and support for faculty research.

**Courses.** 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 leading edge electives such as CESR 4000 Leadership Challenges: Exercises in Moral Courage, CESR 4005 Business Solutions for the Developing World: Learning through Service and CESR/ACCT 4827 Integrated Reporting for Socially Responsible Strategies.

**Certificate and Portfolio.** 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 MBAs to acquire the sustainability portfolio.

### CESR Co-Curricular Activities:

- **CESR Stampede at Leeds: A Week of Driving Values in Business.** This weeklong event showcases the values-driven and innovative curriculum developed by the CESR that is shaping tomorrow's business leaders. Through class visits, expert panels and lectures, student competitions and showcases, attendees will explore their own values and network with like-minded professionals about applying positive values in a business setting. Stampede Week also includes the fourth annual Conscious Capitalism Conference, a CESR flagship event.
- **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 ([SCSE@CU](mailto:SCSE@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 Club.** 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.
- **New Venture Challenge Social Impact Track.** CESR developed and is home to the social impact track of the **CU New Venture Challenge**, a campus-wide 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.

## 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 mentoring to current undergraduate students. The program's mission is to enhance business education at the Leeds School by offering hands-on learning, professional skills development, leadership opportunities, and a sense of connection and community among current students, Leeds alumni, and corporate partners. PMP mentors prepare and inspire our students to become the next generation of strong business leaders.

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, and effective networking and 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: [leedsmentoring.colorado.edu/about](http://leedsmentoring.colorado.edu/about)

E-mail: [leedspmp@colorado.edu](mailto:leedspmp@colorado.edu)

Office: Koelbel S220C

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:

- Alpha Kappa Psi
- ABC—Athletic Business Club
- Art of Fashion Club
- Beta Alpha Psi
- Business and Film Club
- Business of Sports Club
- Collegiate DECA
- Collegiate Entrepreneurs Organization
- Collegiate Social Impact Initiatives
- CU Energy Club
- CU Finance Club
- CU American Marketing Association
- CU Investment Club
- CU Society for Human Resources Management
- Dart Project
- Delta Sigma Pi
- CU GBLA Business Leaders Alliance
- Graduate Finance Club
- Graduate Real Estate
- International Business Club
- Leeds Ambassadors
- Leeds Association of Info Systems
- Leeds Council (Undergraduate Student Government)
- Multicultural Business Student Alliance
- MBA National Association of Women
- Music Industry Club
- Net Impact
- Real Estate Club
- Peer-2-Peer Mentors
- Women in Business Club

## 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

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completed business course work at the university. The amount and number of the awards vary each year.

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## Programs of Study

### 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:

- bachelor of science (BS)
- master of science (MS)
- master of business administration (MBA)
- doctor of philosophy (PhD)

### 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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Undergraduate business students receive academic counseling from a staff of professional advisors in the Office of Undergraduate Student Services. During the semester, advisors are available in KOBL S220, Monday-Friday, 8:00 a.m.-5:00 p.m., and by appointment.

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.

## Minor in Business

Beginning fall 2013, a new and innovative 12-hour minor was introduced to non-business majors. This program has been uniquely designed for non-business students so that they can effectively perform in an emerging global business environment. Through integrated modular coursework, students will be introduced to the essential elements of marketing, management, accounting, finance, and corporate social responsibility.

Once completed, students will then choose between one of three business track options: innovation, analytics, or entrepreneurship. Students will also have the option of completing multiple tracks for increased breadth of application. Finally, students complete their minor requirements through a business capstone course that focuses on strategy, application, and the development of a business plan.

## Important Notes

- Courses are available in the fall and spring only.
- Due to program cost, there is a \$500 per course fee. Scholarships are available. See website for details.
- Applications are submitted online and will be reviewed on a rolling, space available basis.

A prerequisite of a statistics or calculus class with a C- or better (AP, IB, or equivalent) or passing score on a specially designed ALEKS exam (see website).

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

- BUSM 2001 Principles of Marketing and Management—3
- BUSM 2002 Principles of Financial Accounting and Finance—3
- BUSM 4001 Professional Business/Venture Plan Development for Business Minor—3
- In addition, Business Minor Students must complete one of the following three track courses:
- BUSM 3001 Managing Innovation in Organizations—3
- BUSM 3002 Business and Financial Analytics—3
- BUSM 3003 New Venture Creation—3

In addition to the required 12 semester hours of coursework, the following requirements apply to the minor in business:

- All students accepted into the new minor will be required to attend a 5-hour on-boarding experience before the semester in which they begin the minor.
- The cumulative GPA for all minor degree course work must equal 2.00 or higher.
- Transfer work and previously taken BCOR classes will be evaluated for application to the minor on a case-by-case basis. However, students may be required to take more track courses to complete 12 hours in the minor at CU.
- No *pass/fail* work may be applied to the minor.
- All minors must be complete and on record at the time your degree is awarded.

Students can obtain further information about the minor at [leads.colorado.edu/minor](http://leads.colorado.edu/minor) or visit the undergraduate programs office in KOBL 227.

**Course codes for these programs are ACCT, BADM, BCOR, BPOL, BSLW, CESR, ESBM, FNCE, INBU, MGMT, MKTG, MBAC, MBAX, OPMG, ORMG, and REAL.**

## Bachelor's Degree Program(s)

### Bachelor of Science in Business Administration (BS)

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 2.00 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 2.00 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.

### 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 pursue careers in public accounting might become partners in public accounting and consulting firms. Those who make their careers in industry might 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 branches of study in the accounting area of emphasis are 1) Financial Accounting / Analysis and Audit, and 2) Tax Planning and Compliance. Basic coursework 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.

#### Professional Certification as a CPA or CMA

Most accounting students from the University of Colorado earn professional credentials within a year or two of receiving their degrees. The two most widely-recognized professional certifications are the certified public accountant [CPA] and certified management accountant [CMA].

The CPA is a state-granted license, for which each state sets its own requirements. All states require 150 total credit hours of study to be licensed as a CPA, thus earning a degree with only 120 credit hours will not meet licensure requirements. Although the CPA requirements of most states have similar components, the specifics of those requirements differ greatly. Most states set requirements for the following before a CPA license will be granted:

1. background checks
2. education
3. CPA Exam passage
4. work experience

Not only do state requirements differ greatly from one state to another, those requirements frequently change. **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](http://NASBA.org) or the website of the particular state's board of accountancy).**

The CPA license is a legal requirement for someone to perform financial statement audits, but is not legally required for other accounting positions. It is important to note, however, that many professional accounting positions set CPA licensure as a job requirement even where it is not legally required, thus a CPA license is a valuable credential for any accounting professional. As a result, most students completing an accounting concentration at Leeds continue into the concurrent bachelor's and master's degree program (see MSBA program) to seek their CPA license.

The CPA's expertise typically 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.

As is the case at most colleges and universities, meeting the requirements to receive a degree with an undergraduate concentration in accounting at Leeds does not ensure that the graduate will meet all of the specific requirements for CPA licensure of any particular state including Colorado. Prior to being licensed, a candidate must be granted permission by a state's board of accountancy to take the CPA Examination. As with the overall requirements for licensure, the specific requirements and timing when students can take the exam differ greatly for different states, all of which makes it crucial for the student to develop the degree plan in conjunction with applicable state requirements.

The CMA is a different type of certification because it not granted by a state, but rather by the Institute of Management Accountants, which is a professional organization. The requirements are the same regardless of where an applicant lives. The website for the Institute of Management Accountants provides information about becoming a Certified Management Accountant. Though not legally required for any kinds of positions in any state, the CMA is also a valuable professional credential.

There are two degree options at the bachelor's level.

## **BS in Business Administration: Accounting Emphasis**

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** meet the educational requirements to be licensed as a CPA in any state. This option might 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. This also might be chosen by a student choosing a dual emphasis, such as accounting and finance or accounting and information systems.

### **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: Accounting Ethics—3

### **Plus 6 credit hours from the following courses:**

- ACCT 3440 Income Taxation of Individuals—3
- ACCT 4240 Advanced Financial Accounting—3
- ACCT 4250 Financial Statement Analysis—3
- ACCT 4330 Advanced Cost Management—3
- ACCT 4540 Accounting Information Systems—3
- ACCT 4620 Auditing and Assurance Services—3
- ACCT 4800 Accounting for Government and Nonprofit Organizations—3

## **BS in Business Administration: Accounting Emphasis, enhanced by additional course work required to meet state CPA licensure requirements**

All states require 150 total credit hours for licensure as a CPA and most require additional accounting and other business courses. Most states do not require a masters degree. Thus, one route to licensure is obtain a BS with an accounting emphasis, but take additional course work to meet the specific requirements of the state(s) where the student expects to practice. Students can generally find the current requirements for a particular state at the website for that state's board of accountancy, or at [NASBA.org](http://NASBA.org). It is possible that one or more courses that a state requires for CPA certification will not be able to be taken at the University of Colorado Boulder; in such a case the student could take those courses either in person or online at a different institution.

## Finance

The finance area of emphasis is designed to provide students with in-depth exposure to the 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.

In addition to the courses below, 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 (required business elective)—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 4060 London Seminar in International Finance and Business (3 credit hours can be applied toward the finance area of emphasis)—variable credit
- 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 4826 Experimental Seminar: Corporate Governance—3
- FNCE 4830 Seminar in Investment Banking—3
- FNCE 4831 Seminar in Investment Management—3

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.

- 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 Analytics—3
- MGMT 4850 Strategy—3

In addition, students in the Information Management track must complete three of the following elective courses:

- MGMT 3210 Business Application Programming—3
- MGMT 4210 Systems Thinking—3
- MGMT 4220 Business Technologies—3
- MGMT 4230 Design of Usable Business—3
- MGMT 4140 Project Management—3

IM students inclined toward careers in technical information systems are encouraged to take programming courses 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 with a marketing emphasis must take 18 hours of marketing courses beyond BCOR 2400. Students pursuing a marketing emphasis will need three semesters to complete the required course work after taking BCOR 2400. The required courses are:

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

- MKTG 3250 Buyer Behavior (prereq., BCOR 2400)—3
- MKTG 3350 Marketing Research (prereq., BCOR 2400)—3
- MKTG 4250 Product Strategy (prereqs., MKTG 3250 and 3350)—3
- MKTG 4300 Pricing and Channels of Distribution (prereqs., MKTG 3250 and 3350)—3
- MKTG 4550 Advertising and Promotion Management (prereqs., MKTG 3250 and 3350)—3
- MKTG 4850 Senior Seminar in Marketing (prereqs., any two of MKTG 4250, 4300, and 4550, with the remaining one of these courses taken as a corequisite)—3

## Areas of Application

### **Center for Education on Social Responsibility (CESR)**

### **Certificate in Socially Responsible Enterprise (SRE)**

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. 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 3.00 grade point average

## 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.

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

- 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 3070 Energy and the Environment
- ENVS 4027 Inequality, Democracy, and the Environment
- ENVS 4100 Topics in Environmental Policy
- FNCE 4832 Microfinance
- 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)

### **1. Business-related Courses**

Complete three of the following (all these courses qualify as business electives):

- CESR 4000/4001 Leadership Challenges: Exercises in Moral Courage (a year-long course)—3
- CESR 4005 Business Solutions for the Developing World: Learning through Service—3
- CESR 4130/MGMT 4130 Sustainable Operations—3
- CESR 4440/MGMT 4440 Privacy in Big Data Analytics—3
- CESR 4827/ACCT 4827 Integrated Reporting for Socially Responsible Strategies—3
- CESR 4828/MGMT 4828 Corporate Boards in Action—3
- MGMT 4140 Project Management (must be pre-approved for SRE course work credit)—3

NOTE: These courses are in addition to BCOR 1015, 3010, the capstone course for the Area of Emphasis, as well as any other prerequisites. See course descriptions for prerequisite details.

## 2. 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
- 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](http://leeds.colorado.edu/CESR).

## 3. 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.

## Entrepreneurship and High Growth Ventures

Whether working for a large global corporation or a small start-up venture, graduates will be valued for their ability to innovate, lead change, recognize emerging markets, and launch new products. The entrepreneurship program is designed to develop an individual's abilities to create, discover, and exploit opportunities in start-up ventures or existing organizations.

The entrepreneurship program at the Leeds School of Business is internationally recognized for the quality of its instruction and the capabilities of our students. Within the Leeds School, the Deming Center for Entrepreneurship has served as a rich resource for students with interests in entrepreneurship—coordinating the academic curriculum, providing help with internship and job placement, creating links with the business community, and sponsoring networking opportunities and many special events.

The curriculum focuses on experiential learning. Courses are designed to give students hands-on experiences that develop the ability to act on opportunities. Students may begin the study of entrepreneurship in their junior year. A Certificate in Entrepreneurship is granted to students who fulfill the following requirements: 1) complete the three courses listed below with at least a 3.0 GPA; 2) complete an entrepreneurship internship; 3) pass a written exam in entrepreneurship at the conclusion of their studies; and 4) participate in entrepreneurship related extracurricular activities and provide a write up on their experiences.

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

- ESBM 3700 Entrepreneurial Environments—3
- ESBM 4570 Entrepreneurial Finance—3
- ESBM 4830 Venture Planning—3

NOTE: Students seeking internships should complete 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 remain 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 consisting of 9 credit hours. Students completing additional requirements may earn a **Certificate in International Business**. The certificate program builds on the students' understanding of the functional areas of business and provides them with an appreciation of the international environment. It also supplies them with a framework for developing policies and strategies appropriate for the global marketplace.

#### **Area of Application**

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

- INBU 3300 International Business Management—3
- INBU 3450 International Marketing—3
- INBU 4200 International Financial Management—3

#### **Certificate**

In addition to the three INBU courses, the **certificate program** requires the completion of the following requirements:

- six credits of additional international course work, such as international business electives not on the required list above, or courses in economics, geography or political science. Courses must be selected from an approved list maintained by the Leeds Undergraduate Advising Office.
- fourth level of a foreign language.
- a significant international experience, which may be satisfied in a number of ways including participation in a study abroad program, an international academic internship, service work in an international location, or an internship with an organization focused on global business and economics. Students should check with the Leeds Undergraduate Advising Office to verify that their global experience will qualify to meet this requirement.

## **Operations and Information Management (OPIM)**

#### **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 3.00 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 in Quantitative Finance**

The Quantitative Finance Track is one of two tracks that make up the Actuarial Studies and Quantitative Finance Certificate Program and is cosponsored 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 3.00. 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 2.87 or greater in calculus courses or a GPA of 3.00 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.*

## **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**

#### **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 and Semester Credit Hours**

- area of application courses listed above—9
- courses in Program in Environmental Design OR from the construction management area in the Department of Civil, Environmental, and Architectural Engineering of the College of Engineering and Applied Science—6
- academic internship in real estate practice or related area—3

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

### **BS in Telecommunications/MS 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 (MSBA)

There are two paths to the master of science in business administration (MSMA) degree with an emphasis in financial 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, including specific prerequisites, undergraduate students in the Leeds School of Business may apply to the program and, if admitted, 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 master of science in business administration that emphasizes financial accounting/audit provides students with opportunities to take a broad cross-section of accounting and accounting-related classes. Most graduates pursue professional careers as certified public accountants (CPAs) specializing in assurance services (auditing) or advisory services (consulting). In addition to auditing courses, students take courses such as international accounting, advanced financial accounting, financial statement analysis, oil and gas accounting, income tax reporting, and integrated (non-financial) reporting. Students with a financial accounting/audit emphasis will:

- Develop expanded skills regarding complex financial reporting topics, including alternative reporting regimes (i.e., U.S. and international reporting);
- Develop ability to prepare, interpret, analyze, and audit financial statements from a broad set of reporting entities, both domestic and international; and
- Have access to, and interaction with, professionals engaged in the financial reporting process and audit profession.

### 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 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 become high-level managers and 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 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 each 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. This fee is waived for active duty military. See the specific MBA application for more information. The online application is on the MBA program website at [leeds.colorado.edu](http://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.

**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 of Business Administration/Master's International (with Peace Corps Service)**

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/MBA

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.

**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.

### MBA/MFA

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.

## MBA/MA in 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.

## MBA/MA in German Studies

The MBA/MA in German studies dual-degree program enables students to earn an MBA and an MA in German studies 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 German studies spend the first year of their dual-degree program exclusively in either the Leeds School of Business or the Department of Germanic and Slavic Languages and Literatures. 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 German studies elective courses.

## MBA/MA in 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.

## MBA/MS in 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-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.

## MBA/MS in 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.

## MBA/MS in 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.

## Certificate Program

### Certificate in Entrepreneurship (for Leeds students)

The entrepreneurial way of thinking is valuable in whatever you do in your career and life. From creative problem solving to building a successful team to capitalizing on opportunities, you'll learn a tool set that will help you throughout your career. And you'll be a part of a supportive and dynamic community working together in learning how to create value in the world. The Entrepreneurship Certificate for Leeds Students consists of a few key components:

1. **Courses.** Three entrepreneurship courses, including Entrepreneurial Finance, Feasibility Analysis, and Venture Planning.
2. **Events.** Attend a few entrepreneurial events to meet leading business owners and gain insights.
3. **Internship.** Immerse yourself into an entrepreneurial environment and experience first-hand the excitement and energy of a fast growing business.
4. **Capstone exam.** A practical exam that allows you to apply your entrepreneurial tool kit.

For more information, please visit [deming.colorado.edu](http://deming.colorado.edu).

## Certificate in Cross-Campus Entrepreneurship (for non-Leeds students)

The entrepreneurial way of thinking is valuable in whatever you do in your career and life. From creative problem solving to building a successful team to capitalizing on opportunities, you'll learn a tool set that will help you throughout your career. And you'll be a part of a supportive and dynamic community working together in learning how to create value in the world. The Cross-Campus Entrepreneurship Certificate consists of a few key components:

1. **Courses.** This Certificate is an enhancement to the business minor. By selecting the entrepreneurship track in the minor, you'll complete the course requirements.
2. **Events.** Attend a few entrepreneurial events to meet leading business owners and gain insights.
3. **Internship.** Immerse yourself into an entrepreneurial environment and experience first-hand the excitement and energy of a fast growing business.
4. **Capstone exam.** A practical exam that allows you to apply your entrepreneurial tool kit.

For more information, visit [deming.colorado.edu](http://deming.colorado.edu).



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- [Programs of Study](#)
- [Colleges & Schools](#)
- [Admission](#)
- [Courses](#)

## Faculty: Business

| Name                 | Title   | Education  |
|----------------------|---|--|
| ANDERSON, Brian S.   | assistant professor, of management and entrepreneurship             | BS, University of Colorado Denver; MS, University of Denver; PhD, Indiana University               |
| APPENZELLER, William | assistant professor of recreation emeritus                          |  |
| BAAS, Roy            | senior instructor of finance  | BS, University of New Orleans  |
| BALKIN, David B.     | professor of management and entrepreneurship                        | 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 management and entrepreneurship                        | BS, MPA, Brigham Young University; PhD, University of Georgia                                      |
| BROWN, Daniel        | senior instructor of finance  | BA, Cornell University; DPhil, Oxford University   |
| BUCHMAN, Thomas A.   | associate professor of accounting                                   | BS, MS, PhD, University of Illinois  |
| CACCIA, Roberto      | director, Burrigge Center for Finance; senior instructor of finance | Laurea, University of Rome; MBA, Massachusetts Institute of Technology; PhD, University of Rome    |
|                      |   |  |

- Arts & Sciences
- Business
  - Facilities & Research Activities
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  - Programs of Study
- Faculty: Business**
- Education
- Engineering & Applied Science
- Environmental Design
- Media, Communication and Information
- Law
- Music
- Graduate School
- Other Academic Programs

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|----------------------|--|---|
| CAMPBELL, Meg        | 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  |
| COOKSON, J. Anthony  | assistant professor of finance   | BS, MS, Montana State University; PhD, University of Chicago  |
| CORRELL, Mark R.     | senior instructor of business economics emeritus                           |   |
| CROPANZANO, Russell  | professor of management and entrepreneurship                               | BA, Louisiana State University; MA, Southern Methodist University; PhD, Purdue University                                       |
| CROSS, Beth          | instructor, CESR   | BS, Springfield College; MEd, Colorado State University   |
| DARNELL, Jerome C.   | professor of finance emeritus  |   |
| DAVIES, Shaun        | assistant professor of finance   | BA, BS, University of Colorado Boulder; MA, PhD, University of California, Los Angeles  |
| 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 |   |
| DONCHEZ, Robert      | senior instructor of finance   | BS, Lehigh University; MBA, Fordham University  |
| DUNCAN, Calvin P.    | associate professor of marketing   | BS, MBA, University of Colorado; PhD, Indiana University  |
| ENGEL, Steven        | senior instructor of marketing emeritus                                    |   |
| ERTIMUR, Yonca       | associate professor of accounting  | BS, Boğaziçi University; MBA, University of Rochester; PhD, New York University   |
| FERNBACH, Phillip M. | assistant professor of marketing   | BA, Williams College; PhD, Brown University   |
| FOO, Maw Der         | associate professor of management and entrepreneurship                     | BA, National University of Singapore; PhD, Massachusetts Institute of Technology  |
| FREDERICK, David M.  | associate professor of accounting  | BS, University of Colorado; PhD, University of Michigan   |
| FUND, Bret           | assistant professor of management and entrepreneurship                     | BA, MA, Brigham Young University; PhD, Penn State University  |

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|----------------------|---|---|
| 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         | senior 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 accounting | BA, Whitman College; MA, University of Chicago; MS, PhD, Texas A&M University                   |
| HAYWARD, Mathew      | associate professor of management and entrepreneurship                | BC, University of Melbourne; PhD, Columbia University   |
| HE, Chuan            | associate professor of marketing                                      | BA, Memorial University of Newfoundland; MA, University of Toronto; PhD, Washington University  |
| HEKMAN, David        | assistant professor of management and entrepreneurship                | BS, Grand Valley State University; PhD, University of Washington, Seattle                       |
| HEKMAN, David        | assistant professor of management and entrepreneurship                | BS, Grand Valley State University; PhD, University of Washington, Seattle                       |
| 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      | senior instructor of management and entrepreneurship                  | 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                                       |
| KAHL, Matthais       | assistant professor of finance  | M Phil, University of Cambridge; MA, PhD, University of Pennsylvania                            |

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|-------------------------|--|---|
| KOBERG, Christine S.    | associate professor of strategy and organization management emerita  |   |
| KOLB, Burton A.         | professor of finance emeritus  |   |
| KORNISH, Laura          | associate professor of marketing                                     | BA, Harvard University; MS, PhD, Stanford   |
| KOZAR, Kenneth A.       | professor of information management                                  | 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 management                        | PhD, Nelson A. Rockefeller College, University of Albany, State University of New York  |
| LAWRENCE , Stephen R.   | associate professor of operations management                         | BS, MS, Purdue University; MS, PhD, Carnegie Mellon University  |
| 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 information management                        | BA, University of Chicago; MA, Harvard University; MPhi, University of Cambridge, England; PhD, Massachusetts Institute of Technology |
| LEWIS, Barry L.         | professor of accounting emeritus                                     |   |
| LEWIS, Mary Beth        | instructor   | BS, BA, West Virginia University; MBA, University of Pittsburgh   |
| 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   |
| MACALUSO, Gregg         | instructor of management and entrepreneurship                        | BS, Regis University, Colorado; MS, University of California, Irvine; Executive MBA, Northwestern University                          |
| MACFEE, Jr., Raymond D. | senior instructor in accounting emeritus                             |   |
| MATUSIK, Sharon         | associate professor of management and entrepreneurship               | BA, Colby College; PhD, University of Washington  |
| McGRAW, A. Peter        | associate 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; professor of finance                   | BS, MBA, DBA, Washington University, St. Louis  |
| MEYER, G. Dale          | professor of strategy and organization                               |   |

|                         |   |  |
|-------------------------|---|--|
|                         | management emeritus   |  |
| MILBURN,<br>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,<br>Ramiro  | director, international management program; associate professor of information management | 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,<br>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   |
| MUELLER, Erick          | senior instructor of management and entrepreneurship                                      | BS, Eastern Michigan University; MA, University of Colorado  |
| 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 emeritus   |  |
| PAPUZZA, Antonio        | instructor of management and entrepreneurship   | BA, University of Palermo; PhD, University of Florence   |
| PARKIN, Don             | professor of marketing emeritus   |  |
| PAYNE, David            | instructor, CESR  | BA, Trinity College; Ed.M. Harvard University, MBA, University of Colorado   |
| PENG, Liang             | associate professor of real estate  | BS, MS, Renmin University of China; 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,            | associate professor of finance emeritus   |  |

|                 |                                   |  |
|-----------------|-----------------------------------|--|
| Ralph G.        |                                   |  |
| ROCK, Steven K. | associate professor of accounting | BS, MBA, Shippensburg University; PhD, Pennsylvania State University |
| ROCK, Steven K. | associate professor of accounting | BS, Shippensburg University; MBA, PhD, Pennsylvania State University |



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## School of Education



**Lorrie A. Shepard, dean**

249 UCB • phone: 303-492-6937 • fax: 303-492-7090

School website: [www.colorado.edu/education](http://www.colorado.edu/education)

The School of Education offers programs that prepare individuals to lead in a wide array of educational settings, including teaching in K-12 classrooms, conducting educational research, developing evidence-based policy, and designing innovative learning environments both in schools and in community-based settings.

The school provides teacher licensure programs that ensure rigorous content preparation and extensive clinical experience in local partner schools. Teacher licensure programs are available at the undergraduate, post-baccalaureate, and master's level. The School of Education collaborates with the College of Arts & Sciences to design degree programs for undergraduates that combine a major in Arts & Sciences with courses and field experiences in education that lead to a Colorado initial license. The school also offers an undergraduate minor in education for those interested in educational issues, serving in the Peace Corps, and/or working in community-based settings.

Graduate programs in the school serve practicing teachers as well as those seeking to improve education through rigorous research and evidence-based policy and practice. The school's doctoral program is a cohort-based, full-time program that prepares individuals to lead in universities, research or policy institutes, state or government agencies, and innovative non-profit organizations.

### Mission

The School of Education is dedicated to inspiring and preparing educators, researchers, and policy makers who understand and further the democratic foundations of education, who are committed to social justice, who seek to bring about greater equity and access in education, and who will draw upon evidence-based policy and practice to improve the quality of education in both Colorado and the world.

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## Accreditation

The licensure programs, both undergraduate and graduate, are fully accredited by the North Central Association of Colleges and Schools, the Council for Accreditation of Educator Preparation, the Colorado Department of Education, and the Colorado Commission on Higher Education.

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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 on the School of Education website.

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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### Teacher Licensure Programs

The School of Education offers course work leading to initial Colorado licensure to undergraduate, postbaccalaureate, and master's degree students in the fields of elementary through secondary education.

**Course code for this program is EDUC.**

### Education as a Minor Field

The School of Education offers a 19-credit minor that is open to all undergraduates. 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 EDUC.**

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## Faculty: Education

| Name                   | Title                        | Education   |
|------------------------|------------------------------|---|
| ANDERSON, Ronald       | professor emeritus           |   |
| 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                         |
| BEGLEY, Donna          | senior instructor            | BS, University of Southern Oregon and University of Alaska; MEd, College of William and Mary; PhD, Southern Illinois University |
| BOARDMAN, Alison G.    | assistant research professor | BA, University of California, Los Angeles; MA, University of San Francisco; PhD, University of Texas at Austin                  |
| BRIGGS, Derek          | professor                    | BA, Carleton College; PhD, University of California, Berkeley   |
| BUNNING, Kim           | instructor                   | BA, University of Wyoming; PhD, University of Colorado  |
| CLINE, Ruth            | professor emerita            |   |
| DALTON, Bridget M.     | associate professor          | BA, American University; MEd, Old Dominion University, Virginia; EdD, Harvard University  |
| 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   |

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|-----------------------|----------------------------------|--|
| ESCAMILLA, Kathy C.   | professor                        | BA, University of Colorado Boulder; MS, University of Kansas; PhD, University of California, Los Angeles |
| FLEXER, Roberta       | associate professor emerita      |  |
| FURTAK, Erin          | associate professor              | BA, University of Colorado Boulder; MA, University of Denver; PhD, Stanford University                   |
| GLASS, Gene V.        | research professor               | BA, University of Nebraska; MS, PhD, University of Wisconsin   |
| GUTIERREZ, Kris Diane | professor                        | MA, Arizona State University; PhD, University of Colorado  |
| HAAS, John            | professor emeritus               |  |
| HAND, Victoria        | assistant professor              | BA, University of California, San Diego; MA, PhD, Stanford University                                    |
| HODGE, Stephen        | professor emeritus               |  |
| HOOVER, John J.       | associate research professor     | BA, Illinois State University; MA, Northern Arizona University; PhD, University of Colorado Boulder      |
| HOPEWELL, Susan       | assistant professor              | BA, University of Colorado; MA, University of Virginia; PhD, University of Colorado                      |
| HOPKINS, Kenneth      | professor emeritus               |  |
| HOUSE, Ernie          | professor emeritus               |  |
| 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                                     |
| KIRSHNER, Benjamin R. | associate professor              | BA, Brown University; MA, Harvard University; PhD, Stanford University                                   |
| KLINGNER, Janette     | professor                        | BA, San Jose State University; MS, PhD, University of Miami  |
| KRAFT, Richard        | professor emeritus               |  |
| 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  |
| LOPEZ, Enrique        | assistant professor              | BA, MS, California State University, Fresno; PhD, Stanford University                                    |
| MANZ, Eve             | assistant professor              | BA, Swarthmore College; PhD, Vanderbilt University   |

|                           |   |   |
|---------------------------|---|---|
| MAUL, Andrew              | assistant professor                                     | BA, MA, PhD, University of California, Berkeley   |
| McGINLEY, William         | associate professor                                     | AB, Western Kentucky University; MEd, Idaho State University; PhD, University of Illinois                                 |
| MOSES, Michele            | associate dean for graduate studies; professor          | BA, University of Virginia; MEd, University of Vermont; MA, PhD, University of Colorado Boulder                           |
| 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  |
| PENJEL, William           | professor   | BA, Clark University; EdM, Harvard University; PhD, Clark University  |
| POLMAN, Joseph L.         | professor   | BA, Brown University; PhD, Northwestern University  |
| SHEPARD, Lorrie A.        | dean; distinguished professor                           | BA, Pomona College; MA, PhD, University of Colorado   |
| SOLANO-FLORES, Guillermo  | 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  |
| SWADENER, Marc            | associate professor emeritus                            |   |
| WEBB, David               | associate 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 for teacher education; senior instructor | BA, PhD, Stanford University  |
| WHITE, Tamara             | assistant professor                                     | BS, Northwestern University; MA, Loyola Marymount University; PhD, Teachers College, Columbia University                  |
| WILLMANN, Kent            | instructor  | BS, St. Joseph's College; MEd, Colorado State University  |



## College of Engineering & Applied Science



### **Robert H. Davis, dean**

**422 UCB • phone: 303-492-5071 • fax: 303-492-2199**

**college website: [www.colorado.edu/engineering](http://www.colorado.edu/engineering)**

The College of Engineering and Applied Sciences offers the bachelor of science degree in:

1. aerospace engineering sciences
2. architectural engineering
3. chemical engineering
4. chemical and biological engineering
5. civil engineering
6. electrical engineering
7. electrical and computer engineering
8. environmental engineering
9. mechanical engineering
10. general engineering plus
11. computer science
12. applied mathematics
13. engineering physics

The first nine of the programs are accredited by the Engineering Accreditation Commission of ABET (see [www.abet.org](http://www.abet.org)). The 10th is a new degree program for which ABET accreditation will be sought. The 11th is accredited by the Computing Accreditation Commission of ABET. 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.

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## 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 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 [www.colorado.edu/engineering](http://www.colorado.edu/engineering).



# Academic Excellence

## Dean's List

An undergraduate 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 placed on the student's transcript by the Office of the Registrar.

## Honors at Graduation

Undergraduate students may be eligible for honors designations at graduation. For more information, visit the engineering website for [graduation requirements](#).

## 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 [www.colorado.edu/engineering/admissions/finances/scholarships](http://www.colorado.edu/engineering/admissions/finances/scholarships) (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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# Overview of the Program

## The Program's Vision

The Program in Environmental Design focuses on integrative design. This vision asserts that in the twenty-first century the creation of built environments requires:

- design approaches of real-world relevance, stressing technical, ecological, economic, social, cultural, aesthetic, and ethical concerns;
- a robust knowledge base for design and planning decisions;
- an interdisciplinary culture of individuals who are not only experts in one of the core designing and planning disciplines, but experts in the sciences, humanities, arts, and other professions; and
- a spirit of service to diverse communities, to social justice, and to ecological sustainability.

This vision positions the program's graduates to confront many significant challenges during the next few decades. Beyond vocational training, our students learn complex problem solving and leadership skills that lay the foundation for a lasting career.

## The Design Professions

Undergraduate students in the Program in Environmental Design come to Boulder to prepare for a career in one of the design professions. Applicants to the program should possess a strong high-school or equivalent 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, landscape architecture, urban design and planning 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 and urban design resolves challenges that cross these scales.

To prepare for graduate professional study in architecture, landscape design, urban design, or planning, students may emphasize study in one of these disciplinary areas. A broadly structured emphasis in design studies is also available. All graduates earn a bachelor of environmental design degree (BEnvd) as preparation for entry into graduate professional degree programs and the workplace.

## Undergraduate Program

The program has taken a broad and integrative view of the design professions in developing its undergraduate curriculum. In recent years the challenges and opportunities facing the design professions have changed dramatically. Clients and employers demand a diverse educational experience that prepares students to work collaboratively within a team of design professionals.

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To prepare students for the constantly evolving demands of the design professions, this program creates opportunities for students to gain experience in a wide range of courses in the humanities, the arts, and the natural and social sciences. Together, these classes help students nimbly adapt their skills in a constantly changing and complex world.

Unlike undergraduate education in many other fields, students in architecture, landscape architecture, urban design and planning learn by doing. They experience the complexity of real-world problems and search for design solutions with the guidance of our program's exceptional faculty. From the first day of their freshman year, students actively integrate and synthesize the knowledge gained in lectures and related course activities in their hands-on design classes.

Throughout the entire curriculum, the program's required core classes are taught communally so that students from all design disciplines study shared problems together. In the professions, architects, landscape architects, urban and regional planners, and urban designers need to understand each other's perspectives. They increasingly work together to find solutions to the complex issues. They must also be able to think critically and communicate clearly about many topics relevant to the sciences, humanities, and arts.

The 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 encourage students to:

- 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 to effect appropriate change;
- 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 with other designers, with stakeholders, and with communities.

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## Academic Excellence

### Recognition of Scholarship

As a preprofessional program, the Program in Environmental Design provides an atmosphere for study and creative investigation. The program holds academic rigor and quality in the highest esteem. In recognition of high scholarship and professional attainment, the program 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. A minimum of 70 hours of course work must be completed at CU to be eligible for honors.

### Scholarships, Loans, Awards, and Prizes

A wide range of scholarships, prizes, and other awards are available to BEnvd students. They are sponsored by the program, the campus, the professions, and other foundations and donors.

In addition to these scholarships, interested students may participate in faculty-student research projects funded by the Undergraduate Research Opportunities Program (UROP) programs, or in other research opportunities provided by the campus or in cooperation with the program's faculty

### Graduating with Honors

The Environmental Design Program offers academic departmental honors in recognition of high scholastic achievement, which are recognized at commencement. To qualify the student's cumulative University of Colorado GPA must be 3.500–3.749 to receive honors and 3.750–4.000 to receive special honors. Honors are based on course work completed at the University of Colorado. A minimum of 70 hours of course work must be completed at CU to be eligible for honors.

### Latin Honors—General Honors Program

All University of Colorado students may participate in the Latin honors granted by the College of Arts and Sciences. Students may graduate with Latin Honors (summa cum laude, magna cum laude, or cum laude) through either the General Honors Program or their department (*see below*). Granting of these honors is based on several criteria, including the quality of original scholarly work (generally reported in the form of a thesis). Students interested in participating in the General Honors Program should visit the CU Honors Program website.

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## Latin Departmental Honors in Environmental Design

Environmental design students may graduate with Latin Departmental Honors (summa cum laude, magna cum laude, or cum laude), students with an overall GPA of 3.3 or higher propose a project to work on in their senior year of study, under the guidance of a primary advisor. Students defend their thesis to a committee of three faculty, (environmental design primary advisor, the honors council liaison, and a faculty member from outside the department) in April, and the full Honors Committee awards honors in the semester the student graduates. Specific deadlines can be found on the CU Honors Program graduation page.

Latin Honors theses present work that is student initiated and student directed, well beyond the requirements for existing classwork.

Latin Honors projects in the Environmental Design Program fall into two major categories: research and design.

- **Research** projects present a heretofore-unanswered question then work to answer it, relying on any number of data or types of evidence. The product is a paper, the length of which is determined by the topic in conversation with your advisor.
- **Design** projects present a problem and propose a solution to that problem. The product is a design or product, presented with a critical introduction. Design theses go beyond designing a building to respond to existing programmatic assumptions, to propose a new response to a problem identified by the student.

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## Environmental Design

Environmental design includes the fields of architecture, landscape architecture, and urban and planning design, as well as research pertaining to these fields. The bachelor in environmental design curriculum is a design studio-based education, which requires the completion of design-based studio experiences every semester, along with a number of complementary courses, general electives, and environmental-design electives. At any time students may declare an emphasis in architectural design, landscape architecture design, urban and planning design, or design studies; they must declare an emphasis during their third-level studio. All graduates from the undergraduate program earn a bachelor in environmental design degree with an emphasis in **architectural design**, **landscape architecture design**, **urban and planning design**, or **design studies**.

In the core, bachelor in environmental design students take a sequence of courses, which emphasize the knowledge, methods, and practices, common to the fields of architecture, landscape architecture, and urban and planning 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 trends.

The program requires that students complete courses in a clear series of prerequisites, but includes flexible opportunity for general studies and elective courses. Students must meet the prerequisites of any course before enrolling in subsequent courses.

### The Design Emphases

Students may declare an emphasis at any time upon enrollment, but must declare an emphasis before enrolling in any third-level design studio. In addition, students must meet the required prerequisites for each level. Students will declare an emphasis in architectural design, landscape architectural design, urban and planning design, or design studies.

The BEnvd degree and its emphases is a preprofessional program of study intended to prepare students for entry into graduate study, though many bachelor's in environmental design students find employment in careers allied to the professions without undertaking graduate study. Depending upon the particular requirements of graduate professional programs at other institutions, the BEnvd degree may lead to advanced standing, which can shorten the duration of graduate studies. After completing the BEnvd degree, a professional master's degree will be required for professional licensure in architecture or landscape architecture.

### Environmental Design Curriculum: Thematic Structure

The undergraduate Program in Environmental Design encourages interdisciplinary study and collaborative work on real-world programs. It also encourages a breadth of knowledge, including knowledge in the liberal arts and in other general studies, which prepare students to be critical thinkers and communicators.

The first year of the core introduces students to fundamental design ideas and practices, to the concepts of analysis and problem solving, to human factors, to ecology, to design history and theory, and to the relationship between environmental design and ethics. The following three semesters challenge students with design problems at a different scales within the built environment: at the scales

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of urban building, landscape, and design. Each of these design challenges underscores the interdependency of scales upon one another and the complex connectedness which characterizes the built environment.

The final three semesters of the curriculum offer students the opportunity to emphasize architecture, landscape architecture, or planning and urban design. Students wishing to pursue academic work that crosses disciplines can pursue design studies. During the final two years of study, students may earn opportunities to engage in service learning in the community or in design-build, they may study abroad, or they may have opportunities for more individualized research.

**Course codes for this program are ARCH and ENVD.**

## Bachelor's Degree Program(s)

# Bachelor's Degree in Environmental Design

## 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 2.00 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:** one class from the following arts and sciences core areas: human diversity, literature and the arts, or ideals and values
- **Social Science:** one class from the following arts and sciences core areas: historical context, United States context, or contemporary societies
- **Math:** one class from the emphasis area: *architecture:* MATH 1150 or 1300; *planning:* MATH 2510 or SOCY 2061; *landscape architecture:* MATH 1150, 1300, 2510; or SOCY 2061
- **Natural Science:** one class from the emphasis area: *architecture:* PHYS 2010; *planning and urban design or landscape architecture:* CHEM 1111, EBIO 1030 and 1050 or EBIO 1210 and 1230, PHYS 2010

## Environmental Design Curriculum and Course Sequence

### Year One

- 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, including human factors and land ethics.
- Semester II. The second semester introduces critical design theories and practices which can effect change at different scales and levels of complexity. Areas of study extend to ecology, as well as to the history and theory of the built environment.

### Years Two and Three

- Semesters III to IV. The three-semester sequence focuses on issues surrounding sustainability in the built environment. In studios, faculty from the disciplines of architecture, landscape, and planning use an interdisciplinary approach to understanding design and the designed environment addressing complex global issues, especially emphasizing sustainability and community engagement.

### Years Three and Four

- Semesters VI to VIII. Students must declare an emphasis in their third semester. During these semesters, students pursue more specialized study within their emphasis. Students may also have opportunities for praxis (applied practice), service learning within the community, research, or study abroad. The program recognizes several certificate programs, within the program and across the campus, which can substitute for praxis and for other requirements (see *Certificates below*).

### 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
- Natural science requirement (*see list of options above*) (Note 1)—3-5
- Social science (*see list of options above*)—3

## Second Year: Core Classes

### Fall Semester

- ENVD 2120 Environmental Design Studio 1—6
- ENVD 3115 Introduction to Building Materials and Systems—3
- ARCH 3114 History of Architecture 1—3
- Math requirement (*see list of options above*) (Note 2)—3-5

### Spring Semester

- ENVD 2130 Intermediate Design Studio 2—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 3—6
- ENVD 3122 Research Issues and Methods in Planning and Design—3
- ENVD 3124 Issues in Planning History—3
- Non-ENVD elective—3

### Spring Semester

- ENVD 3300 Selected ENVD Design Studio or Practicum or study abroad—6
- ENVD 3300 ENVD Seminar, approved certificate courses, study abroad, or design studies—3
- ENVD or open electives—3
- Non-ENVD elective—3

## Course Notes

1. These are linked core courses that are corequisites and are designed to be taken together.

2. Students intending to enroll in the architecture emphasis are strongly encouraged to take a physics class.
3. Students intending to enroll in the architecture emphasis are strongly encouraged to take a pre-calculus math class.
4. Students intending to enroll in the architecture emphasis are strongly encouraged to take a total of 45 credits of general study.

### **Fourth Year: Architecture Emphasis**

Architecture emphasis students develop design solutions encompassing conventional design-build, digital fabrication, cultural, urban and global context, areas of structures, construction, and environmental systems, and how they are integrated into built structures.

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

- ENVD 4100 Architecture Studio 1—6
- ENVD elective or AREN 3050 Environmental Systems for Buildings 1—3
- ENVD elective or AREN 4035 Architectural Structures 1—3
- Elective—3

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

- ENVD 4300 Architecture Studio 2—6
- ENVD elective or AREN 3060 Environmental Systems for Buildings 2—3
- ENVD elective or AREN 4045 Architectural Structures 2—3
- Elective—3

### **Fourth Year: Planning Emphasis**

Planning emphasis students will focus on problems of sustainability in urban environments and the integration of urban design with other planning practices to address sustainability issues.

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

- ENVD 4100 Advanced Planning Seminar—3
- ENVD 4023 Environmental Impact Assessment—3
- ENVD 3152 Geographic Information Systems (GIS)—3
- ENVD 4361 Healthy and Vital Communities—3
- Non-ENVD elective—3

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

- ENVD 4420 Planning Capstone—3
- ENVD 4794 Planning/Urban History—3
- ENVD 4311 Housing Policies and Planning—3
- ENVD elective—3
- Non-ENVD elective—3

### **Fourth Year: Landscape Emphasis**

Landscape emphasis students develop design solutions in all scales that work in concert with natural systems and reflect both the art and science of design.

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

- ENVD 4340 Landscape Architecture Studio 1—6
- ENVD 4100 Landscape Architectural History—3
- ENVD 4100 Landform Manipulations—3
- Elective—3

### **Spring Semester**

- ENVD 4440 Landscape Architecture Studio 2—6
- ENVD 4100 Materials and Methods—3
- ENVD4100 Plants and Design—3
- Elective—3

### **Fourth Year: Design Studies Emphasis**

The design studies sequence provides students the opportunity to build interdisciplinary, flexible, and specialized courses of study. Faculty advisor and academic advisor must approve courses.

### **Fall Semester**

- ENVD 4100 Design Thinking—3
- ENVD elective—6-9
- Elective—3-6

### **Spring Semester**

- ENVD 4420 Design Studies Capstone—3
- ENVD elective—6-9
- Elective—3-6

## **Environmental Design Minor**

A minor in environmental design provides an approach to identifying and solving complex problems within the context of the built environment. It provides a foundation in theory, history, and methodology employed in fields such as architecture, planning, landscape architecture, and related design disciplines. The environmental design minor has three possible tracks, one in **design**, one in **theory**, and one in **planning**. These three tracks reflect the breadth of topics and methods covered in the environmental design curriculum and meet a variety of interests of students seeking the minor.

### **Design Track**

The design track develops students' basic skills and knowledge about designing in the built environment. It provides practice that enables students to work with professional architects and planners or to go to graduate school in the professional design fields.

### **Required**

- ENVD 1052 Design and Communication 1
- ENVD 1102 Design and Communication 2

### **History and Theory Classes: Choose two:**

- ENVD 3114 History and Theory of ENVD: Buildings; ENVD 3134 History and Theory of ENVD: Precincts; ENVD 3144 History and Theory of ENVD: Systems
- ENVD 2120 Environmental Design Studio 1

### **Studio Class Option. Choose one:**

- ENVD 2130 Environmental Design Studio: Landscape Design,
- ENVD 3100 Environmental Design Studio: Urban Design or AREN only—ARCH 4010 Architectural Appreciation and Design

## Environmental Design History and Theory Track

The theory track develops students' basic skills in design and an understanding of theories of design through history and in contemporary society. It provides a foundation for students interested in a broad range of fields, including computational design, urban and community development, resource management, and technology.

### Required

- ENVD 1052: Design and Communication 1
- ENVD 1102: Design and Communication 2
- ENVD 1104: Intro Environmental Design Methods

### History and Theory Classes. Choose two:

- ENVD 3114 History and Theory of ENVD: Buildings; ENVD 3134 History and Theory of ENVD: Precincts; ENVD 3144 History and Theory of ENVD: Systems
- History theory elective: any one class from
- ENVD 4364 History and Historiography of ENVD
- ENVD 4764 Theory and Criticism in ENVD

## Planning Track

The planning track develops students' basic skills and knowledge about urban and environmental planning. Students gain an understanding of land use, fundamentals of successful communities, and the sustainable interaction of systems. This track enables students to work with professional planners and better understand planning as it applies to their own major field. It also prepares students for graduate study in planning.

### Required

- ENVD 3144 History and Theory of ENVD: Systems
- ENVD 3300 Planning Studio Praxis (*see ENVD 4100 below*) or 4000-level planning studio

### Three of the following courses:

- ENVD 4100 Praxis coupled class (required if taking praxis)
- ENVD 3152 Geographic Information Systems
- ENVD 4023 Environmental Impact Assessment
- ENVD 4311 Housing Policy and Planning
- ENVD 4794 History of Urban Design and Planning
- Any special topics class in ENVD 4361 Social Factors in Design or ENVD 4363 Physical Factors in ENVD

## Dual Degree Programs

### Dual Degrees

In addition to the BEnvd degree, students may pursue a dual degree 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; and additional hours (varying by college) may be required. All undergraduate students must complete the general education requirements and the requirements for their specific emphasis within the Program in Environmental Design in addition to the other requirements. Students considering a double-degree program are encouraged to speak with advisors in both units 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 program supports towards its Praxis semester. Students interested in the certificate options below or in any alternative certificate or minor offered at CU, 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 ([www.colorado.edu/communitystudies](http://www.colorado.edu/communitystudies))
- Western American Studies ([www.centerwest.org/academics/certificate](http://www.centerwest.org/academics/certificate))
- Minor in Technology, Arts and Media ([tam.colorado.edu/mtam.php](http://tam.colorado.edu/mtam.php))
- Certificate in Digital Media (CDM) ([tam.colorado.edu/cdm.php](http://tam.colorado.edu/cdm.php))
- Sustainable Practices ([sustainable.colorado.edu](http://sustainable.colorado.edu))

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## Faculty: Environmental Design

| Name                | Title               | Education   |
|---------------------|---------------------|---|
| ARIAS, Ernesto G.   | professor emeritus  |   |
| BANASIAK, Meredith  | senior instructor   | HAB, Xavier University; MArch, Arizona State University                                 |
| BARBOUR, John       | senior instructor   | BEnvd, MURP, ABD, University of New South Wales   |
| BELLINO, Marianne   | instructor          | BFA, College of the Holy Cross; MArch, Washington University, St. Louis                 |
| BELLUCCI, Justin    | instructor          | BEnvD, MS, University of Colorado Boulder   |
| CHAWLA, Louise      | professor           | BA, Hunter College; MA, Bryn Mawr College; PhD, City University of New York             |
| COOK, Brian         | instructor          | BS, University of Colorado Boulder; MLA, University of Colorado Denver                  |
| DELANGE, Marcel     | senior instructor   | MArch, Delft Institute of Technology  |
| DERR, Victoria      | senior instructor   | BA, Hope College, Michigan; MES, PhD, Yale School of Forestry and Environmental Studies |
| DRENNAN, Kimberly   | instructor          | BA, Trinity University, San Antonio; MArch, Rhode Island School of Design               |
| FARR, Marcus        | instructor          | BA, BArch, Drury University; MArch, Rice University                                     |
| GOLDSTEIN, Bruce E. | associate professor | BA, Wesleyan University; MS, Yale University; PhD, University of California             |
| HARLOW, Allen       | senior instructor   | BArch, MArch, University of Colorado. Registered architect: Colorado                    |
| JELACIC, Matthew    | assistant professor | BArch, Pratt Institute; MArch, Harvard  |

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|-------------------------|------------------------------|---|
| JUHASZ, Joseph          | professor 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  |
| KRIZECK, Kevin          | associate professor          | BSE, Northwestern University; MRP, UNC Chapel Hill; MSCE, PhD, University of Washington   |
| LANTERMAN, John         | senior instructor            | BSC, Colorado State University; MLA, University of Colorado   |
| LINDSAY, Georgia        | visiting assistant professor | MS, PhD, University of California, Berkeley   |
| McCALL, Jr., Raymond    | associate professor          | BS, University of Wisconsin–Milwaukee; MS, Illinois Institute of Technology; PhD, University of California, Berkeley            |
| MULLER, Brian           | associate professor          | BA, Yale University; PhD, University of California, Berkeley  |
| POLIZZI, Jade           | instructor                   | BEnvd, University of Colorado Boulder; MArch, University of Colorado Denver   |
| PYATT, Rob              | senior instructor            | BEnvd, University of Colorado Boulder; MArch, University of Colorado Denver   |
| RENAUD, Ken             | instructor                   | BA, New York University; MArch, University of Colorado Denver   |
| ROUDBARI, Shawhin       | visiting assistant professor | BS, MS, PhD, University of California, Berkeley; MS, Cornell University; California Registered Professional Engineer (PE-Civil) |
| SANCAR, Fahriye Hazer   | professor emeritus           |   |
| SCHULTE, Stacey         | instructor                   | BA, University of Colorado Boulder; MA, University of Colorado Denver; MS, University of Michigan, Ann Arbor                    |
| SILVERSTEIN, Joann      | program director; professor  | BA, Stanford University; BS, MS, PhD, University of California, Davis   |
| TAVEL, Michael          | senior instructor            | BA, BS, University of Toledo; MArch, University of California, Berkeley   |
| VAN VLIET, Willem K. T. | professor                    | Doctorandus, Free University of Amsterdam; PhD, University of Toronto   |
| XU, Ping                | professor                    | BA, MArch, Tsinghua University (PRC); MLA, University of Pennsylvania; DDesign, Harvard University                              |






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## Graduate School



**John Stevenson, dean**

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**school websites: [www.colorado.edu/graduateschool](http://www.colorado.edu/graduateschool) and [www.colorado.edu/admissions/graduate/](http://www.colorado.edu/admissions/graduate/)**

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](#).

Currently overseeing 100 graduate and professional programs, the Graduate 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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## Funding for Graduate School

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.

Colorado residents may be eligible for the Colorado Graduate Grant program and the Graduate Fee Grant program. Both are automatically considered with the FAFSA application.

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 full-time enrolled graduate student, with a cumulative GPA of at least 3.00. 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 full coverage 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

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departments.

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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# Research Institutes and Centers

Some important graduate study at CU-Boulder is done through, or in partnership with, research institutes and centers.

## Research Institutes

CU-Boulder has developed a longterm tradition of interdisciplinary collaboration throughout the university community and beyond. At the heart of this tradition is a system of world-class research institutes that create a dynamic environment for discovery and learning.

Since the first institutes emerged a half-century ago, research teams of faculty, students, and external partners have tackled complex questions from multiple perspectives, leading to important advances in human knowledge. These learning enterprises offer common ground for scholars and students to collaborate on issues that confront the world—in such areas as climate; energy resources; atmosphere; outer space; human behavior; solar energy; the human mind; and atomic, molecular and optics studies.

CU-Boulder's 11 research institutes account for more than half of all sponsored research dollars at the university, and they employ some of the most productive researchers in the country. With more than 900 researchers and supporting staff, the institutes make a major contribution to the university's research and education missions as well as the local and area economy. Numerous graduate students are employed by the institutes, which contribute to the quality of graduate education at CU-Boulder.

- [Alliance for Technology, Learning, and Society \(ATLAS\)](#)
- [BioFrontiers Institute](#)
- [Cooperative Institute for Research in Environmental Sciences \(CIRES\)](#)
- [Institute of Arctic and Alpine Research \(INSTAAR\)](#)
- [Institute for Behavioral Genetics \(IBG\)](#)
- [Institute of Behavioral Science \(IBS\)](#)
- [Institute of Cognitive Science \(ICS\)](#)
- [JILA \(formerly the Joint Institute for Laboratory Astrophysics\)](#)
- [Laboratory for Atmospheric and Space Physics \(LASP\)](#)
- [Renewable and Sustainable Energy Institute \(RASEI\)](#)
- [University of Colorado Museum of Natural History](#)

## Research Centers

In addition to the large research institutes, there are nearly 90 [research centers](#) housed within academic departments or as subsets of the research institutes themselves. They can be found in all fields of the university, including humanities and the arts, social sciences, natural sciences, engineering, business, and law.

The centers cover a broad range of topics, from multicultural education and astrophysics to glaciology and prevention of violence. They grant fellowships, sponsor internships, house archives for research, conduct competitions with cash awards, host public debates and

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programs, and support graduate study in many other ways.

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## Requirements for Advanced Degrees

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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/vcr](http://www.colorado.edu/vcr).

### 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.

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Every thesis presented in partial fulfillment of the requirements for an 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

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. For students pursuing a Degree Plan Approval option, a final exam is not required. 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 97 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

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 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.

## 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.

## 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.





# Programs of Study

## Graduate 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 (AudD)
- Doctor of Musical Arts (DMusA)
- Doctor of Philosophy (PhD)

## Graduate Programs and Degrees

NOTE: Degrees listed in parentheses are non-terminal degrees.

|  |                 |
|--|-----------------|
| <a href="#">Aerospace Engineering Sciences</a>       | MS, PhD         |
| <a href="#">Anthropology</a>                         | MA, MA/MBA, PhD |
| <a href="#">Applied Mathematics</a>                  | MS, PhD         |
| <a href="#">Architectural Engineering</a>            | MS, PhD         |
| <a href="#">Art and Art History</a>                  | MA, MA/MBA, MFA |
| <a href="#">Asian Languages and Civilizations</a>    | MA, PhD         |
| <a href="#">Astrophysical and Planetary Sciences</a> | (MS), PhD       |
| <a href="#">Atmospheric and Oceanic Sciences</a>     | MS, PhD         |
| <a href="#">Audiology</a>                            | AudD            |
| <a href="#">Biochemistry</a>                         | (MS), PhD       |

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|  |                                |
|--|--------------------------------|
| Business Administration                                  | MS, MBA, PhD                   |
| Chemical Engineering                                     | ME, MS, PhD                    |
| Chemical Physics   | PhD                            |
| Chemistry  | (MS), PhD                      |
| Civil Engineering  | MS, PhD                        |
| Classics   | MA, PhD                        |
| Cognitive Science  | PhD (joint only)               |
| Comparative Ethnic Studies                               | PhD                            |
| Communication (through Arts and Sciences)                | MA, PhD                        |
| Communication (through Journalism)                       | PhD                            |
| Comparative Literature                                   | MA, PhD                        |
| Computer Science   | ME, MS, MS/MBA, PhD            |
| Creative Writing   | MFA                            |
| Dance  | MFA                            |
| Ecology and Evolutionary Biology                         | MA, PhD                        |
| Economics  | (MA), PhD                      |
| Education  | MA, MA+, PhD                   |
| Electrical Engineering                                   | ME, MS, PhD                    |
| Engineering Management                                   | ME                             |
| English  | MA, PhD                        |
| Environmental Studies                                    | JD/MS, JD/PhD, MS, MS/MBA, PhD |
| Film   | MFA                            |
| French   | MA, PhD                        |
| Geography  | MA, PhD                        |
| Geological Sciences                                      | MS, PhD                        |
| Geophysics   | PhD                            |
| German Studies   | MA, MA/ MBA, PhD               |
| History  | MA, PhD                        |
| Information and Communication Technology for Development | MS                             |
| Integrative Physiology                                   | MS, PhD                        |

|   |   |
|---|---|
| Journalism and Mass Communication                     | MA  |
| Law   | JD, JD/Canadian LLB, JD/MBA, JD/MD, JD/MPA, JD/MS, JD/MST, JD/MURP, JD/PhD, LLM, MS |
| Linguistics   | MA, PhD   |
| Materials Science and Engineering                     | MS, PhD   |
| Mathematics   | MA, PhD   |
| Mechanical Engineering                                | ME, MS, PhD   |
| Molecular, Cellular, and Developmental Biology (MCDB) | (MA), PhD   |
| Museum and Field Studies                              | MS  |
| Music   | MMus, MMusEd, DMusA, PhD  |
| Neuroscience  | PhD (joint only)  |
| Philosophy  | MA, PhD   |
| Physics   | (MS), PhD   |
| Political Science                                     | MA, PhD   |
| Psychology  | (MA), PhD   |
| Religious Studies                                     | MA  |
| Sociology   | (MA), PhD   |
| Spanish   | MA, PhD   |
| Speech, Language, and Hearing Sciences                | MA, PhD   |
| Technology, Media, and Society                        | PhD   |
| Telecommunications                                    | JD/MS, ME, MS, MS/MBA, PhD  |
| Theatre   | MA, MA/MBA, PhD   |

Inquiries regarding admission to graduate programs should be addressed to the graduate department in which the applicant wishes to study (see [admissions.colorado.edu/graduate](http://admissions.colorado.edu/graduate)).



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## Environmental Design



**JoAnn Silverstein, program director**

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program website: [www.colorado.edu/envd](http://www.colorado.edu/envd)

The Program in Environmental Design at the University of Colorado Boulder prepares students for graduate study and careers in **architecture, landscape architecture, urban design, and urban and regional planning**. With a diverse faculty committed to excellence in teaching, research, scholarship, and creative and professional work, the program provides students with a varied range of learning opportunities.

These courses of study prepare students for careers in some of the most exciting professions that shape the designed and built environment. In addition to the program's core design sequence, students will take a wide range of technology and theory courses. Many of these courses can be eligible for advanced standing in highly rated graduate programs throughout the country.

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## Media, Communication and Information



### **Christopher Braider, Transitional Dean**

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**website: [www.colorado.edu/cmci](http://www.colorado.edu/cmci)**

The College of Media, Communication and Information (CMCI) prepares students for careers as engaged and effective citizens endowed with deep understanding of the historical and contemporary context of human communication and expression. Mindful of the active role communication plays in shaping human relationships, CMCI trains graduates to study and practice constructive interaction among people, communities, industries and publics. The college equips students with the skills needed to produce, gather, archive, curate, analyze and evaluate the flood of information, messages, images, sounds and ideas that populate our complex and rapidly evolving global media landscape.

To these ends, CMCI resourcefully combines disciplines newly extended and empowered by digital media and the social and cultural transformations those media engender. These include established scholarly, creative and professional fields such as media studies, communication, the history and interpretation of film and television, journalism, advertising and video production in its cinematic, documentary and broadcast forms. But the college also houses both the fast-growing field of information science—a discipline that, through inquiry and innovation, tackles the problems and opportunities facing an increasingly networked society—and the emergent disciplines of intermedia art, design, music, writing and performance.

In giving these activities a collaborative home, CMCI facilitates innovative interactions among them. Its academic structure accordingly stimulates cross-disciplinary cooperation at all levels of curriculum, research and creative work. Further, CMCI promotes the transformational exchanges it nurtures within its own walls for campus-wide benefit. Its organization thus fosters outreach to—and student and faculty participation from—other schools, colleges, centers and facilities throughout CU Boulder and the wider Colorado community.

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## School of Law



### **Philip J. Weiser, dean**

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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:

- 510 students, selected from the nation's statistically best applicants with diverse backgrounds and representing 100 undergraduate institutions
- A favorable faculty-student ratio (1:10) that produces class sizes that encourage discussion
- 55 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 (JD) degree, one-year Master of Laws (LLM) 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 moot court competitions
- Comprehensive program to prepare students for a wide range of careers; many graduates obtain judicial clerkships

## 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, sustainable society.

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## 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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## College of Music



### **James Austin, interim dean**

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**college website: [colorado.edu/music](http://colorado.edu/music)**

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 while showing appreciation for a diversity of musical cultures and individual backgrounds.

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Other Academic Programs

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 an online graduation application 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 [www.colorado.edu/music/academics/graduate-degrees](http://www.colorado.edu/music/academics/graduate-degrees).

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## Other Academic Programs



Take your interests beyond the classroom through study abroad, honors, leadership, service learning, research, and more.

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### Other Academic Programs

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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 3.75 or better are included on the directors' 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 3.50 cumulative GPA and a 3.50 GPA in journalism and mass communication courses, complete an honors project, 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 3.75 overall GPA on 60 or more CU-Boulder hours 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.

## Program 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 Press Women Scholarship
- Courtney Erin Klee Memorial Scholarship
- Denver Woman's Press Club Scholarship
- Dan Creedon Sports Scholarship
- Dominic Manzanares Memorial Scholarship
- Don Ridgway/CHSPA

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- 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
- J. Ember and Agnes Sterling Memorial Scholarship
- J. Winton Lemen Memorial Scholarship
- Karsh & Hagan Advertising Scholarship
- Larry and Brigitte Zimmer Sports Announcing 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
- William S. Hemingway Scholarships
- William W. White Awards

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## Programs of Study

The Journalism and Mass Communication Program (JMC) enrolls 750 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 a 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.

**Course code for this program is JOUR.**

### Bachelor's Degree Program(s)

## Bachelor of Science in Journalism

### 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 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

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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 Analysis Media—3
- JOUR 2403 Principles of Advertising and Consumer Culture—3
- JOUR 4651 Media 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 (7 hours)

- ECON 2010 Principles of Microeconomics—4
- BCOR 2400 Fundamentals of Marketing—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 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 Analysis Media—3
- JOUR 2601 Principles of Journalism and Networked Communication—3
- JOUR 4651 Media Law (junior standing prerequisite)—3
- One upper-division conceptual course—3

### **Broadcast News Requirements (13 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)—4

### **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 Analysis Media—3
- JOUR 2601-3 Principles of Journalism and Networked Communication—3
- JOUR 4651-3 Media 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 Analysis Media—3
- JOUR 2403 Principles of Advertising and Consumer Culture or 2601 Principles of Journalism and Networked Communication—3
- JOUR 4651 Media 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 Analysis Media—3
- JOUR 2601 Principles of Journalism and Networked Communication—3
- JOUR 4651 Media 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)**

# **Graduate Study in Journalism & Mass Communication**

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.

## **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.

## **Master of Arts 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 of Arts 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.

## Certificate Program

### Certificate in International Media

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 [journalism.colorado.edu/academics/undergraduate/international-media-certificate/](http://journalism.colorado.edu/academics/undergraduate/international-media-certificate/).

### Graduate Certificate 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.



## 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           | professor emeritus                                    | BA, University of Colorado; MA, Johns Hopkins School of Advanced International Studies   |
| 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                  |  |
| BROWNE, Jeffrey        | instructor  | BJ, University of Nebraska-Lincoln; ME, University of Florida.   |
| CALABRESE, Andrew      | professor   | BA, Denison University; MA, PhD, Ohio State University   |
| CHEVAL, Melinda Kiger  | senior instructor                                     | BS, West Virginia University School of Journalism  |
| DAUGHERTY, Paul        | instructor  | BA, MA, University of Colorado Boulder   |
| DUNCAN, Thomas R.      | professor emeritus                                    |  |
| ECHCHAIBI, Nabil       | associate professor                                   | BA, Mohammed V University, Morocco; MA, PhD, Indiana University, Bloomington   |
| GANGADHARBATLA, Harsha | associate professor                                   | BE, Motilal Nehru Institute of Technology, University of Allabad, India; MA, Michigan State University; PhD, University of Texas at Austin |
| HOOVER, Stewart        | professor   | BA, McPherson College; MA, PhD, University of Pennsylvania   |
| JONES, Stephen B.      | associate director; assistant dean; senior instructor | BA, MA, West Virginia University; PhD, University of Utah  |

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**Faculty: Journalism & Mass Communication Program**

Law

Music

Graduate School

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|                       |  |  |
|-----------------------|--|--|
| KAPLAN, Frank L.      | professor emeritus                                       |  |
| KIM, Hun Shik         | associate professor                                      | BA, Chung-Ang University; MA, PhD, University of Missouri  |
| KODAS, Michael        | instructor   | BS, University of Missouri-Columbia.   |
| KUCZUN, Sam           | professor emeritus                                       |  |
| LOGAN, Kelly          | assistant professor                                      | BA, University of California, Los Angeles; MBA, Tulane University; PhD, University of Texas at Austin                            |
| McDEVITT, Michael J.  | 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 director; professor                            | BA, University of Utah; MA, University of Washington; PhD, Simon Fraser University   |
| RAYBON, Patricia      | professor emerita  |  |
| ROBBS, Brett          | professor emeritus                                       |  |
| 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, Michael       | professor  | BA, University of Exeter; PhD, University of Leicester   |
| TRAGER, Robert        | professor emeritus                                       |  |
| VOAKES, Paul S.       | professor  | BA, University of California, Davis; MJ, University of California, Berkeley; PhD, University of Wisconsin-Madison                |
| WEED, Michael L.      | instructor   | BA, Duke University  |
| WHITT, Jan            | professor  | BA, MA, Baylor University; PhD, University of Denver   |
|                       |  |  |

YULSMAN, Thomas

professor

BA, Harpur College, State University of New York at Binghamton; MS,  
Columbia University Graduate School of Journalism

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## JD Admissions & Financial Aid

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### 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

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.lisac.org](http://www.lisac.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 the United States, since the Colorado Law cannot offer loan assistance to international students.

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## 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 or both. 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 on 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 some 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.



# Law

The course code for this school is LAWS.

## Graduate Degree Program(s)

### Master of Laws (LLM) Degree

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) Degree

#### 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

- **Legal Writing II:** 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

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**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
- 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
- Auditing, Compliance, and Management
- Bankruptcy
- Business Planning
- Business Transactions
- Corporate Finance
- Corporations
- Creditors' Remedies and Debtors' Protection
- Deals
- Deals Lab: Advanced Securities
- Deals Lab: Advanced Venture Capital
- Law Practice Management
- Mergers, Acquisitions, and Reorganizations
- Payment Systems
- Secured Transactions
- Securities Regulation
- Venture Capital and Private Equity

#### ***Criminal***

- Capital Punishment in America
- Criminal Procedure: Investigative Phase
- Criminal Procedure: Adjudicative Process
- Post Conviction Criminal Procedure
- White Collar Crime

#### ***Family, Gender, and Health***

- 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
- Parent, Child, and State

Sexuality and the Law

### ***Government and Public Interest***

- Administrative Law
- Education Law
- Election Law
- Employment Discrimination
- Employment Law
- Federal Courts
- First Amendment
- Labor Law
- Legislation
- Local Government
- Race and American Law

### ***Intellectual Property, Technology, and Telecommunications***

- Computer Crimes
- Copyright
- Introduction to Intellectual Property Law
- IP Counseling
- IP and Technology Contracting
- Patent Law
- Patent Litigation
- Privacy and Security in the Digital Age
- Telecommunications Law and Policy
- Trademark and Unfair Competition

### ***International***

- Conflict of Laws
- Law and Development
- Immigration and Citizenship Law
- International Business Transactions
- International Dispute Resolution
- International Environmental Law
- International Human Rights
- International Law
- International Legal Order: History and Foundations
- International Trade Law
- Refugee and Asylum Law

### ***Jurisprudence and Perspective***

- Class and Law
- Critical Theory Colloquium
- Economic Analysis of Law
- Gender and Law
- Jurisprudence
- Philosophy of Law

### ***Litigation***

- Advanced Appellate Advocacy
- Advanced Evidence
- Complex Civil Litigation
- Evidence
- Federal Litigation: Everything but the Trial
- Litigation Drafting
- Motions Advocacy
- Trial Advocacy

### ***Natural Resources, Energy, and Environmental Law***

- American Indian Law I
- American Indian Law II
- Climate Change Law and Policy
- Energy Insecurity and Sustainable Law
- Energy Law and Regulation
- Environmental Law
- Foundations of Natural Resources Law and Policy
- Jurisdiction in Indian Country
- 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
- Legal Negotiation
- Mediation
- Motions Advocacy
- Trial Advocacy
- Trial Competition

### ***Property***

- Advanced Real Estate Transactions

- Construction Law
- Estate Planning
- Land Use Planning
- Real Estate Planning
- Real Estate Transactions
- Wills and Trusts

### **Research and Writing**

- Advanced Legal Research
- Advanced Legal Writing
- 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
- Partnership Tax
- Tax Policy
- Taxation of Conduit Entities

### **Seminars**

- Advanced American Indian Law
- Advanced Criminal Procedure
- Advanced Natural Resources Law
- Antidiscrimination and First Amendment
- Class and Law
- Comparative Constitutional Law
- Computers and the Law
- Constitutional Theory
- Consumer Empowerment
- Counseling Families in Business
- Gender Law
- Information Privacy
- Jurisprudence
- Law and Economics of Utility Regulation
- Law and Literature
- Media, Popular Culture, and Law
- Oil and International Relations
- Power, Ethics, and Professionalism
- 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 professor                                 | BA, University of Kansas; JD, University of Colorado   |
| BLOOM, Frederic       | associate professor                                 | BA, Washington University in St. Louis; JD, Stanford University  |
| BOYD, William         | associate professor                                 | BA, University of North Carolina; MA, PhD, University of California, Berkeley; JD, Stanford 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   |
| 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 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,              | professor   | BA, Yale University; LLB, Harvard University   |

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|---------------------------|---|---|
| Richard B.                |   |   |
| 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  |
| FURMAN, H. Patrick        | clinical professor emeritus   |   |
| GAZUR, Wayne M.           | associate dean for faculty development; 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               | professor   | BA, University of California, Berkeley; JD, Harvard University  |
| GURUSWAM, Lakshman        | Nicholas Doman Professor of International Environmental Law                                   | 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; professor | BA, Harvard-Radcliffe; JD, Harvard University   |
| HENDRICKS, Jennifer       | associate professor   | BA, Swarthmore College; JD, Harvard University  |
| HUANG, Peter              | DeMuth Chair; professor   | AB, Princeton University; SM and PhD, Harvard University; JD, University of Pennsylvania                  |
| KIERNAN-JOHNSON, Derek H. | director of the legal writing program; legal writing professor                                | AB, Princeton University; JD, University of Michigan  |
| KRAKOFF, Sarah A.         | Schaden Chair for Experiential Learning; 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   |
| NEVELOW                   | law library director, associate professor   | BA, University of California, Santa Cruz; JD, University of   |

|                           |  |   |
|---------------------------|--|---|
| MART, Susan               |  | 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                      |
| PEPPET, Scott R.          | 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.           | 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           | 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.         | legal writing professor  | BA, Southern Methodist University; JD, Duke University                                  |
| 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                 |
| 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  |

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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 3.70, 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 3.70–3.79 (honors), 3.80–3.89 (high honors), and 3.90–4.00 (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. 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 3.00.

Graduate students must enroll as full-time students, maintaining a 3.00 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.

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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:

- [Bachelor of music \(BM\)](#)
- [Bachelor of arts \(BA\)](#)
- [Bachelor of music education \(BME\)](#)
- [Double degrees in music and an outside major](#)
- [Dual degree in music performance and music education](#)
- [Double major in music performance](#)

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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## 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   |
| 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   |
| CONLON, Joan Catoni         | professor emerita   |  |

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|----------------------|---|---|
| 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  |   |
| GENTRY, Gregory      | associate professor (choir)   | BME, University of Denver; MM, DMA, University of Missouri, Kansas City                       |
| 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        | associate professor (jazz studies, saxophone)                         | BM, MA, Berklee College of Music; MA, University of Miami                                     |
| HARBISON, Kevin      | professional exempt (recording technology)                            | BM, Cleveland Institute of Music  |
| 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 |
| 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                                     |
| 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  |  |
| MALIN, Yonatin           | assistant professor (theory)                              | BA, Harvard University; PhD, University of Chicago   |
| 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  |  |
|                          |   |  |

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|-----------------------|--|--|
| 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  |
| MUELLER, Ronald       | senior instructor  |  |
| 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  |
| OKIGBO, Austin        | assistant professor (musicology)                                 | BPhil, Pontifical Urban University, Rome; MM, Westminster Choir College; PhD, Indiana University, Bloomington  |
| PANN, Carter          | associate 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   |  |
| RICKELS, David B.     | assistant professor (music education)                            | BM, MM, DMA, Arizona State University  |
| 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   |

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|-----------------------------|---|---|
| SCOTT, F.<br>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   |
| SMITH, Jeremy               | associate professor<br>(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,<br>Robert         | professor emeritus                          |   |
| STANLEY,<br>William         | associate professor<br>(trombone)           | BME, University of Kansas; MM, DMA, University of Illinois  |
| THEODORE,<br>Michael        | associate professor<br>(theory/composition) | BA, Amherst College; MM, Yale School of Music; PhD, University of California, San Diego                           |
| THORNTON,<br>Michael        | associate professor (horn)                  | BM, Temple University; additional studies at Manhattan School of Music and Juilliard School                       |
| TOENSING,<br>Richard        | professor emeritus                          |   |
| WALTER,<br>Douglas          | professor (percussion)                      | BM, University of North Texas; MM, University of Michigan; DMA, Temple University                                 |
| WATERS, Keith               | professor (theory/composition)              | BM, University of North Carolina, Greensboro; MM, New England Conservatory of Music; PhD, Eastman School of Music |
| WETHERBEE,<br>Charles       | assistant professor                         | BM, Curtis Institute of Music   |
| WOLZIEN,<br>Charles         | professor emeritus                          |   |
| ZEMLIAUSKAS,<br>Christopher | instructor (vocal coach,<br>accompanist)    | BM, Ithaca College; MM, University of Minnesota   |



## Continuing Education

### On This Page:

- [Boulder Evening Credit Program](#)
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- [Center for Advanced Engineering and Technology Education \(CAETE\)](#)
- [Post-Baccalaureate Pre-Medical Program](#)
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- [Summer Session and Maymester at CU-Boulder](#)

The mission of the Division of Continuing Education 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 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 six months.

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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 the 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, 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.

## Post-Baccalaureate Pre-Medical Program

The Post-Baccalaureate Pre-Medical program is a partnership between the College of Arts and Sciences and the Division of Continuing Education. It is designed for career changers who were academically successful as undergraduates but have not completed the prerequisite science courses needed to apply to medical school. Students enter the program in a cohort and take all course work together. Academic advising, tutoring, and preparation for applying to medical schools are provided.

## 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 Program

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 may be 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-Boulder 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 science education outreach organization designed to heighten student interest and increase literacy in science, technology, engineering, and math (STEM). Science Discovery connects K-12 students and teachers to current CU science through a broad array of programs including summer camps, after-school classes, in-school programs, teacher professional development workshops, and Teen Science Cafés. Programs capitalize on CU-Boulder's scientific resources, facilities and expertise (including CU graduate and undergraduate students) in order to excite students about STEM, expose them to a variety of STEM careers and professionals, and inspire a future generation of scientists and engineers. Science Discovery reaches more than 25,000 students and teachers throughout Colorado.

## 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. CU-Boulder faculty, staff, and students develop a wide variety of outreach programs in partnership with 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 promote engagement and 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.

## 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 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 immediately following the end of spring semester. It provides intense, accelerated courses for those who need academic credits in an abbreviated time period.



## Leadership, Certificate in the Study and Practice of

Starting in spring 2014 students completing the Certificate in the Study and Practice of Leadership may also be qualified to complete the minor in Leadership (see [www.colorado.edu/newtonleadershipchair/leadership-minor](http://www.colorado.edu/newtonleadershipchair/leadership-minor)).

The certificate program in leadership development seeks to expand a student's 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
- 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 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 3.00 GPA in the required course work.

### Leadership Residential Academic Program

For certificate requirements, see [The Leadership RAP Program](#).

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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 3.00 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 3.00 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.





## Leadership Residential Academic Program

The Leadership Residential Academic Program (RAP) in Kittredge Central 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 first year. When students choose their residence hall they are given the option to enroll in one of these programs. Most participants reside at Kittredge Central; however, that RAP will accept commuter students. 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 first 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 and/or a minor in leadership studies.

#### **ELLC Curriculum and Semester Credit Hours**

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 2410 The Dynamics of Privilege, Oppression, and Empowerment in Leadership—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

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. The CLSP curriculum enables students to understand how

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institutions and communities solve problems and learn about the different leadership styles needed to work effectively in each setting. Students also explore ways to work more effectively with others by learning about various cultures and communities. Through learning about their own values and belief systems as well as the values and the belief systems of others, CLSP students build a culturally competent leadership style. 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 and/or a minor in leadership studies.

#### **CLSP Curriculum Semester Credit Hours**

- LDSP 1000 The Foundations of 21st Century Leadership (fall)—3
- LDSP 1571 Topics in Leadership—1
- LDSP 2410 The Dynamics of Privilege, Oppression, and Empowerment in Leadership—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. A limited number of scholarships are available for students with financial need.

## **Certificate Program**

### **Certificate in the Study and Practice of Leadership**

ELLC and CLSP students in the Leadership RAP students who complete 10 credits of approved lower-division courses and 8 credit hours of approved upper-division courses with a 3.00 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**

##### **First Year**

- LDSP 1000 The Foundations of 21st Century Leadership—3
- LDSP 2410 The Dynamics of Privilege, Oppression, and Empowerment in Leadership—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**

- LDSP 4010 Critical Issues in Leadership— 4

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## Library Research

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. For more information, go to the [Courses](#) section and search for Library Research (LIBR).

**Course code for this program is LIBR.**

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## Norlin Scholars Program

Being a Norlin Scholar at CU-Boulder helps students mindfully develop their capacities to the full and prepares them to make a conscious contribution to the world. Students gain self-awareness, balance and confidence; they flex their learning boundaries and get more comfortable with ambiguity and complexity. Our scholars enjoy intellectual camaraderie, establishing close and lasting friendships with other students and teachers. They're encouraged to gain a broad perspective through service experiences, international study, and merging their academic interests with community issues. In addition to the structured components of the program—courses, mentoring, and activities—students informally share music, art, and other talents, having many opportunities to share their own knowledge, experiences, and stories with the group. These skills and activities put students in a strong position for whatever comes next: the job market, graduate and professional schools, or fellowships.

Benefits of being a Norlin Scholar include:

- \$4000 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

Students from all majors, including undecided, can apply as high school seniors for a four-year scholarship or as second year college students for a two-year scholarship. Norlin applicants must apply to CU first, though they need not be an admitted student.

## 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, talents, and majors 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**.

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**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 three new Master's International (MI) programs developed in cooperation with the Peace Corps and with three academic units on the Boulder campus:

- education
- environmental studies
- 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/peacecorps/masters-international-program](http://www.colorado.edu/peacecorps/masters-international-program)

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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 further study at professional schools. Except for prejournalism, CU-Boulder does not offer preprofessional undergraduate majors or degrees. Completion of preprofessional prerequisites does not guarantee 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 further 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 that 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 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.

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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, the "first" and "second" small group meetings, 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, interview workshops, 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 Journalism & Mass Communication Program. Students complete two prerequisite courses while working toward arts and sciences core curriculum requirements. For more information, see [Journalism & Mass Communication](#) in this catalog or visit the program website at [journalism.colorado.edu](http://journalism.colorado.edu).

## Prelaw

Students who plan to apply to law school upon completing their baccalaureate degree do not have to complete any specific course 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 Office. 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 Office in University Club 111 for more information.

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## Presidents Leadership Class

The Presidents Leadership Class (PLC) is a specially designed, top scholar, academic curriculum that focuses on leadership development, personal development, community impact projects, and global initiatives. Skills are developed in interdisciplinary, experiential environments 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 has an Advisory Board 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. Most Presidents Leadership Class students are admitted prior to the beginning of their first year, however, a maximum of 15 spots are reserved for rising sophomores and juniors in a second point of entry. Selection criteria include academic excellence, demonstrated commitment outside of self, demonstrated leadership potential, and uniqueness of contribution to the incoming cohort. Each year, 50 first-year students are enrolled, comprising both Colorado residents and nonresidents. A separate admission application must be obtained from the PLC website and returned each academic year prior to February 15. Applications may be obtained online at [www.presidentsleadershipclass.org/about/applying](http://www.presidentsleadershipclass.org/about/applying) 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 (PRLC). 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

PLC believes that communities, from local to global, are especially in need of agile leaders who are able to tackle problems that: are very complex; are best understood by synthesizing insights from across disciplines; are best addressed by mobilizing diverse participants and resources from across social sectors; require especially ingenious innovation; and finally, demand leadership of exceptional integrity, ethics, and virtue of character.

To cultivate leaders who are prepared to serve their community, PLC provides a variety of academic and experiential opportunities that prepare students to lead according to this leadership process: discover, design, act, and accountability.

PLC provides opportunities by uniting the support of the university, local, and statewide leaders. PLC operates as a "leadership laboratory" in which all students, staff, faculty, and volunteers model and practice the core competencies and demonstrate the character traits that PLC strives to cultivate. The academic curriculum is supplemented by experiential learning and leading, a Wilderness Leadership Experience, and a new Global Inquiry seminar.

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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 Issues in Leadership
- PRLC 2820 Multilevel Issues in Leadership
- PRLC 3810 Global Issues in Leadership
- LDSP 4010 Critical Issues in Leadership: A Capstone Course (required only for Leadership Certificate completion)

## Scholarship Programs and Opportunities

PLC students receive a merit-based scholarship of \$1,000 their first year to over \$12,000 (dependent upon participation) over the course of their four years in PLC. Students must enroll in PRLC course work to maintain their scholarship. PLC students are eligible to apply for Enrichment Fund scholarship dollars each semester after the completion of their first year (maximum \$1,000 per semester; \$3,000 total).

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 (\$3,500 per year, students are nominated and selected by FirstBank board members), the Alvin G. Flanigan Scholarship Fund (annual \$500 minimum awards), the Walker Family Scholarship Fund (annual \$500 minimum awards), the Michael Lee Hoelscher Memorial Scholarship (annual \$2,000 award).

**The course code for this program is PRLC.**

## Certificate Program

### Certificate in the Study and Practice of Leadership

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 [leadershiprap.colorado.edu/certificate-study-practice-leadership/approved-electives](http://leadershiprap.colorado.edu/certificate-study-practice-leadership/approved-electives) 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 3.00 average GPA for all required Leadership Certificate courses.



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## Reserve Officers Training Corps

Enrollment in Reserve Officers 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 NAVR.**

### 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. The unit administrative officer in Boulder (**303-492-3128**) 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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Business

Education

Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

Continuing Education

Leadership, Certificate in the Study and Practice of

Leadership Residential Academic Program

Library Research

Norlin Scholars Program

Peace Corps

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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

Army 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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## 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/admissions/undergraduate/visit](http://www.colorado.edu/admissions/undergraduate/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/admissions/undergraduate/visit](http://www.colorado.edu/admissions/undergraduate/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 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, and other health professions, 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 [advising.colorado.edu](http://advising.colorado.edu) or see Preprofessional Programs in the Other Academic Programs section.

### Music Applicants

Prospective music majors must submit both an Undergraduate Application for Admission to the Office of Admissions, and a College of

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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 [www.colorado.edu/music/admissions](http://www.colorado.edu/music/admissions).

## 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 (CCHÉ) 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, 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 must submit their application to the Office of Admissions. 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 School of Education. 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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- [ALEKS Mathematical Skills Assessment](#)
- [Minimum Academic Preparation Standards \(MAPS\)](#)
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- [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.

### ALEKS Mathematical Skills Assessment

A solid grounding in basic mathematics is assumed for most CU-Boulder introductory science, engineering, business, and social

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science courses. The questions in the ALEKS assessment helps students determine their level of preparation for many introductory courses, specifically so their likelihood of having a successful experience is enhanced. An ALEKS exam score is a prerequisite for many courses. This means a student cannot enroll in one of these courses unless he or she has taken the ALEKS exam and obtained the minimum required score for a particular course. Therefore, it is very important that students take their time and complete the assessment carefully, as it will affect the courses in which they may enroll. Because many colleges preregister students in required courses, it is highly recommended to complete the placement prior to June 1. Waiting to take the exam may make it difficult to get a student's necessary courses.

For further information, visit the Division of Academic Affairs at [www.colorado.edu/academicaffairs/AVCUealeks.html](http://www.colorado.edu/academicaffairs/AVCUealeks.html) or go to the Office of Orientation at [orientation.colorado.edu/sites/default/files/ExplainingALEKSPrereqs\\_Web.pdf](http://orientation.colorado.edu/sites/default/files/ExplainingALEKSPrereqs_Web.pdf).

## Minimum Academic Preparation Standards (MAPS)

Students who graduated from high school in 1988 or later are expected to have completed courses that meet certain minimum academic preparation standards (MAPS) before enrolling at CU-Boulder. Students who attended a non-U.S. high school for two years or more are not subject to MAPS. Any MAPS deficiency will be considered during the admission review process. The MAPS for 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 generally 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.

Also review the [MAPS table](#).

## Advanced Placement

CU-Boulder participates in the Advanced Placement program of the College Board. More than 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**

[aphighered.collegeboard.org](http://aphighered.collegeboard.org)

## 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 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*.

## 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 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 Arts and Sciences

A cumulative college GPA of 2.50 or better in appropriate general education courses is required. Students who complete 60 semester hours of transfer-level work with a cumulative GPA of 2.50 at a 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.

NOTE: 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.

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## Leeds School of Business

A cumulative college GPA of 3.00 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-students/undergraduate-licensure](http://www.colorado.edu/education/prospective-students/undergraduate-licensure) for additional information.

## Program in Environmental Design

A college GPA of 2.75 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 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 with lab and/or college-level chemistry with lab. 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 coursework, 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](#).

## Program in Journalism and Mass Communication

Admission to the Program in Journalism and Mass Communication 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 3.00 as well as a 3.00 average GPA in journalism course prerequisites. Applicants must have completed or be in progress two introductory courses:

- Contemporary Mass Media, or the equivalent at another institution (all majors), AND
- Principles of Advertising, or the equivalent at another institution (advertising applicants only), OR Principles of Journalism, or the equivalent at another institution (broadcast news, broadcast production, media studies, or news-editorial majors).

## College of Music

A college GPA of 2.75 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.

## ALEKS Mathematical Skills Assessment

A solid grounding in basic mathematics is assumed for most CU-Boulder introductory science, engineering, business, and social science courses. The questions in the ALEKS assessment helps students determine their level of preparation for many introductory courses, specifically so their likelihood of having a successful experience is enhanced. An ALEKS exam score is a prerequisite for many courses. This means a student cannot enroll in one of these courses unless he or she has taken the ALEKS exam and obtained the minimum required score for a particular course. Therefore, it is very important that students take their time and complete the assessment carefully, as it will affect the courses in which they may enroll. Because many colleges preregister students in required courses, it is highly recommended to complete the placement prior to June 1. Waiting to take the exam may make it difficult to get a student's necessary courses.

NOTE: ALEKS may be unnecessary if the students are transferring credit for math courses from another accredited institution. Some college level courses at other institutions may meet these prerequisites and some departments may still require ALEKS regardless of AP/IB or transfer credit. For questions, students should consult their academic advisor for their specific situation. Most students have at least one math course as a component of their general education requirements, and most will require completing the ALEKS assessment.

For further information, visit the Division of Academic Affairs at [www.colorado.edu/academicaffairs/AVCUealeks.html](http://www.colorado.edu/academicaffairs/AVCUealeks.html) or go to the Office of Orientation at [orientation.colorado.edu/sites/default/files/ExplainingALEKSPrereqs\\_Web.pdf](http://orientation.colorado.edu/sites/default/files/ExplainingALEKSPrereqs_Web.pdf).

## Minimum Academic Preparation Standards (MAPS)

Effective with students who graduated from high school in spring 1988 or later, CU-Boulder expects all transfer students to have completed courses that meet certain minimum academic preparation standards (MAPS). For MAPS requirements for specific CU-Boulder colleges and schools, click [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. Students who attended a non-U.S. high school for two years or more are not subject to MAPS.

## 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 information is available online at [www.colorado.edu/admissions/undergraduate/apply/transfer/courseequivalency](http://www.colorado.edu/admissions/undergraduate/apply/transfer/courseequivalency), and also through Colorado community college advising offices. This includes 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 information to assure that appropriate courses are taken prior to transfer. Students wishing to enter the Program in Environmental Design 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.*





## 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.

More than 1,600 international students from more than 95 countries study at CU-Boulder. Applications for admission are processed by the Office of Admissions. 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/admissions](http://www.colorado.edu/admissions) for admission information and online application forms.

Assistance after admission is provided by International Student and Scholar Services, located in the Office of International Education ([www.colorado.edu/oie/iss](http://www.colorado.edu/oie/iss)). 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**.

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 meets academic prerequisites.

E-mail [ceadvisor@colorado.edu](mailto:ceadvisor@colorado.edu) or [ssdean@colorado.edu](mailto:ssdean@colorado.edu) for additional information.

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## Other Applicants

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## Readmit Students

CU-Boulder undergraduate degree students who have not attended the Boulder campus for three semesters must submit the undergraduate Application for Readmission to the Office of Admissions. No application fee is required. Students who have attended any other college or university since attending CU-Boulder should submit official transcripts directly from the issuing institution(s) to the Office of Admissions.

Readmit students changing from their previous college or school should note the requested change on the application. Otherwise, the university assumes that students will return to the same field of study, if eligible to do so. Students who request a change in college or school for which they are not eligible must request reconsideration for their previous program.

Former students in the College of Arts and Sciences wishing to return to the college 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.

Continuing undergraduate degree-seeking students who do not attend for three semesters or less (including summer) are automatically eligible to return without having to readmit. This policy includes degree-seeking undergraduates who are only taking classes through Continuing Education. During these semesters of non-enrollment, students' CU-Boulder e-mail and MyCUInfo accounts remain open. To return, students should register for classes during the regular enrollment period for the returning term. Students who received a refund of the confirmation deposit must repay it when returning. Consult the Return Chart and the StayConnected Program information at [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) for important details.

## 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 (**303-492-5148** or [conted.colorado.edu](http://conted.colorado.edu)). Nondegree students may enroll in credit classes through the ACCESS (Available Credit Courses

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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.

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 2.00 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.

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 nondegree 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 Program in Environmental Design 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.
7. 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 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.

## Intrauniversity Transfer Students

Students wishing to change colleges or schools within the CU-Boulder campus follow the Intrauniversity Transfer (IUT) guidelines from the college or school into 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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## 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- (1.70) 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

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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- (1.70)
- 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.

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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 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 [www.colorado.edu/admissions/undergraduate/apply/freshman/credit](http://www.colorado.edu/admissions/undergraduate/apply/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.

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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.*

| <b>Program in Environmental Design</b>   | <b>College of Arts &amp; Sciences / Journalism &amp; Mass Communication Program</b>  | <b>Leeds School of Business</b>  | <b>College of Engineering &amp; Applied Science</b>  | <b>College of Music</b>   |
|--|--|--|--|---------------------------|
| <b>English: 4</b>  | <b>English: 4</b><br>(includes 2 of composition)   | <b>English: 4</b><br>(includes 2 of composition)   | <b>English: 4</b>  | <b>English: 4</b>         |
| <b>Mathematics: 4</b><br>(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><br>(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><br>(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><br>(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><br>(includes physics and/or biology)   | <b>Natural science: 3</b><br>(includes 2 of lab science, 1 of which must be either chemistry or physics)   | <b>Natural science: 3</b><br>(includes 2 of lab science, 1 of which must be either chemistry or physics)   | <b>Natural science: 3</b><br>(includes 2 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; OR 1 of physics AND 1 of chemistry or biology AND 1 of another science) | <b>Natural science: 3</b> |
| <b>Social science: 3</b>   | <b>Social science: 3</b>   | <b>Social science: 3</b>   | <b>Social science: 3</b>   | <b>Social science: 2</b>  |

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|                                   |  |  |   |   |
|-----------------------------------|--|--|---|---|
|                                   | (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 and 1/2 unit of world history) | (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 and 1/2 unit of world history) |   |   |
| <b>Single foreign language: 2</b> | <b>Single foreign language: 3</b>  | <b>Single foreign language: 3</b>  | <b>Single foreign language: 3</b><br>(or 2 units in each of 2 separate foreign languages) | <b>Single foreign language: 2</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: 17</b>   | <b>Total units: 17</b>  | <b>Total units: 17</b>                    |



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## Advanced Placement (AP) Credit

| <b>AP SUBJECT and Examination Title</b>                                    | <b>Exam Score</b> | <b>CU-Boulder Course Equivalent*</b>       | <b>Semester Hours</b> |
|--|-------------------|--|-----------------------|
| <b>ARTS</b>  |                   |  |                       |
| Art History  | 5, 4              | ARTH 1300 and 1400                         | 6                     |
| Studio Art: Drawing Portfolio, General Portfolio, 2-D Design or 3-D Design | 5, 4              | ARTS elective credits                      | 3                     |
| Music Theory   | 5                 | MUSC 1101, 1111, 1121, and 1131            | 6                     |
|  | 4                 | MUSC 1101 and 1121                         | 3                     |
| <b>ENGLISH</b>   |                   |  |                       |
| English Literature and Composition   | 5, 4              | ENGL 1500                                  | 3                     |
| English Language and Composition   | 5                 | WRTG 1250                                  | 3                     |
|  | 4                 | WRTG 1150                                  | 3                     |
| <b>HISTORY &amp; SOCIAL SCIENCE</b>  |                   |  |                       |
| Comparative Government & Politics  | 5, 4              | PSCI 2012                                  | 3                     |
| European History   | 5, 4              | HIST 1020                                  | 3                     |
| Economics: Macroeconomics  | 5, 4              | ECON 2020                                  | 4                     |
| Economics: Microeconomics  | 5, 4              | ECON 2010                                  | 4                     |
| Human Geography  | 5, 4              | GEOG 1992                                  | 3                     |
| Psychology   | 5, 4              | PSYC 1001                                  | 3                     |
| U.S. Government & Politics   | 5, 4              | PSCI 1101                                  | 3                     |
| U.S. History   | 5, 4              | HIST 1025                                  | 3                     |
| World History  | 5, 4              | Determined by department ( <i>Note 3</i> ) | 3                     |

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| <b>MATHEMATICS &amp; COMPUTER SCIENCE</b>                          |         |                                 |    |
|--|---------|---------------------------------|----|
| Calculus AB  | 5, 4    | MATH 1300                       | 5  |
| Calculus BC  | 5, 4    | MATH 1300 and 2300              | 10 |
| Calculus BC (score 3) + AB subscore ( <i>Note 5</i> ) (score 5, 4) | 5, 4, 3 | MATH 1300                       | 5  |
| Computer Science A ( <i>Note 1</i> )                               | 5       | CSCI 1300                       | 4  |
| Statistics   | 5, 4    | MATH 2510                       | 3  |
| <b>SCIENCES</b>  |         |                                 |    |
| Biology  | 5, 4    | EBIO 1210, 1220, 1230, and 1240 | 8  |
| Chemistry ( <i>Note 4</i> )  | 5       | CHEM 1113/1114 and 1133/1134    | 10 |
|  | 4       | CHEM 1113/1114                  | 5  |
| Environmental Science  | 5, 4    | ENVS 1000                       | 4  |
| Physics B ( <i>Note 6</i> )  | 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>WORLD LANGUAGES &amp; CULTURES</b>                              |         |                                 |    |
| Chinese Language and Culture                                       | 5       | CHIN 1020, 2110, and 2120       | 15 |
|  | 4       | CHIN 1020 and 2110              | 10 |
|  | 3       | CHIN 1020                       | 5  |
| French Language and Culture  | 5       | FREN 2110, 2120, and 3050       | 9  |
|  | 4       | FREN 2110 and 2120              | 6  |
|  | 3       | FREN 2110                       | 3  |
| German Language and Culture  | 5       | GRMN 2020 and 3010              | 7  |
|  | 4       | GRMN 2010 and 2020              | 8  |
|  | 3       | GRMN 2010                       | 4  |
| Italian Language and Culture                                       | 5       | ITAL 1020, 2110, and 2120       | 11 |
|  | 4       | ITAL 1020 and 2110              | 8  |
|  | 3       | ITAL 1020                       | 5  |
| Japanese Language and Culture                                      | 5       | JPNS 1020, 2110, and 2120       | 15 |
|  | 4       | JPNS 1020 and 2110              | 10 |
|  | 3       | JPNS 1020                       | 5  |

|  |   |                           |    |
|--|---|---------------------------|----|
| Latin  | 5 | LATN 1024, 2114, 2124     | 11 |
|  | 4 | LATN 1024 and 2114        | 8  |
|  | 3 | LATN 1024                 | 4  |
| Spanish Language and Culture ( <i>Note 2</i> )   | 5 | SPAN 2110, 2120, and 3000 | 11 |
|  | 4 | SPAN 2110 and 2120        | 6  |
|  | 3 | SPAN 2110                 | 3  |
| Spanish Literature and Culture ( <i>Note 2</i> ) | 5 | SPAN 1000 and 3002        | 6  |
|  | 4 | SPAN 1000                 | 3  |

\* 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.

1 Students will need to gain experience with C or C++ before taking further computer science courses.

2 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.

3 Three lower-division credits meeting the historical context core requirement in the College of Arts and Sciences and the Leeds School of Business.

4 Engineering students: CHEM 1113/1114 fulfills departmental requirements in all areas. CHEM 1133/1134 fulfills chemical engineering, chemical and biological engineering, environmental engineering, and computer science requirements.

5 Students taking the Calculus BC exam automatically receive an AB subscore.

6 Does not apply toward degree requirements for students in the College of Engineering and Applied Science.

NOTE: This table was prepared based on spring 2013 exams. Credit awarded is subject to change based on faculty review of spring 2014 exams.

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## International Baccalaureate (IB) Credit

| <b>IB Subject Examination Title</b>       | <b>Exam Level</b> | <b>Exam Score</b> | <b>UCB Course Equivalent*</b>   | <b>Semester Hours</b> |
|---|-------------------|-------------------|---|-----------------------|
| <b>Anthropology</b>                       | Higher            | 4                 | ANTH 2100 and 3 lower-division credits meeting human diversity requirement                                  | 6                     |
| <b>Art</b>                                | Higher            | 4                 | Elective credits (consult faculty with portfolio for further consideration of fine arts course equivalents) | 6                     |
| <b>Biology</b>                            | Higher            | 4                 | EBIO 1210, 1220, 1230, and 1240   | 8                     |
| <b>Business and Management</b>            | Higher            | 4                 | BCOR 1010 and BADM 2999   | 6                     |
| <b>Chemistry</b>                          | Higher            | 5                 | CHEM 1113/1114 and 1133/1134  | 10                    |
|   | Higher            | 4                 | CHEM 1113/1114  | 5                     |
| <b>Chinese A: Language and Literature</b> | Higher            | 4                 | CHIN 3110, 3120   | 10                    |
|   | Standard          | 4                 | CHIN 2110, 2120   | 10                    |
| <b>Dance</b>                              | Higher            | 4                 | Elective credits; performance scores required to determine credit awarded                                   | 1–3                   |
| <b>Design Technology</b>                  | Higher            | 4                 | Elective credits  | 6                     |
| <b>Economics</b>                          | Higher            | 4                 | 3 lower-division ECON credits   | 4                     |
| <b>English A: Literature</b>              | Higher            | 4                 | ENGL 1500   | 3                     |
| <b>English A: Language and Literature</b> | Higher            | 4                 | ENGL 1500   | 3                     |
| <b>French B</b>                           | Higher            | 7                 | FREN 2120 and 2500  | 6                     |
|   | Higher            | 6, 5              | FREN 2110 and 2120  | 6                     |
|   | Higher            | 4                 | FREN 2120   | 3                     |

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|   |          |         |  |    |
|---|----------|---------|--|----|
| <b>French B</b>                                   | Standard | 7       | FREN 2110 and 2120   | 6  |
|   | Standard | 6       | FREN 2110  | 3  |
|   | 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—Rt.1: Europe and the Islamic World</b> | Higher   | 4       | HIST 1010 and 3 lower-division credits meeting historical core requirement         | 6  |
| <b>History—Rt.2: Africa</b>                       | Higher   | 4       | HIST 1228 and 3 lower-division credits meeting historical context core requirement | 6  |
| <b>History—Rt.2: Americas</b>                     | Higher   | 4       | HIST 1025 and 3 lower-division credits meeting historical context core requirement | 6  |
| <b>History—Rt.2: Asia and Oceania</b>             | Higher   | 4       | Two lower-division 3-credit classes meeting historical context core requirement    | 6  |
| <b>History—Rt.2: Europe and the Middle East</b>   | Higher   | 4       | HIST 1020 and 3 lower-division credits meeting historical context core requirement | 6  |
| <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: Language and Literature</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                   | 6,7  | LATN 1024, 2114, 2124   | 12 |
|   | Higher                   | 5    | LATN 1024, 2114   | 8  |
|   | Higher                   | 4    | LATN 1024   | 3  |
| <b>Mathematics</b>                        | Higher<br>AND<br>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> <i>(Note 1)</i>            | Higher                   | 4    | PHYS 2010 and 2020  | 10 |
| <b>Psychology</b>                         | Higher                   | 4    | PSYC 1001 and 3 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: Language and Literature</b> | Higher                   | 4    | SPAN 3000 and 3100  | 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>Swedish A: Language and Literature</b> | Standard                 | 4    | SCAN 3020   | 3  |
| <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.

*1 Does not apply toward degree requirements for students in the College of Engineering and Applied Science.*

NOTE: This table was prepared based on spring 2013 exams. Credit awarded is subject to change based on faculty review of spring 2014 exams.

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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.

## Freshmen Applicants

You can access the CU-Boulder online application or the Common Application for any open term through your MyCUBoulder account. Log in and navigate to the Apply tab to start your application today. The application for future terms becomes available each August.

Students must choose **either** the University of Colorado Boulder application or the Common Application to apply and use **only** that application through to submission. **DO NOT submit both applications as it will delay your admission decision.** CU-Boulder does not prefer one application over the other and all students will be reviewed in the order their application file is completed (application is submitted and all required documents are received and official) regardless of which application is used.

## Spring Freshman Applicants

Spring applications are processed on a rolling basis. The Office of Admissions begins notifying applicants about admission decisions in

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October. Decisions are made approximately six to eight 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 2015 candidates.

### Non-Binding Early Action

Freshman applicants who complete their file by **November 15, 2014**, are guaranteed early action and will receive an admission decision on or before **February 1, 2015**. Students meeting the non-binding, early action 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, 2015**. Early action 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, 2015**.

### Freshman Application Deadline

The freshman application deadline is **January 15, 2015**. Students may begin applying and completing their files in August. All applicants with completed files by **January 15, 2015**, will be notified of their admission decision no later than **April 1, 2015**. Students must, if they choose to attend, confirm their intent to enroll by **May 1, 2015**.

## Transfer Applicants

Full consideration is given to transfer applications completed by the **October 1** deadline for spring admission, or the **March 1** deadline for summer and fall admission. From the time a transfer application is complete, it takes a minimum of six to eight weeks for it to be reviewed. Applications are processed on a rolling basis. Spring notifications will begin going out on October 1 and summer decisions on March 1.

## 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 Fees

### Nonrefundable Application Fee (\$50/\$70 for international students)

#### University of Colorado Boulder Application

Payable online at the time you submit your application or by check or money order (made payable to the University of Colorado) after you submit your application. If submitting a check or money order, include your full legal name and birth date. We recognize that some students may be faced with financial constraints in paying the application fee. Waivers can be granted for documented hardships if you submit an application fee waiver form.

### Common Application

Payable online at the time you submit your application. We recognize that some students may be faced with financial constraints in paying the application fee. Waivers can be granted for documented hardships if you submit an application fee waiver form.

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. All credentials written in languages other than English must be accompanied by a literal certified English translation. Official transcripts must be sent to the Office of Admissions from the issuing institution either electronically ([transcripts@colorado.edu](mailto:transcripts@colorado.edu)) or by mail and must have the appropriate seals and signatures.

## 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. SAT subject test scores are not required. 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

One letter of recommendation will be required. Your full legal name should be included at the top of recommendation letters.

## Optional Documents

Applicants may submit additional letters of recommendation if you wish, however, doing so is optional. Applicants may also choose to submit a résumé or list of cocurricular activities, work experience, leadership positions, and awards.

College of Music applicants must also complete a College of Music application after their admission application has been submitted, provide a letter of reference, and schedule an audition.

## 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 check their status, apply for scholarships and financial aid, and take care of other pre-enrollment university business. Students may apply through MyCUBoulder or through the Common Application.

## 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. Letter of recommendation

## 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. 1**
- 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 ([www.colorado.edu/registrar/](http://www.colorado.edu/registrar/)) 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.

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## Courses

Search by College, Department & Category

**College/School**

**Department**

Search by Course Number

**Subject**

**Number**

### 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](#) | [College of Arts & Sciences](#) | [Writing](#)

### ASTR-1000 (3) The Solar System

Introduction to the night sky, planets, moons, and the life in our solar system. Highlights the latest discoveries from space. For non-science majors. Some lectures may be held at Fiske Planetarium. Offers opportunities for nighttime observations at Sommers-Bausch Observatory. Similar to ASTR 1010, but without lab. 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 (sequence).

[College of Arts & Sciences](#) | [Astrophysical & Planetary Sci](#)

### 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 Res Acad Prgm](#)

### DNCE-1000 (2) Beginning Contemporary Dance Technique

Introduces students to the dynamic capabilities of the body as an articulate means of expression. Presents basic concepts and skills from contemporary dance forms that may include

Afro-modern, floor work, inversion, classical modern and improvisation. Classwork develops efficient alignment, strength, flexibility, coordination, rhythm, dynamics and spatial awareness. No experience necessary. May be repeated up to 4 credit hours.

College of Arts & Sciences Theatre & Dance Nonmajor Technique

## 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

## FARR-1000 (1) Farrant 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. Pass/fail only.

College of Arts & Sciences Farrant Residential Acad Prgm

## 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 Res Acad Prgm

## 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 GT-SS3. 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), Journalism (JOUR) or College of Arts and Sciences Open Option (XXAS) majors only.

College of Arts & Sciences International Affairs

## 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 GT-SS3. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences Invst Community Studies

## 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

## 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 GT-AH3. Approved for arts and

sciences core curriculum: ideals and values.

College of Arts & Sciences | Philosophy

## 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

## 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 GT-AH2. 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 & Portuguese | Spanish

## ENGL-1001 (3) Freshman Writing Seminar

Provides training and practice in writing and critical thinking. Focuses on the writing process, the fundamentals of composition, and the structure of argument. Provides numerous and varied assignments with opportunity for revision. Meets MAPS requirement for English. Approved for arts and sciences core curriculum: lower-division written communication. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) College of Arts and Sciences majors only.

College of Arts & Sciences | English | Undergraduate Writing

## 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. Approved for GT-SC1. 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

## 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 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 (PHNR).

College of Arts & Sciences | Honors

## 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 and Neuroscience | General

## 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 GT-SS3. Approved for arts and sciences core curriculum: contemporary societies.

College of Arts & Sciences | Sociology | General Sociology

## 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. Prerequisites: Requires prerequisite courses of ARTS 1010 and 1020 (all minimum grade C-). Restricted to Studio Arts (AASA or AASF) or Art History (AAAH) majors only.

College of Arts & Sciences | Art & Art History | Painting/Drawing

## 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

## 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

## 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. Pass/fail only.

College of Arts & Sciences | Farrand Residential Acad Prgm

## THTR-1003 (3) Acting 1: Introduction to Acting

Introductory course designed to explore creativity, collaboration, and communication in the craft of acting. Focuses on basic terms and concepts of psychological realism fundamental to the actors' process through solo work and ensemble exercises. Open to majors and non-majors.

College of Arts & Sciences | Theatre & Dance | Performance

## 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 Acad Prgm

## 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 GT-SS3. Approved for arts and sciences core curriculum: ideals and values.

College of Arts & Sciences | Sociology | Deviance and Criminology

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## Courses

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**Number**

### 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 Sciences](#) | [Aerospace Design & System Engr](#)

### CHEN-1000 (3) Creative Technology

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. Fulfills Engineering social science requirements. Approved for arts and sciences core curriculum: natural science.

[College of Engineering & Applied Science](#) | [Chemical & Biological Eng](#)

### 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. Prerequisites: Restricted to students with 0-26 credits (Freshmen) only.

[College of Engineering & Applied Science](#) | [Computer Science](#) | [General Computer Science](#)

### EVEN-1000 (1) Introduction to Environmental Engineering

Introduces first-year students to the environmental engineering program from an academic and a career perspective. Covers air quality, applied ecology, chemical processing, energy, engineering for developing communities, environmental remediation, and water resources and treatment. Includes reading and writing on the history of environmental engineering, major environmental issues, and professional ethics. Prerequisites: Restricted to students with 0-60 units completed. Restricted to Engineering undergraduate students (ENGRU) or Environmental Studies majors (ENVS) or Pre-Engineering Arts & Sciences (PREN) students only.

[College of Engineering & Applied Science](#) | [Environmental Engineering Prog](#)

## COEN-1010 (4) Engineering Explorations Through Physics

Explore the world of engineering through understanding physics concepts, engaging in active learning assignments, and conducting hands-on labs and experiments. Students will analyze product designs and engineering decisions based on the physics surrounding the situation. Prerequisites: Restricted to Engineering Goldshirt (PENG) students only.

College of Engineering & Applied Science | Engineering & Applied Sci Admn

## HUEN-1010 (3) Humanities for Engineers: The Human Quest

Explores a wide variety of challenging and interesting humanistic themes (love, responsibility, ambition, etc.) in many forms (fiction, philosophy, plays, poetry, art, music, etc.). In small discussion-based classes, emphasizes the writing, public speaking and critical thinking skills needed to excel as a professional engineer. Fulfills College of Engineering writing requirement for first-year freshmen only. Prerequisites: Restricted to students with 0-26 (Freshmen) College of Engineering majors only.

College of Engineering & Applied Science | Humanities for Engineers

## ASEN-1022 (3) Materials Science for Aerospace Engineers

Covers prerequisite chemistry topics for materials science and introduces material types, properties and behavior for aerospace engineers. Topics include review of chemistry; atomic bonding; crystals; diffusion; mechanical/thermal properties; phase diagrams; heat treatment; failure mechanisms; materials selection; and a general introduction to modern materials for aerospace engineering applications including composites, nanomaterials and metamaterials. Lab project or tensile testing is included. Prerequisites: Requires prerequisite courses of APPM 1350 or MATH 1300 (minimum grade C). Requires corequisite courses of GEEN 1300 or CSCI 1300 or ECEN 1310. Restricted to Aerospace Engineering (ASEN) majors only.

College of Engineering & Applied Science | Aerospace Engineering Sciences | Structures, Mat, & Struc Dynam

## MCEN-1024 (4) Chemistry for Energy and Materials Science

Covers the basic physical and chemical fundamentals underlying the disciplines of energy and materials, with a focus on topics relevant to your mechanical engineering education. These fundamentals include atomic structure, stoichiometry, the periodic table, chemical bonding, states of matter, thermochemistry, and chemical reactions. Department enforced prereq., one year of high school chemistry or CHEM 1021 (minimum grade C-). Prerequisites: Restricted to Mechanical Engineering or students with a plan of Mechanical Engineering Concurrent Degree or General Engineering Plus students with a MCEN subplan.

College of Engineering & Applied Science | Mechanical Engineering | Materials

## MCEN-1025 (4) Computer-Aided Design and Fabrication

Introduces CAD software and relevant concepts, including orthographic projection, sections, engineering drawing, geometric dimensioning and tolerancing, and an introduction to manufacturing methods. Final design project involves rapid prototyping. Prerequisites: Restricted to Mechanical Engineering (MCEN) or Engineering Physics (EPEN) majors only.

College of Engineering & Applied Science | Mechanical Engineering | Design

## AREN-1027 (3) Engineering Drawing

Introduces engineering drawing including sections and dimensioning, print readings, computer 3D, and building information modeling (BIM). Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) Engineering Physics (EPEN), Architectural (AREN), General Engineering (GEEN) or Civil (CVEN) Engineering majors only.

College of Engineering & Applied Science | Civil, Environ & Arch Eng | 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, Environ & Arch Eng | Miscellaneous

## 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.

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| College of Engineering & Applied Science | Electrical, Computer & Energy Eng | General |
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## 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. Department restriction, honors standing or instructor consent required. Prerequisites: Restricted to College of Engineering majors only.

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| College of Engineering & Applied Science | Engineering & Applied Sci Admn |
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## 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. Prerequisites: Restricted to students with 0-26 units (Freshmen) Mechanical Engineering (MCEN) majors only.

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|--|------------------------|----------------|
| College of Engineering & Applied Science | Mechanical Engineering | Special Topics |
|--|------------------------|----------------|

## CHEN-1211 (4) General Chemistry for Engineers

One-semester lecture and recitation 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 sub-disciplines. Department enforced prereqs., one year of high school chemistry or CHEM 1021 (min. grade C-) and high school algebra. Not recommended for students with grades below B- in CHEM 1021. Credit not granted for this course and CHEM 1113/1114, 1251, or 1351. Prerequisites: Requires corequisite course of CHEM 1221. Restricted to College of Engineering (ENGR) majors only.

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| College of Engineering & Applied Science | Chemical & Biological Eng |
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## 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.

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| College of Engineering & Applied Science | ATLAS |
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## 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.

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| College of Engineering & Applied Science | Computer Science | General Computer Science |
|--|------------------|--------------------------|

## COEN-1236 (1) Precalculus Work Group

Develops and enhances problem solving skills for students enrolled in APPM 1235. Course is conducted in a collaborative learning environment with students working in groups under the guide of a facilitator. Prerequisites: Requires enrollment in corequisite course of APPM 1235.

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| College of Engineering & Applied Science | Engineering & Applied Sci Admn |
|--|--------------------------------|

## 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 Engineering &amp; Applied Science | ATLAS

## 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 &amp; Applied Science | Computer Science | General Computer Science

## 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. Prerequisites: Restricted to Chemical (CHEN) Engineering or Chemical and Biological (CBEN) Engineering majors only.

College of Engineering &amp; Applied Science | Chemical &amp; Biological Eng

## COEN-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. Prerequisites: Requires prerequisite or corequisite course of APPM 1340 or 1345 or 1350 or MATH 1300 (minimum grade C-). Restricted to College of Engineering majors only.

College of Engineering &amp; Applied Science | Engineering &amp; Applied Sci Admn

## 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. This class is intended for students with little to no experience in computing or programming.

College of Engineering &amp; Applied Science | Computer Science | General Computer Science

## ECEN-1310 (4) C and MATLAB Programming for Electrical and Computer Engineers

Introduces fundamental programming concepts with engineering applications using C at a lower level of abstraction and MATLAB at a higher, application-focused level. The course teaches the use of pointers, control flow, and data types. Example engineering applications include signal processing and the numerical computations. The course includes a weekly computer lab session. Recommended prereq., APPM 1350. Prerequisites: Restricted to College of Engineering majors only.

College of Engineering &amp; Applied Science | Electrical, Computer &amp; Energy Eng | General

## 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 &amp; Applied Science | Civil, Environ &amp; Arch Eng | Miscellaneous

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## About the Course Descriptions

The courses listed here are offered on the Boulder campus during the 2014–15 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

**CE/SL**—civic engagement/service learning component

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## Courses

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### 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: College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

### MUSC-1081 (3) Intensive Music Theory

Introduces tools used in notating, performing, creating, and listening to music. Offered fall only. Prerequisites: Requires corequisite course of MUSC 1121. Restricted to College of Music (MUSCU) majors or graduate students only.

College of Music | College of 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 College of Music (MUSCU) majors or graduate students only.

College of Music | College of Music | Theory and Composition

### 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. Prerequisites: Restricted to College of Music (MUSCU) majors or graduate students only.

College of Music | College of Music | Keyboard Musicianship

### 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. Offered spring only. Prerequisites: Requires prerequisite course of MUSC 1101 or 1081 (minimum grade D-). Restricted to College of Music undergraduate students only.

College of Music | College of Music | Theory and Composition

## 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. Department enforced prereq., no prior keyboard experience or instructor consent required. Formerly EMUS 1115. Prerequisites: College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

## 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 College of Music (MUSCU) majors or graduate students only.

College of Music | College of Music | Theory and Composition

## 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. Prerequisites: Requires prerequisite course of MUEL 1145 (minimum grade D-). College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

## 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. Offered spring only. Prerequisites: Requires prerequisite course of MUSC 1121 (minimum grade D-). Restricted to College of Music undergraduate students only.

College of Music | College of Music | Theory and Composition

## 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. Formerly EMUS 1145. Prerequisites: College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

## 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. Prerequisites: Requires prerequisite course of MUEL 1145 (minimum grade D-). College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

## 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 upto 6 total credit hours. Recommended prereq., ability to read music. Formerly EMUS 1184. Prerequisites: College of Music (MUSCU) majors are excluded from this course.

College of Music | Elective Music

## 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. Prerequisites: Restricted to College of Music (MUSCU) undergraduate students only.

College of Music | Elective Music

College of Music | College of Music | Voice

## PMUS-1205 (1) Keyboard-Musicianship 2

Prerequisites: Restricted to College of Music (MUSCU) undergraduate students only.

College of Music | College of Music | Keyboard Musicianship

## 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

## EMUS-1267 (1) Choirs/Festival

College of Music | Music Ensembles

## EMUS-1277 (1) Court Players

College of Music | Music Ensembles

## EMUS-1287 (1) Marching Band

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

## EMUS-1297 (1) Wind Symphony

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

## EMUS-1307 (1) Band

Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

College of Music | Music Ensembles

## 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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## Courses

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### 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. Because this course does not apply to any degree program, it is not eligible for financial aid.

[Cross College Programs](#) | [Career Services](#)

### 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.

[Cross College Programs](#) | [Leadership Res Acad Prgrm](#)

### 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 Officers Training](#) | [Air Force Aerospace Studies](#)

### NAVR-1010 (2) Introduction to Naval Science

Introduces to the naval profession. Instruction emphasizes the mission, organization, and warfare components of the Navy and Marine Corps. Included is an overview of officer and enlisted ranks and rates, training, and education. Naval customs and courtesies, military justice, leadership and nomenclature are also covered. This course exposes the student to the

professional competencies required to become a naval officer.

Cross College Programs | Reserve Officers Training | Naval Science

## 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 Officers Training | Military Science (U.S. Army)

## 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 Officers Training | Air Force Aerospace Studies

## 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 Officers Training | Military Science (U.S. Army)

## 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.

Cross College Programs | Leadership Res Acad Prgrm

## 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.

Cross College Programs | Leadership Res Acad Prgrm

## 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 | Presidents Leadership Class

## 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 GT-SS3. Approved for arts and sciences core curriculum: contemporary societies.

Cross College Programs | Presidents Leadership Class

## NAVR-1840 (1-3) Independent Study

Cross College Programs | Reserve Officers Training | Naval Science

## 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. Prerequisites: Restricted to students with 0-56 credits (Freshmen or Sophomore) only.

Cross College Programs | Library

## NRLN-2000 (3) Ways of Knowing: Constructions of Knowledge in the Academy and Beyond

Constructions of Knowledge is an interdisciplinary, cross-cultural exploration of different ways of knowing. Students will gain an understanding of their own approaches to knowledge acquisition. Texts will come from various genres: poetry, prose, fiction, scholarly articles and film and performance. The course will explore cultural assumptions about knowledge and learning and look at how gender, race, class and other categories of cultural identity shape and interpret concepts of knowledge. Students will explore intellectual, emotional, spiritual and other types of knowledge. Same as ARSC 2000. Approved for arts and sciences core curriculum: ideals and values.

Cross College Programs | Norlin Scholars

## 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 Officers Training | Air Force Aerospace Studies

## NAVR-2010 (3) Naval Ships Systems

Cross College Programs | Reserve Officers Training | Naval Science

## 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.

Cross College Programs | Reserve Officers Training | Air Force Aerospace Studies

## NAVR-2020 (3) Seapower and Maritime Affairs

Surveys international maritime history and provides a review of American maritime history and policy. Examines American naval involvement in regional and global conflicts, evolution in technology and management, the role of the navies in foreign policy, and the influence of seapower on history. Discusses historical examples and current trends.

Cross College Programs | Reserve Officers Training | Naval Science

## 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 Officers Training | Military Science (U.S. Army)

## 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 Officers Training](#) | [Military Science \(U.S. Army\)](#)

## LDSP-2410 (3) The Dynamics of Privilege, Oppression and Empowerment in Leadership

Examination of the theoretical framework of social identity development, individual-group, cultural - and institutional- power dynamics, and the resulting inequalities formed by systems of privilege and oppression. Application of theory of both how specific forms of privilege and oppression, and their intersections, are manifested in society and how leadership is used to continue these systems or lead to empowerment and liberation. Department enforced coreq., LDSP 2910. Prerequisites: Requires a prerequisite course of LDSP 1000 (minimum grade C).

[Cross College Programs](#) | [Leadership Res Acad Prgrm](#)

## PRLC-2810 (3) Global Issues in Leadership

Examines the challenges of leadership posed by changeand 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](#) | [Presidents Leadership Class](#)

## 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.

[Cross College Programs](#) | [Leadership Res Acad Prgrm](#)

## PRLC-2820 (3) Multilevel Issues 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 LDSP 2820.

[Cross College Programs](#) | [Presidents Leadership Class](#)

## 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.

[Cross College Programs](#) | [Leadership Res Acad Prgrm](#)

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## Courses

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### 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. Prerequisites: Restricted to Program in Journalism & Mass Communication (JOUR) undergraduate students only.

[Journalism & Mass Communication Program](#) | [Pgm Journalism & Mass Comm](#) | [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.

[Journalism & Mass Communication Program](#) | [Pgm Journalism & Mass Comm](#) | [Core Curr & General Electives](#)

### 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. Prerequisites: Restricted to Program in Journalism & Mass Communication (JOUR) undergraduate students only.

[Journalism & Mass Communication Program](#) | [Pgm Journalism & Mass Comm](#) | [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 on an increasingly diverse society. Prerequisites: Restricted to Program in Journalism & Mass Communication (JOUR) or Marketing (MKTG) majors only.

[Journalism & Mass Communication Program](#) | [Pgm Journalism & Mass Comm](#) | [Core Curr & General Electives](#)

## 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. Prerequisites: Restricted to Program in Journalism & Mass Communication (JOUR) undergraduate students only.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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. Prerequisites: Requires prerequisite course of JOUR 2601 or 1002 (minimum grade D-). Restricted to News Editorial (NSED-BSJR or JNED-BSJR) majors and with a minimum of 57 hours taken.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online Journalism |
|---|----------------------------|---------------------------|

## 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. Department enforced: may be limited to Journalism majors. Prerequisites: Restricted to students with 57-180 credits (Juniors or Seniors).

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online Journalism |
|---|----------------------------|---------------------------|

## 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. Prerequisites: Requires a prerequisite course of JOUR 2601 (minimum grade D-). Restricted to Program in Journalism and Mass Communication (JOUR) majors with a minimum of 57 hours taken.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online Journalism |
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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. Prerequisites: Requires prerequisite course of JOUR 2403 (minimum grade D-). Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 45 hours taken.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Advertising & Media Design |
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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. Prerequisites: Requires prerequisite course of JOUR 2403 (minimum grade D-). Restricted to Advertising (ADVT-BSJR or JADV-BSJR) or Marketing (MKTG) majors only with a minimum of 45 hours taken.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Advertising & Media Design |
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## JOUR-3463 (3) Advertising Media

Studies media, markets, and audiences, and their relationships to advertising messages. Prerequisites: Requires prerequisite courses of JOUR 3403 and 3453 (all minimum grade D-). 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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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Advertising & Media Design |
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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. Prerequisites: Requires prerequisite courses of JOUR 3403 and 3453 (all minimum grade D-). 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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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Advertising & Media Design |
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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. Instructor consent required. Prerequisites: Requires prerequisite course of JOUR 3453 (minimum grade D-) and a corequisite course of JOUR 4513.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Advertising & Media Design |
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## JOUR-3552 (3) Editing and Presentation

Explores copy editing, graphic principles and processes, new media technology. Prerequisites: Requires prerequisite course of JOUR 3001 (minimum grade D-). Restricted to students with 57-180 credits (Junior or Senior) News Editorial (NSED-BSJR or JNED-BSJR) majors only.

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|---|----------------------------|---------------------------|
| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online Journalism |
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## JOUR-3604 (3) Radio and Television News

Covers principles and techniques involved in the preparation of news for broadcasting. Prerequisites: Requires prerequisite course of JOUR 2601 (minimum grade D-). 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.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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. Prerequisites: Restricted to Program in Journalism and Mass Communication (JOUR) majors with a minimum of 45 hours taken.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Broadcast Journalism |
|---|----------------------------|----------------------|

## 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. Prerequisites: Requires prerequisite course of JOUR 2601 (minimum grade D-). 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.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Broadcast Journalism |
|---|----------------------------|----------------------|

## 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. Prerequisites: Requires prerequisite course of JOUR 3644 (minimum grade D-). 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.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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. Department enforced: may be limited to majors. Prerequisites: Restricted to students with 57-180 credits (Juniors or Seniors).

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Core Curr & General Electives |
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## JOUR-3902 (1-3) Newspaper Practicum

Gives students the opportunity to participate in newswriting on Campus Press. May be repeated up to 6 total credit hours. Instructor consent required.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online 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.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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. Prerequisites: Requires prerequisite course of JOUR 3001 (minimum grade D-). Restricted to students with 57-180 credits (Junior or Senior) News Editorial (NSED-BSJR or JNED-BSJR) majors only.

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|---|----------------------------|---------------------------|
| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Print & Online 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. Prerequisites: Requires a prerequisite course of JOUR 3102 (minimum grade D-).

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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) Program in Journalism & Mass Communication (JOUR) or International Affairs (IAFS) majors only.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | 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. Prerequisites: Restricted to students with 57-180 credits (Junior or Senior) Program in Journalism & Mass Communication (JOUR) majors only.

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| Journalism & Mass Communication Program | Pgm Journalism & Mass Comm | Core Curr & General Electives |
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## Courses

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### LAWS-5103 (1) Legal Ethics and Professionalism: What Kind of Lawyer Do You Want to Be?

Explores both the kind of law students might decide to practice and the ethical, personal, and professional commitments central to the practice of law. Students who elect to participate in this 1-unit elective are committing to enroll in the fall of the 2nd year in LAWS 6133 for 2 units, focusing on the Model Rules of Professional Conduct. Prerequisites: Restricted to Law (LAWS) students only.

[Law School](#)
[School of Law](#)
[Jurisprudence and Perspective](#)

### 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.

[Law School](#)
[School of 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. Offered Pass/Fail only. Prerequisites: Restricted to Law (LAWS) students only.

[Law School](#)
[School of 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. Prerequisites: Restricted to

Law (LAWS) students only.

Law School School of Law Government and Public

## LAWS-5211 (1) Framing and Legal Narrative

Explores the role of framing effects in constructing a legal argument. From an appellate court opinion to closing statement to a jury to a white paper to a regulatory agency to a public campaign for a ballot proposition, the role of an overarching narrative is critical to effective persuasion. Offered Pass/Fail only. Prerequisites: Restricted to Law (LAWS) students only.

Law School School of Law

## LAWS-5223 (2) Legal Writing II

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.

Law School School of Law Litigation and Procedure

## LAWS-5226 (2) Legal Writing I

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 (LAWS) students only.

Law School School of Law Research and Writing

## 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 (LAWS) students only.

Law School School of Law Litigation and Procedure

## 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.

Law School School of Law Litigation and Procedure

## 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 (LAWS) students only.

Law School School of Law Jurisprudence and Perspective

## 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 (LAWS) students only.

Law School School of Law Government and Public

## 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.

Law School | School of Law | Litigation and Procedure

## 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 (LAWS) students only.

Law School | School of Law | Jurisprudence and Perspective

## 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 (LAWS) students only.

Law School | School of Law | Property

## 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.

Law School | School of Law | Property

## LAWS-5646 (1) Foundations of Legal Research

Moves students from the brief introduction to legal research offered in the first-year legal writing classes to the sort of problem-centered research students will perform starting in the summer after their first year. Provides students with a conceptual understanding of the organization and connectivity of legal authority and with instruction in research methodology at both the project and resource levels. Prerequisites: Restricted to Professional Year 1 Law students only.

Law School | School of Law | Research and Writing

## 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 (LAWS) students only.

Law School | School of Law | Jurisprudence and Perspective

## LAWS-6001 (4) Commercial Transaction

Law School | School of Law

## 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. Prerequisites: Requires prerequisite course of LAWS 6112 (minimum grade D-).

Law School | School of Law | Envir, Nat Resources, Amer Ind

## 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.

Law School | School of Law | Property

## LAWS-6005 (4) Constitutional Law

Studies constitutional structure: judicial review, federalism, separation of powers; and constitutional rights of due process and equal protection.

[Law School](#) | [School of Law](#) | [Government and Public](#)

## 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.

[Law School](#) | [School of Law](#) | [Taxation](#)

## LAWS-6008 (3) The International Legal Order: History and 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 (LAWS) students only.

[Law School](#) | [School of Law](#) | [International](#)

## 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. Prerequisites: Requires prerequisite or corequisite course of LAWS 6353 (minimum grade D-). Restricted to Law (LAWS) students only.

[Law School](#) | [School of Law](#) | [Practice:Clinical & Simulation](#)

## 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.

[Law School](#) | [School of Law](#) | [Business](#)

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## Courses

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### LEAD-1000 (3) Becoming a Leader

The foundation course will begin preparing students to exercise leadership in business, government, and non-profit organizations. It will introduce leadership skills useful in a variety of settings including community and civic activities. The course will help students to improve self awareness, understand multiple theories, importance of moral courage, build analytic and critical thinking skills, and adapt leadership practices to differences in individuals. Students taking this course will not receive credit for MGMT 3030.

Leeds School of Business | Management

### BCOR-1015 (3) The World of Business

Provides an overview of the nature of business in a global economy. In addition to exploring the economic, governmental, social and environmental context in which businesses operate, students will discover how business creates value and takes advantage of opportunities and challenges. Using examples, cases and projects, students will learn about the business functions in an integrated format. Weekly discussion of current events will focus on entrepreneurship, ethics, international business, business and society, and other topics. Formerly BCOR 1010. Prerequisites: Restricted to Business majors with less than 52 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. Credit not granted for this course and MATH 2510.

Prerequisites: Requires prereq course of MATH 1071 or ECON 1078 or MATH 1001 or MATH 1011 or MATH 1150 or MATH 1300 or MATH 3130 or APPM 3310 or APPM 2360 or APPM 2380 (min grade D-) or an ALEKS math score of 61% or greater. Restricted to BUSN, ADVT, or IAFS mjrs only.

Leeds School of Business | Business Core

### BCOR-1025 (3) Data Analysis in Business

Covers sampling concepts, graphical and numerical data summaries, basic probability theory, discrete and continuous probability models, sampling distributions, hypothesis testing, correlation, and both simple and multiple regression analysis. Students learn decision making and solving business problems by using data. Uses statistical features of Excel. Course requirements: laptop with Excel 2010 or newer; clickers. Prerequisites: Requires a prerequisite or corequisite course of MATH 1112 (minimum grade D-). Restricted to Business (BUSN), Advertising (ADVT) or International Affairs (IAFS) majors only.

Leeds School of Business Business Core

## BCOR-1030 (3) Communication Strategy

Helps develop basic communication skills to prepare you for success in the business world. This communication and social science theory-based, skill-building course is framed in Fiske and Cuddy's person perception theory that all people are perceived on two dimensions, competence and warmth. You will learn how to use communication skills to strategically demonstrate those dimensions. Prerequisites: Restricted to Business (BUSN) majors with 0 - 59 units completed.

Leeds School of Business Business Core

## BADM-1250 (1) First Year Seminar for Business

Surveys the entire undergraduate experience and includes topics, issues, and practices that focus on the professional, academic, and leadership growth of a business student. It addresses how to make an effective transition to college and puts students on a path to become well-rounded, engaged and globally-minded. Students will acquire the knowledge and skills to take advantage of all the opportunities and support services available to them while learning to balance the challenges and expectations of their business degree. A sample of the topics covered include: transition to college, dealing with academic rigor, developing a professional tool kit--resume and cover letter preparation, interview skills, project management, working in teams and public speaking--and preparing for the role as a global business leader. Prerequisites: Restricted to Business (BUSN) majors only.

Leeds School of Business Business Administration

## BADM-1260 (2) First-Year Global Experience

In today's world of increased mobility, globally aware students have more choices for employment upon graduation and are immediately ready to contribute in global environments. They are aware of global issues and cultural differences, and their global mindset allows them to recognize good ideas from whenever they might come and new market/product opportunities wherever they might exist. This course is the first step toward the development of a global mindset. It provides a meaningful global experience to first-year business students through an in-depth perspective of a specific country or region outside the United States and a short academic trip to the region. Prerequisites: Restricted to Business (BUSN) majors only.

Leeds School of Business Business Administration

## 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. Prerequisites: Requires prerequisite course of BCOR1020 or MATH2510 or ECON3818 or APPM3570 or 4570 or CHEN3010 or CVEN3227 or IPHY2800 or MATH4510 or PSCI2075 or PSYC3101 (min grade D-). Restricted to mjrs in BUSN, SPPR-PRO, IAFS, or with a WBE subplan.

Leeds School of Business Business Core

## BUSM-2001 (3) Principles of Marketing and Management

Focuses on topics of marketing management and management of the firm, including the means by which firms use the "four P" decision variables of price, place, promotion, and product to create value for consumers and the marketplace. In addition, students learn the skills needed to effectively lead and manage individuals and teams, leading to a more effective and efficient workplace. Prerequisites: Restricted to students with Business Minor (BUSM-MIN) plan and 12 units completed.

Leeds School of Business Business Minor

## BUSM-2002 (3) Financial Accounting and Finance

Focuses on the development and interpretation of companies' external financial reports. Emphasizes the concepts and skills needed to make sound financial decisions. Topics include financial statement development, statement analysis, working capital management, time value of money, sources of financial capital, cost and value of bonds and stocks, and capital budgeting or project analysis. Prerequisites: Restricted to students with Business Minor (BUSM-MIN) plan and 12 units completed.

Leeds School of Business Business Minor

## BADM-2010 (1) Excel Lab

Teaches beginner to intermediate level Excel skills, emphasizing efficient use of Excel to make sense of substantial data sets. The course is designed to increase students' proficiency with Excel through a series of hands-on workshops. The workshops have a business problem solving orientation and use real data from Leeds' corporate partners. The workshops emphasize the most important skills that employers value. Prerequisites: Restricted to Business (BUSN) majors only.

Leeds School of Business | Business Administration

## BADM-2050 (3) Honors/Special Topics

Variable topics in business, drawing from a variety of disciplines. Department enforced requirement, 3.50 minimum cumulative GPA.

Leeds School of Business | Business Administration

## 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. Prerequisites: Requires prereq course of BCOR2000 and BCOR1020 and MATH2510 or 4510 or ECON3818 or APPM3570 or 4570 or CHEN3010 or CVEN3227 or IPHY2800 or PSCI2075 or PSYC3101 (min grade D-). Restricted to BUSN, IAFS, w/WBE subplan and 26-180 units completed.

Leeds School of Business | Business Core

## 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. Prerequisites: Restricted to Business (BUSN) or SPPR-PRO majors, or students with a subplan of WBE only and 26-180 units completed.

Leeds School of Business | Business Core

## 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. Prerequisites: Requires prereq course of BCOR1020 or MATH2510 or 4510 or ECON3818 or APPM3570 or 4570 or CHEN3010 or CVEN3227 or IPHY2800 or PSCI2075 or PSYC3101 (min grade D-). Rstr to BUSN, SPPR-PRO, IAFS, or ADVT majors, students w/WBE subplan and 26-180 units.

Leeds School of Business | Business Core

## BCOR-2500 (3) Introduction to Operations and Information Management

Introduces the processes and information needed to create products and service in a business organization. Explores the importance of managing the transformation of inputs (materials, labor and capital) into outputs (products and services) and how the availability of the right information, at the right time, in the right hands, is critical to making better decisions later. Prerequisites: Requires prerequisite course of BCOR 1020 or MATH 2510 or 4510 or ECON 3818 or APPM 3570 or 4570 or CHEN 3010 or CVEN 3227 or IPHY 2800 or PSCI 2075 or PSYC 3101 (minimum grade D-). Restricted to Business majors with 13-180 units completed.

Leeds School of Business | Business Core

## INBU-2800 (3) Special Topics

Variable topics in international business drawing from a variety of business disciplines, industry trends and best practices. Prerequisites: Restricted to Leeds School of Business majors only.

Leeds School of Business | International Business

## FNCE-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. Credit not granted for this course and ACCT 2820.

Leeds School of Business | Finance

## 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. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) only.

Leeds School of Business | Business Administration

## BADM-2900 (1-3) Independent Study

Department consent and departmental form required. Prerequisites: Restricted to Business (BUSN) majors only.

Leeds School of Business | Business Administration

## 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. Prerequisites: Restricted to Business (BUSN) or Spanish (SPPR) majors or students with a subplan of WBE, and 52-180 units completed.

Leeds School of Business | Business Core

## 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. Prerequisites: Requires prerequisite course of BCOR 2200 (minimum grade D-). Restricted to Business majors with 52-180 units completed.

Leeds School of Business | Real Estate

## BUSM-3001 (3) Managing Innovation in Organizations

Examines the organizational structures that support innovation and organizational change. Creativity and innovation are becoming critical competitive advantages, yet over forty percent of the new products that are launched each year fail in the marketplace. This course focuses on the role of training and teamwork in organizations and the tools needed during new product development to improve success. Prerequisites: Requires prerequisite courses of BUSM 2001 and 2002 (minimum grade D-). Restricted to students with Business Minor (BUSM-MIN) plan.

Leeds School of Business | Business Minor

## BUSM-3002 (3) Business and Financial Analytics

Focuses on the use of quantitative tools to interpret and solve important problems in business and finance. Makes extensive use of spreadsheet modeling, analysis, and minicases to present material. Targeted at students with an interest in quantitative methods and modeling. Prerequisites: Requires prerequisite courses of BUSM 2001 and 2002 (minimum grade D-). Restricted to students with Business Minor (BUSM-MIN) plan.

Leeds School of Business | Business Minor

## BUSM-3003 (3) New Venture Creation: Intro to Entrepreneurship

Introduces students to the multiple facets of entrepreneurship including the entrepreneurial process and way of thinking. Venture creation involves many key areas including ideation to opportunity recognition to opportunity evaluation to venture planning to exit. This course will focus on the ideation and opportunity recognition and evaluation areas of venture creation, utilizing tactics such as rapid prototyping and design thinking. Prerequisites: Requires prerequisite courses of BUSM 2001 and 2002 (minimum grade D-). Restricted to students with Business Minor (BUSM-MIN) plan.

Leeds School of Business | Business Minor

Leeds School of Business | Business Minor

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## Courses

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### ENVD-1001 (1) ENVD First-Year Seminar

Transitions first-year ENVD students into college through the process of discovering their path to educational success. Provide opportunities to facilitate learning through peer support groups and curricular integration with the ENVD core classes. Prerequisites: Restricted to Environmental Design (ENVD) major or minor students only.

[Program in Environmental Design](#)
[Environmental Design](#)
[Social Factors](#)

### 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. Department enforced coreqs., ENVD 1052 and 2001. Prerequisites: Restricted to Program in Environmental Design major or minor students only.

[Program in Environmental Design](#)
[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. Prerequisites: Restricted to non-Program in Environmental Design major or minor students only.

[Program in Environmental Design](#)
[Environmental Design](#)
[History and Theory](#)

### ENVD-1032 (3) Urban Land in Peril

[Program in Environmental Design](#)
[Environmental Design](#)
[Methods and Techniques](#)

### 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. Department enforced coreqs., ENVD 1004 and 2001. Prerequisites: Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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. Department enforced coreqs., ENVD 1104 and ENVD 2003. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052 and ENVD 2001 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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. Department enforced coreqs., ENVD 1102 and ENVD 2003. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052 and ENVD 2001 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | History and Theory

## 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. Department enforced coreqs., ENVD 1004 and 1052. Prerequisites: Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Social Factors

## 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. Open to nonmajors on a space available basis. Prerequisites: Requires prerequisite course of ENVD 1004 (minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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. Department enforced coreqs., ENVD 1102 and ENVD 1104. Prerequisites: Requires prerequisite courses of ENVD 1004, ENVD 1052 and ENVD 2001 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Physical Factors

## 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 Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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. Prerequisites: Requires prerequisite course of ENVD 2002 (minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Studios

## 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. Prerequisites: Requires prerequisite course of ENVD 2002 (minimum grade C-).

Program in Environmental Design | Environmental Design | Studios

## ENVD-2120 (6) Environmental Design Studio 1

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. Department enforced coreqs., ENVD 3115 and ARCH 3114. Prerequisites: Requires prerequisite courses of ENVD 1102, ENVD 1104 and ENVD 2003 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Studios

## ENVD-2130 (6) Environmental Design Studio 2

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. Department enforced coreqs., ENVD 3003 and ENVD 3004. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3115 and ARCH 3114 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Studios

## 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 Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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 Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Social Factors

## 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.

Program in Environmental Design | Environmental Design | Methods and Techniques

## 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. Department enforced coreqs., ENVD 2130 and ENVD 3004. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3115 and ARCH 3114 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

Program in Environmental Design | Environmental Design | Methods and Techniques

[Program in Environmental Design](#) | [Environmental Design](#) | [Physical Factors](#)

## 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. Department enforced coreqs., ENVD 2130 and ENVD 3003. Prerequisites: Requires prerequisite courses of ENVD 2120, ENVD 3115 and ARCH 3114 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

[Program in Environmental Design](#) | [Environmental Design](#) | [History and Theory](#)

## ENVD-3009 (1-6) Special Topics in Environmental Design

Provides a seminar or design lab on special issues in environmental design, including study abroad. May be repeated up to 18 total credit hours. Variable topic class. Recommended prereq., ENVD 1004 and 1052. Prerequisites: Restricted to Environmental Design (ENVD) major or minor students only.

[Program in Environmental Design](#) | [Environmental Design](#) | [Miscellaneous](#)

## 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. Prerequisites: Requires prerequisite course of ENVD 2130 (minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

[Program in Environmental Design](#) | [Environmental Design](#) | [Technology and Practice](#)

## 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 Program in Environmental Design major or minor students only.

[Program in Environmental Design](#) | [Environmental Design](#) | [Methods and Techniques](#)

## 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.

[Program in Environmental Design](#) | [Environmental Design](#) | [Methods and Techniques](#)

## ENVD-3100 (6) Environmental Design Studio 3

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. Department enforced coreqs., ENVD 3122 and ENVD 3124. Prerequisites: Requires prerequisite courses of ENVD 2130, ENVD 3003 and ENVD 3004 (all minimum grade C-). Restricted to Program in Environmental Design major or minor students only.

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**Number**

### EDUC-1580 (3) Energy and Interactions

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. Same as PHYS 1580.

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### 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 five visits to a local elementary school. Prerequisites: Restricted to AMEN, ASTR, BCHM, CHEM, EBIO, GEOL, IPHY, MATH, MCDB, PHYS, GEEN, NRSC, Arts and Sciences Open Option majors, College of Engineering majors, or Education minors only.

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### EDUC-2025 (1) Step 1: Inquiry Approach to Teaching in Informal Settings

Invites science and mathematics students to explore teaching and learning in informal K-12 environments. Introduces theory and practice necessary to design and deliver excellent instruction. Meets weekly on CU campus (1.5 hours/week) and requires participants to work a minimum of five hours with K-12 students at STEM-related special events such as science fairs, after school programs, and science camps. Prerequisites: Restricted to AMEN, ASTR, BCHM, CHEM, EBIO, GEOL, IPHY, MATH, MCDB, PHYS, GEEN, NRSC, Arts and Sciences Open Option majors, College of Engineering majors, or Education minors only.

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### 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 five visits to a local middle school. Department enforced prereq., EDUC 2020. Prerequisites: Restricted to AMEN, ASTR, BCHM, CHEM, EBIO, GEOL, IPHY, MATH, MCDB, PHYS, GEEN, NRSC, Arts and Sciences Open Option majors, College of Engineering majors, or Education minors only.

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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 (1.25 hours/week). Involves additional visits to local schools.

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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. Approved for arts and sciences core curriculum: United States context.

School of Education | School of Education | General Education

## 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 | School of Education | General Education

## 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 | School of Education | General Education

## 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.

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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.

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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 | School of Education | General Education

## EDUC-2919 (3) Renewing Democracy in Communities and Schools

Examines curriculum theory, K-12 reform, and the concepts of citizenship, democracy, power, and diversity through classroom discussion and participation in a school-based Public Achievement program. Students will 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. Approved for arts and sciences core curriculum: human diversity.

School of Education | School of Education | General Education

## 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 | School of Education | General Education

## EDUC-3013 (3) 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 (Sophomores, Juniors or Seniors) only.

School of Education | School of Education | General Education

## 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. Involves brief internship (5 hours outside class) and design projects that integrate these tools to transform in either a classroom or after-school program.

School of Education | School of Education | General Education

## 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. Department enforced prereq., completion of 30 hours of course work. Prerequisites: Restricted to School of Education (EDUC) undergraduates only

School of Education | School of Education | Elementary Education

## 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 | School of Education | General Education

## EDUC-4023 (3) 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. 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.

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| School of Education | School of Education | Secondary Education |
|---------------------|---------------------|---------------------|

## EDUC-4050 (3) Knowing and Learning in Mathematics and Science

Explores current theories of learning in mathematics and science at the secondary level. This course focuses on learners' opportunities to learn mathematics and science in a classroom context from the perspective of different theoretical orientations. Students examine their own assumptions about learning, and 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, GEEN, NRSC, Arts and Sciences Open Option majors, College of Engineering majors, or Education minors only.

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| School of Education | School of 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.

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| School of Education | School of Education | Secondary Education |
|---------------------|---------------------|---------------------|

## EDUC-4112 (3) Educational Psychology and Adolescent Development

Analyzes fundamental psychological concepts underlying classroom instruction, as well as adolescent growth and development. Includes service learning requirement. Same as PSYC 4114. Prerequisites: Restricted to students with 27-180 credits (Sophomores, Juniors or Seniors) only.

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| School of Education | School of 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. Prerequisites: Restricted to EDEN, EDFR, EDGR, EDIT, EDJP, EDLT, EDMA, EDMU, EDSC, EDRU, EDSP, EDSS or MMED majors only.

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| School of Education | School of 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.

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| School of Education | School of 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.

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| School of Education | School of Education | General Education |
|---------------------|---------------------|-------------------|

## 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.

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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.

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### Summer 2014

|                |   |
|----------------|---|
| March 1 (Mon.) | Transfer application deadline for summer and fall sessions                |
| May 1 (Wed.)   | Freshman confirmation deadline  |
| May 12 (Mon.)  | Maymester begins  |
| May 26 (Mon.)  | <b>Memorial Day</b> holiday; campus closed                                |
| May 30 (Fri.)  | Final exams for Maymester   |
| June 2 (Mon.)  | Classes begin for terms A, C, and D; 7:30 a.m.                            |
| July 3 (Thurs) | Final examinations for Term A (first five-week term)                      |
| July 4 (Fri.)  | <b>Independence Day</b> holiday; campus closed                            |
| July 8 (Tues.) | Classes begin for term B (second five-week term)                          |
| July 25 (Fri.) | Final examinations for term C (eight-week term)                           |
| Aug. 8 (Fri.)  | Final examinations for terms B and D (second five-week and 10-week terms) |
| Aug. 9 (Sat.)  | Official graduation date. No summer ceremony.                             |

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- Summer 2014
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| Fall 2014                |   |
|--------------------------|---|
| Aug. 25 (Mon.)           | Classes begin; 8:00 a.m.  |
| Sept. 1 (Mon.)           | <b>Labor Day</b> holiday; campus closed   |
| Oct. 1 (Mon.)            | Freshman and transfer application deadline for spring semester                      |
| TBD (Fri.–Sun.)          | Family Weekend  |
| Nov. 15 (Sat.)           | Freshman non-binding early action application deadline for fall and summer sessions |
| Nov. 24–26 (Mon.–Wed.)   | Fall break; no classes  |
| Nov. 27–28 (Thurs.–Fri.) | <b>Thanksgiving</b> holiday; campus closed  |
| Dec. 12 (Fri.)           | Last day of classes   |
| Dec. 13 (Sat.)           | Reading Day   |
| Dec. 14–18 (Sat.–Thurs.) | Final examinations (begins at 4:30 p.m. Saturday)                                   |
| Dec. 20 (Sat.)           | Commencement  |

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### Spring 2015

|                        |  |
|------------------------|--|
| Jan. 12 (Mon.)         | Classes begin; 8:00 a.m.                                   |
| Jan. 15 (Wed.)         | Freshman application deadline for summer and fall sessions |
| Jan. 19 (Mon.)         | <b>Martin Luther King Jr.</b> holiday; campus closed       |
| Mar. 1 (Mon.)          | Transfer application deadline for fall and summer sessions |
| Mar. 23–27 (Mon.–Fri.) | Spring break (campus closed Friday, March 27)              |
| May 1 (Wed.)           | Freshman confirmation deadline                             |
| May 1 (Fri.)           | Last day of classes  |
| May 2 (Sat.)           | Reading Day  |
| May 3–7 (Sun.–Thurs.)  | Final examinations (begins at 4:30 p.m. Sunday)            |
| May 9 (Sat.)           | Commencement   |

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### Summer 2015

|                 |   |
|-----------------|---|
| May 11 (Mon.)   | Maymester begins  |
| May 25 (Mon.)   | <b>Memorial Day</b> holiday; campus closed                                |
| May 29 (Fri.)   | Final exams for Maymester   |
| June 1 (Mon.)   | Classes begin for terms A, C, and D; 7:30 A.M.                            |
| July 2 (Thurs.) | Final examinations for term A (first five-week term)                      |
| July 3 (Fri.)   | <b>Independence Day</b> holiday; campus closed                            |
| July 7 (Tues.)  | Classes begin for term B (second five-week term)                          |
| July 24 (Fri.)  | Final examinations for term C (eight-week term)                           |
| Aug. 7 (Fri.)   | Final examinations for terms B and D (second five-week and 10-week terms) |
| Aug. 8 (Sat.)   | Official graduation date. No summer ceremony.                             |

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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 (Honors RAP) is the optional residential component of the program. Honors RAP, open to a limited number of qualified freshmen and continuing students, consists of small classes offered in Smith Hall as well as opportunities to participate in extracurricular activities. (There is an additional charge for the Honors Residential Academic Program.)

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.

Freshmen are invited to join the Honors Program based on their high school GPA and test scores. Transfer students must have a 3.30 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 3.30, 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.

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## 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 outstanding student achievement and academic excellence. MASP accepts highly motivated students with strong academic records interested in any of the academic disciplines in the College of Arts and Sciences. It supports these students through mentoring, advising, scholarships, instruction, and community activities. Students are typically from traditionally underrepresented groups or are first-generation college students.

For most members of MASP, support begins the summer before freshman year with the Program for Excellence in Academics and Community (PEAC), a five-week summer bridge program that facilitates the often difficult transition from achieving academic excellence in high school to achieving excellence in the college learning environment. Continuing students interested in MASP can also apply during any year through out MASP affiliate program.

Throughout the academic year MASP students are offered both co-seminars and seminars to strengthen and broaden their understanding of topics they encounter in their courses. Students are encouraged to participate in undergraduate research and/or other scholarly activities such as internships and study abroad programs. MASP students are also required to be involved with our community space and to participate in community activities to help develop a strong sense of group cohesiveness and spirit.

For more information, call MASP 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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# Academic Standards

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- [Academic Ethics](#)
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## Good Academic Standing

Good academic standing in the college requires a cumulative grade point average of 2.00 (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 University 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 2.00 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 2.00 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 2.00 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 2.00 and are dismissed from the university if they do not achieve a minimum 2.00 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 2.00 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 2.00 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

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restore their good standing must maintain a 2.50 GPA or above in each term in continuing education or be dismissed from both day 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 2.00 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 2.00 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.



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### 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 described in the [Transfer Course Work Not Accepted by the University](#) section in Undergraduate Admission.

All courses transferred from junior and community colleges carry lower-division credit. Courses transferred from four-year institutions generally carry credits at the level at which they were taught at the previous institution, but can be subject to review on a course-by-course basis.

### Colorado Student Bill of Rights

In the interests of promoting timely graduation and facilitating the transfer of students among the institutions of higher education in the state of Colorado, the College of Arts and Sciences and the University of Colorado Boulder adhere to the Student Bill of Rights as presented in Colorado Statute 23-1-125.

- 23-1-125. Commission directive - student bill of rights - degree requirements - implementation of core courses - competency test - prior learning**

(1) Student bill of rights. The general assembly hereby finds that students enrolled in public institutions of higher education shall have the following rights:

(a) Students should be able to complete their associate of arts and associate of science degree programs in no more than sixty credit hours or their baccalaureate programs in no more than one hundred twenty credit hours unless there are additional degree requirements recognized by the commission;

(b) A student can sign a two-year or four-year graduation agreement that formalizes a plan for that student to obtain a degree in two or four years, unless there are additional degree requirements recognized by the commission;

(c) Students have a right to clear and concise information concerning which courses must be completed successfully to complete

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their degrees;

(d) Students have a right to know which courses are transferable among the state public two-year and four-year institutions of higher education;

(e) Students, upon completion of core general education courses, regardless of the delivery method, should have those courses satisfy the core course requirements of all Colorado public institutions of higher education;

(f) Students have a right to know if courses from one or more public higher education institutions satisfy the students' degree requirements;

(g) A student's credit for the completion of the core requirements and core courses shall not expire for ten years from the date of initial enrollment and shall be transferrable.

## Statewide Guaranteed Transfer of General Education Courses

As of 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).

As of fall 2006, a student graduating with an associate of arts or an associate of science degree from a Colorado community college and entering the College of Arts and Sciences is exempt from the written communication requirement and the lower-division component of the core curriculum. 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-students](http://www.colorado.edu/artssciences/prospective-students).

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.

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.

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 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

## 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 2014–15 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.

**Preprofessional Advising Program.** 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. The Preprofessional Advising Program provides in-depth individual advising on preparation for these professional programs, provides workshops to prepare students for the application process, and offers guidance in arranging professional internships and shadowing opportunities.

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 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; and
- 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 2.00 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 2.00 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 student should apply online 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 2.00 (C) grade point average in all University of Colorado work and a 2.00 (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 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.

After fall 2010, the Minimum Academic Preparation Standards for mathematics for the College of Arts and Sciences is 4 units including 2 of algebra, 1 of geometry, and 1 of college preparatory math such as trigonometry, analytic geometry, or elementary functions. This applies 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/undergraduates/core\\_curriculum.html](http://www.colorado.edu/ArtsSciences/students/undergraduates/core_curriculum.html).

## 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 2110-5 Intermediate Arabic 1\*
- CHIN 2110-5 Intermediate Chinese 1
- FREN 2110-3 Second-Year French Grammar Review and Reading 1\*
- FRSI 2110-4 Intermediate Farsi 1 (formerly FRSI 2010)
- GREK 3113-3 Intermediate Classical Greek 1 (formerly CLAS 3113)
- 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 (formerly HNDI 2010)
- 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
- LATN 2114-4 Intermediate Latin 1\* (formerly CLASS 2114)

- NORW 2110-4 Second-Year Norwegian Reading and Conversation 1\*
- 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 2010-4 Intermediate Swedish 1-DILS\*

\*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, [highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://highered.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\*
- MATH 1110-3 and 1120-3 The Spirit and Uses of Mathematics 1 and 2
- MATH 1130-3 Mathematics from the Visual Arts
- MATH 1150-4 Precalculus Mathematics\*
- MATH 1310-5 Calculus, Stochastics, and Modeling
- MATH 1410-3 Mathematics for Secondary Educators\*
- MATH 2380-3 Mathematics for the Environment\*
- 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, [highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://highered.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 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 Written Communication in the Sciences
- ENVS 3020-3 Advanced Writing in Environmental Studies
- GEOL 3090-3 Developing Scientific Writing Skills
- HIST 3020-3 Historical Thinking and Writing
- HONR 3220-3 Advanced Honors Writing Workshop\*
- IPHY 3700-3 Scientific Writing in Integrative Physiology
- ITAL 3025-3 Advanced Composition 2: Introduction to Literary Writing
- 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
- SOCY 4010-3 Sociology Capstone Course: Professional Writing
- SPAN 3010-3 Advanced Rhetoric and Composition
- WMST 3800-3 Advanced Writing in Feminist Studies
- 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, [higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

## 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
- 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 Britain
- 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 Introduction to Early Latin American History to 1810
- HIST 1020-3 Western Civilization 2: 16th Century to the Present\*
- HIST 1028-3 Introduction to Modern Latin American History Since 1800 (formerly HIST 1038)
- 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 1218-3 Introduction to Sub-Saharan African History to 1800 (formerly HIST 1208)
- HIST 1228-3 Introduction to Sub-Saharan African History since 1800
- HIST 1308-3 Introduction to Middle Eastern History
- HIST 1518-3 Introduction to South Asian History to 1757
- HIST 1528-3 Introduction to South Asian History since 1757 (formerly HIST 1408)
- HIST 1618-3 Introduction to Chinese History to 1644 (formerly HIST 1608)
- HIST 1628-3 Introduction to Modern Chinese History
- HIST 1708-3 Introduction to Japanese History\*
- HIST/JWST 1818-3 Introduction to Jewish History: Bible to 1492
- HIST/JWST 1828-3 Introduction to Jewish History since 1492 (formerly HIST/JWST/GSLL 1108)
- HIST 2100-3 Revolution in History
- HIST 2112-3 Early Modern Societies (1450–1700)
- HIST 2170-3 History of Christianity 1: To the Reformation
- 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
- IAFS/JWST 3650-3 History of Arab-Israeli Conflict
- 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 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 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/MMST 4769-3 Gender Studies in Early Modern Visual Culture
- ASTR 2000-3 Ancient Astronomies of the World
- CHIN 1012-4 Introduction to Chinese Civilization
- CLAS/MMST 2100-3 Women in Ancient Greece
- CLAS/MMST 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)
- 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)
- FILM 3013-3 Women and Film
- FREN/ITAL 1400-3 Medieval/Renaissance Women Writers in Italy and France\*
- FREN 1950-3 French Feminisms
- 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 HINDI 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
- INVS/EDUC 2919-3 Renewing Democracy in Communities and Schools
- 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 1020-3 Languages of the World
- 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

PSCI 3301/WMST 3300-3 Gender, Sexuality, and U.S. Law

- PSCI 4131 -3 Latinos and the U.S. Political System
- PSYC/WMST 2700-3 Psychology of Contemporary American Women
- RLST 2700-3 American Indian Religious Traditions\*
- 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
- 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
- EDUC 2125-3 History of American Public Education
- ENGL 2115-3 American Frontiers
- 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 Ethnic-American Autobiography (formerly AMST 4500)
- HIST 1015-3 History of the United States to 1865\*

- 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 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

\*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).

**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.

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. 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 The Literature of Ancient Greece: Texts and Contexts
- CLAS 1115-3 Masterpieces of Greek Literature in Translation
- CLAS 1120-3 The Literature of Ancient Rome: Texts and Contexts\*
- COMR 1800-3 Visual Literacy: Images and Ideologies
- DNCE 1017-3 Dance and Popular Culture
- 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 Jewish Literature: Jews Coming of Age
- HONR 2860-3 The Figure of Socrates
- HUMN 1110-3 Introduction to Humanities: Literature 1
- HUMN 1120-3 Introduction to Humanities: Literature 2
- HUMN 1210-3 Introduction to Humanities: Art and Music 1
- HUMN 1220-3 Introduction to Humanities: Art and Music 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\*
- RUSS 2241-3 The Vampire in Literature and the Visual Arts
- 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: Global Theatre Origins\*
- 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, [highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://highered.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 4203-3 Israeli Literature: Exile, Nation, Home
- 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 3260-3 Late 19th and 20th Century Argentine Narrative
- 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). To fulfill the natural science core requirement the lab/field experience courses must be affiliated with a natural science lecture course. 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 (sequence does not include a lab) (ASTR 1000 formerly ASTR 1110)
- 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 1030-3\* and 1041-3 Molecules, Plagues and People, and Fundamentals of Human Genetics\* (corequisite lab MCDB 1043)
- 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, [highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html).

### Nonsequence Courses

- ANTH 3000-3 Primate Behavior

- ANTH 3010-3 The Human Animal
- AREN 2110-3 Thermodynamics
- 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
- ASTR/GEOL 2040-3 The Search for Life in the Universe
- 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
- ENVS 1000-4 Introduction to Environmental Studies
- ENVS/PHYS 3070-3 Energy and the Environment
- ENVS/GEOL 3520-3 Energy and Climate Change: An Interdisciplinary Approach
- 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 3500-3 Earth Resources and the Environment
- GEOL 3720-3 Evolution of Life: The Geological Record
- GEOL 3950-3 Natural Catastrophes and Geologic Hazards
- IPHY 2420-3 Nutrition for Health and Performance
- IPHY 3660-3 The Dynamics of Motor Learning
- MCDB 3150-3 Biology of the Cancer Cell
- MCDB 3330-3 Evolution and Creationism
- PHIL 1400-3 Philosophy and the Sciences\*
- PHIL 3410-3 History of Science: Ancients to Newton
- 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 1043-1 Exploring Genetics Laboratory
- 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 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 sociocultural 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 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)
- 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\*
- IAFS/JWST 4302-3 Justice, Human Rights, and Democracy in Israel
- INVS 3000 (3-4) Innovative Approaches to Contemporary Issues through Service Learning
- 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, [highered.colorado.gov/Academics/Transfers/gtPathways/curriculum.html](http://highered.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 3310-3 The Bible as Literature (formerly ENGL/JWST 3312)
- ENVS/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
- FARR 2820-3 The Future of Spaceship Earth
- 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 1160-3 Introduction to Bioethics
- 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\*
- RUSS 3701-3 Slavic Folk Culture: Ideals and Values in the Contemporary World
- RUSS 4221-3 Cultural Mythologies of Russian Communism
- SCAN 3301-3 Radical Nationalism in Contemporary Northern Europe
- SEWL 2000-3 America, the Environment, and the Global Economy
- 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 statewide guaranteed transfer program can be found at the website of the Colorado Commission on Higher Education, [higher.ed.colorado.gov/Academics/Transfers/gfPathways/curriculum.html](http://higher.ed.colorado.gov/Academics/Transfers/gfPathways/curriculum.html).

## 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- (1.70) 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- (1.70) or higher.
4. Twelve hours of upper-division course work in the major on the CU-Boulder campus.
5. A 2.00 (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 students are advised in the Center for First-Year Students, which 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 45 credit hours (approximately the end of the third semester). 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 first-year 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; Jewish studies; 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 2.00 (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

## 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
- European Union Studies
- Foundations of Western Civilization
- International Media
- Jewish Studies
- Lesbian, Gay, Bisexual, and Transgender Studies
- Medieval and Early Modern Studies
- Middle Eastern and Islamic Studies
- Neurosciences and Behavior
- Peace and Conflict Studies
- South Asian Languages and Civilizations
- 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:

- 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.
- The student completes a minimum of 145 credit hours when both degrees are offered within the College of Arts and Sciences.
- The student completes all requirements for both degrees when the degrees are offered by two different colleges.
- 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).

The student has completed all general education and major requirements of the College of Arts and Sciences.

- 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 undergraduate 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 undergraduate 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 or as part of a graduate degree program 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.

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 date when the final grades are due for that term.



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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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# 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
- ANTH 2100-3 Frontiers of Cultural Anthropology—3
- ANTH 2200-3 Introduction to Archaeology—3
- One upper-division topical course in cultural anthropology—3

#### Arts & Sciences

Policies & Requirements

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Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

#### Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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 requirement:

- 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).

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)).

## Dual Degree Programs

### MBA/MA in 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

- 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
- Molecular, Cellular, and Developmental Biology
- Museum and Field Studies
- Peace and Conflict Studies
- Philosophy
- Physics
- Political Science
- Psychology and Neuroscience
- Religious 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

managing the business aspects of archaeological projects, working in the growing field of corporate cultural anthropology, and ethnography or museum management.

See Dual degrees in [School of Business](#) for details.

[Environmental Design](#)

[Media, Communication and Information](#)

[Law](#)

[Music](#)

[Graduate School](#)

[Other Academic Programs](#)

**University Catalog 2014-2015**

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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 scientists and engineers 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 high 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.

### Mathematical Biosciences

Advances in our ability to quantitatively study biological phenomena have provided a 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.

### Dynamical Systems and Nonlinear Phenomena

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

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

#### Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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, transport and mixing, and the study of nonlinear phenomena arising from the interactions of many interconnected dynamical units. 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)

### Undergraduate Study 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, 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/undergraduates/minor\\_requirements.html](http://www.colorado.edu/artssciences/students/undergraduates/minor_requirements.html).

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

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. For more information on the minor in applied mathematics, see [amath.colorado.edu/cmsms/index.php?page=minor-requirements](http://amath.colorado.edu/cmsms/index.php?page=minor-requirements).

## 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 3.40 or higher, an APPM and MATH GPA of 3.40 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.

## 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 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).

### MS in Applied Mathematics

The MS degree can serve as a steppingstone for any student considering a PhD program at CU-Boulder or elsewhere. However, the MS degree is unique and an important program in its own right. One of the principal advantages is in preparation for teaching or industry, which is the genesis of the required numerical analysis and out-of-department sequences. It is also a flexible program that supports special interest directions.

### 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,

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| Media, Communication and Information |
| Law                                  |
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| Graduate School                      |
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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. Approval of the sequence from the graduate committee chair 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 at [amath.colorado.edu](http://amath.colorado.edu).

## 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).

## Dual Degree Programs

### 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.



# 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. Requirements for the bachelor's in art history are currently under review.

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)

### Bachelor of Arts (Art History)

(39 credit hours in the major)

**Required Courses and Semester Credit Hours**

- Arts & Sciences
- Policies & Requirements
- Programs of Special Interest
- Residential Academic Programs (RAPs)
- Programs of Study
  - Actuarial Studies and Quantitative Finance Certificate Programs
  - Anthropology
  - Applied Mathematics
  - Art and Art History**
  - Asian Languages and Civilizations
  - Asian Studies
  - Astrophysical and Planetary Sciences
  - Atmospheric and Oceanic Sciences
  - Biological Sciences
  - British and Irish Studies
  - Central and East European Studies
  - Chemistry and Biochemistry
  - Classics
  - Cognitive Science Studies
  - Communication
  - Comparative Literature
  - Computer Science
  - Distributed Studies Program
  - Ecology and Evolutionary Biology
  - Economics
  - English
  - Environmental Studies
  - Ethnic Studies

- ARTS 1010 and 1020 Introduction to Studio Art—6
- ARTH 1300 and 1400 World Art Studies 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 Studies 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
- 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)

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

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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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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 Studies 1 and 2—6
- 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 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

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| Law                                  |
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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 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 3.00 and a GPA of 3.60 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 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 by taking ARTH 6929 Theories of Art History 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 3.00.
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 (153 on the verbal).
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)

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.

**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

**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 the student's academic advisor, associate chair, and the Graduate School.

## 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](tel:303-492-0907) or [tuit.class@registrar.colorado.edu](mailto:tuit.class@registrar.colorado.edu)).





## 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

### Bachelor of Arts in 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 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

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

#### Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

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 of the major.

## **Minor Program in Chinese**

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 Department of Asian Languages and

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| Ethnic Studies   |
| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| INVT Community Studies                                 |
| Jewish Studies   |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

Civilizations undergraduate advisor.

## Bachelor of Arts in 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 Advanced Readings in Modern Japanese 1 and 2 or JPNS 4210 and 4220 Contemporary Japanese 1 and 2—6
- 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 Passion: 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

### Japanese Language and Civilization Track

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

**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 in Japanese**

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 Department of 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 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 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 Asian Languages and Civilizations, Language and Literature Track

The concurrent BA/MA degree program in 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 should have completed all MAPS and core requirements by the end of the sophomore year. An application and three letters of recommendation indicating strong potential for advanced intensive study are also required, one of which must be from a full-time member of the Chinese/Japanese faculty; these must be submitted by **September 1** of the junior year. Applications will be reviewed by the graduate faculty in Chinese or Japanese. For specific requirements, please contact the Department of Asian Languages and Civilizations 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.

## Certificate Program

### Certificate in Middle Eastern and Islamic Studies

The region commonly referred to as the Middle East includes over 20 Arabic speaking countries, as well as Iran, Turkey, and Israel, and spans Southwest Asia and North Africa. A culturally, religiously, and linguistically diverse region, the Middle East today is one of the most geopolitically critical regions in the world. It is the birthplace of the three major monotheistic faiths, Judaism, Christianity, and Islam; the home of medieval Islamic civilizations; and home to rich literary, architectural, and religious traditions. Islam, a monotheistic faith that began in the Arabian Peninsula in the 7th century, is today practiced by over one billion people and is diversely expressed through a vast geographic, linguistic, and cultural terrain, from West Africa to East Asia. The Certificate in Middle Eastern and Islamic Studies provides students the opportunity to formally explore the cultural, political, and religious diversity of the Middle East and the Islamic worlds.

Students currently pursuing the requirements of the MEIS Certificate or interested in doing so should complete the Statement of Intent form. Students who have completed the requirements for the MEIS certificate and are graduating in December or May must complete the Program of Study form and the Certificate Completion form and submit them to the office of the certificate director, Haytham Bahoora, 215 Humanities, two months prior to the end of the semester.

### Requirements

The certificate requires a total of 19 credit hours to include both language and content courses.

- One year of either Arabic or Farsi language. Only language courses beginning at the intermediate level (2000 level) will count toward fulfilling certificate credit hour requirements. Advanced Arabic language courses can also fulfill content course requirements. In addition to Arabic or Farsi, students are encouraged to study another Middle Eastern language, such as Hebrew or Turkish (although Turkish is not currently offered at CU, there may be a possibility for interested students to study Turkish through DILS—Direct Independent Language Study).
- Students must complete 9 additional credit hours (three upper-division courses), at least one of which must be a course designated ARAB. These 9 credit hours may be selected from the list of approved content courses and are to be completed with a grade of C- or better.
- As a certificate program with a focus on Islamic studies, at least one of the three content courses must have a specific focus on

Islam and the Islamic world.

- Students should also consult with the Middle Eastern and Islamic Studies Certificate advisor annually and must fulfill the requirements for a BA or BS degree in an established major in a school or college of the CU-Boulder.

For a list of approved courses, see the Department of Asian Languages and Civilizations website [alc.colorado.edu](http://alc.colorado.edu).

## Certificate in South Asian Languages and Civilizations

South Asia—comprising India, Pakistan, Sri Lanka, Bangladesh, Nepal, and Tibet—has emerged as a key center of economic, political, and cultural power in the 21st century. South Asia in ancient times drove the economy of Central and Southeast Asia, exported a cosmopolitan Sanskrit literary culture, and was the spiritual home of Hinduism and Buddhism. South Asia in medieval times was a major hub of global trade and the pride of a wide-ranging Persianate civilization. Its Mughal Empire was far more populous and wealthy than the Ottomans and Safavids combined. South Asia today is home to over 100 officially recognized languages and most of the world's major religious traditions. With some 500 million speakers, Hindi-Urdu is one of the most popular languages in the world, alongside Mandarin, English, and Spanish. Hindi-Urdu boasts thriving contemporary literary and media cultures, and—with Bollywood—the world's largest and most influential film industry.

In the 21st century, international companies and government agencies are searching for employees with language skills in Hindi-Urdu and a broad understanding of South Asia. The Certificate in South Asian Languages and Civilizations is designed to help prepare CU students for these emerging careers.

### Requirements

The certificate requires a total of 19 credit hours to include both language and content courses.

- A fundamental component of the certificate is the study of Hindi-Urdu. Students must complete at least one year of Hindi-Urdu language courses beyond the beginning level (language course hours will count toward the certificate beginning only at level 2010), earning a grade of C or better. No other languages will count towards the certificate.
- Students must complete 9 additional credit hours (three upper-division courses), at least one of which must be a course designated HIND. These 9 credit hours may be selected from the list of approved content courses and are to be completed with a grade of C- or better.
- Students should also consult with the South Asian Languages and Civilizations Certificate advisor annually, and must fulfill the requirements for a BA or BS degree in an established major in a school or college of CU-Boulder.

For a list of approved courses, see the Department of Asian Languages and Civilizations website [alc.colorado.edu](http://alc.colorado.edu).



General Information
  Programs of Study
  Colleges & Schools
  Admission
  Courses

## 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, see Bachelors' Degree below or contact Tim Weston at [weston@colorado.edu](mailto:weston@colorado.edu) or **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 (College of Arts and Sciences 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 (East Asia, South Asia, West Asia); 6 credits minimum, lower division.

#### East Asian Civilization

- CHIN 1012 Introduction to Chinese Civilization (3-4 credits)

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

#### Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

HIST 1618 Introduction to Chinese History to 1644

- HIST 1708 Introduction to Japanese History
- JPNS 1012 Introduction to Japanese Civilization (3-4 credits)
- KREN 1011 Introduction to Korean Civilization
- RLST 2620 Religions of East Asia

### South Asian Civilization

- HIND 1011 Introduction to South Asian Civilization
- HIST 1518 Introduction to South Asian History to 1757
- RLST 2610 Religions of South Asia

### West Asian 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 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

### GEOG (all modern Asian geography courses)

- GEOG 3822 Geography of China
- GEOG 4822 Environment and Development in China
- GEOG 4232 Geography of Tibet

### HIST (all modern Asian history courses)

- HIST 1518 Introduction to South Asian History to 1757
- HIST 1528 Introduction to South Asian History since 1757
- HIST 1628 Introduction to Chinese History to 1664
- HIST 2166 The Vietnam Wars
- HIST 3628 Seminar in Recent Chinese History
- HIST 4166 The War in Vietnam and Its Legacy
- HIST 4328 The Modern Middle East, 1600 to the Present
- 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

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

INVT Community Studies

Jewish Studies

Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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

- 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
- PSCI 4312 Politics and Language

**RLST** (all modern Asian religion courses)

- RLST 3820 Religion in Modern China
- RLST 4250 Topics in Buddhism
- RLST 4650 Islam and the Modern World

**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 English 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 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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

**GEOG** (all Asian geography courses)

- GEOG 3822 Geography of China
- GEOG 4822 Environment and Development in China

**PSCI** (all Asian politics courses)

- PSCI 3072 Government and Politics of Southeast Asia
- PSCI 3102 South Asian Politics
- PSCI 4022 Chinese Foreign Policy
- PSCI 4052 Chinese Politics
- PSCI 4242 Middle Eastern Politics
- PSCI 4312 Politics and Language

**WMST** (all Asian women's studies courses)

- WMST 3220 Women in Islam

**Plus all other Asian social science courses****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. By the first semester of their senior year, students should consult with the faculty advisor in Asian studies about this course.

**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 4200 Advanced Readings in Arabic
- ARAB 4250 Arabic Media
- ARTH 2409 Introduction to Asian Art
- ARTH 3619 The Arts of China
- ARTH 3629 The Arts of Japan
- ASIA 4300 Open Topics: Readings in Asian Literature
- ASIA 4840 Independent Study
- ASIA 4930 Engage Asia: Internship in Asian Studies
- 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 3334 Chinese Narrative Tradition
- 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 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
- HIND 1011 Introduction to South Asian Civilizations
- HIND 2441 Screening India: A History of Bollywood Cinema
- HIND 3400 Special Topics
- 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 1518 Introduction to South Asian History to 1757
- HIST 1528 Introduction to South Asian History since 1757
- HIST 1618 Introduction to Chinese History to 1644
- HIST 1628 Introduction to Chinese History since 1644
- HIST 1708 Introduction to Japanese History
- HIST 1800 introduction to Global History
- HIST 2166 The Vietnam Wars
- HIST 2629 China in World History
- HIST 3328 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 4339 Borderlands of the British Empire
- 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 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 4022 Chinese Foreign Policy
- PSCI 4028 Special Topics: Politics of Southeast Asia
- PSCI 4052 Chinese Politics
- PSCI 4242 Middle Eastern 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.

## Minor Program

A minor program is offered in Asian Studies. Declaration of minor is open to any student enrolled at CU-Boulder, regardless of college or school. For more information see [cas.colorado.edu/content/asian-studies-minor](http://cas.colorado.edu/content/asian-studies-minor).

**University Catalog 2014-2015**

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University of Colorado Boulder

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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 department website at [aps.colorado.edu](http://aps.colorado.edu)).

The **general astronomy track** 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 but not required.

Specific goals for both tracks are to provide:

- both theoretical and practical knowledge of astronomy and astrophysics. 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, as well as data analysis and image processing and numeric 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

#### General Astronomy Track

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**

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

#### **Astrophysical and Planetary Sciences**

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- APPM 1350 and 1360 or MATH 1300 and 2300 Calculus 1 and 2—8-10
- ASTR 1030 and 1040 Accelerated Introductory Astronomy 1 and 2 (or ASTR 1010 and 1020 Introductory Astronomy 1 and 2 with permission)—8
- PHYS 1110, 1120, and 1140 General Physics 1 and 2—9
- 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 and Exploration—3
  - ASTR 2030 Black Holes—3
  - ASTR 2040 Life in the Universe—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.

### **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
- One upper-division course sequence: ASTR 3720 Planets and their Atmospheres and ASTR 3750 Planets, Moons, and Rings;

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

- or ASTR 3730 Astrophysics 1: Stellar and Interstellar and ASTR 3830 Astrophysics 2: Galactic and Extragalactic—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).

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

## 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, regardless of college or school. 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 ASTR 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 2.00 (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)

- ASTR 1030 and 1040 Accelerated Introductory Astronomy 1 and 2 (or ASTR 1010 and 1020 Introductory Astronomy 1 and 2 with permission)—4
- ASTR 2000 Ancient Astronomies of the World—3
- ASTR 2010 Modern Cosmology: Origin and Structure of the Universe—3
- ASTR 2020 Introduction to Space Astronomy—3
- ASTR 2030 Black Holes—3
- ASTR 2040 Life in the Universe—3
- ASTR 2500/ASEN 1400 Gateway to Space—3
- ASTR 2600 Computational Techniques—3
- ASTR 3300 Extraterrestrial Life—3

#### 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—6
- or**
- **Astrophysics Sequence:** ASTR 3730 Stellar and Interstellar and ASTR 3830 Galactic and Extragalactic—6

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
- ASTR 4840 Independent Research—1-8
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics—3

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 solar and space physics.

**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. 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

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 Array (VLA), the Green Bank Telescope (GBT), the Hubble Space Telescope (HST), the Chandra, SWIFT, and XMM X-ray telescopes, the Fermi Gamma-Ray Space Telescope and the National Solar Observatory (NSO). 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 Cassegrain-Coude and 16- and 18-inch Cassegrain telescopes through Sommers-Bausch Observatory, 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. 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 ATOC. 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 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.

## Graduate Interdisciplinary Study

### 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.

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General Information
  Programs of Study
  Colleges & Schools
  Admission
  Courses

## 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.

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.**

### 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**

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

#### **Atmospheric and Oceanic Sciences**

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

- ATOC 1050 Weather and the Atmosphere—3
- ATOC 1060 Our Changing Environment—3
- ATOC/GEOL 3070 Introduction to Oceanography—3
- ATOC 3180 Aviation Meteorology—3
- 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 2.00 (*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.

## 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.

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 PhD students are required to take a total of six ATOC core courses, or their equivalent, from one of the two following ATOC core course tracks:

#### Atmosphere Track (A-Track)

- ATOC 5050 Introduction to Atmospheric Dynamics
- ATOC 5051 Introduction to Physical Oceanography
- ATOC 5060 Dynamics of the Atmosphere
- ATOC 5151 Atmospheric Chemistry
- ATOC 5235 Introduction to Atmospheric Radiative Transfer and Remote Sensing
- ATOC 5600 Physics and Chemistry of Clouds and Aerosols

#### Oceanography Track (O-Track)

- ATOC 5050 Introduction to Atmospheric Dynamics
- ATOC 5051 Introduction to Physical Oceanography

|  |
|--|
| 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                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

- ATOC 5060 Dynamics of the Atmosphere
- ATOC 5200 Biogeochemical Oceanography
- ATOC 5235 Introduction to Atmospheric Radiative Transfer and Remote Sensing

Plus one of the following as the sixth course:

- ATOC/ASEN 5215 Descriptive Physical Oceanography
- ATOC/ASTR 5400 Introduction to Fluid Dynamics
- GEOL 5270 Marine Chemistry and Geochemistry
- GEOL 5430 Paleoceanography and Paleoclimatology
- MCEN 5021 Introduction to Fluid Dynamics

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 a preliminary copy of the dissertation has been accepted for defense by the student's committee, a final examination on the dissertation and related topics is conducted.

## 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.

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

## 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)).

## 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 Paleoclimatology 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).

## Graduate Certificate in 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.

This certificate is 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
- 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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## Chemical Physics

### Doctoral Degree in Chemical Physics

The interdepartmental doctoral program in chemical physics prepares students for research in such interdisciplinary fields as atomic and molecular radiative processes, spectroscopy, laser chemistry and physics, atmospheric chemistry, molecular quantum mechanics, statistical mechanics, kinetics, chemistry and physics of the surface and condensed phase, semiconductors, and nanoscale processes.

Students wishing to pursue the doctoral degree in chemical physics should apply for admission to either the Department of Chemistry and Biochemistry or the Department of Physics.

Entering students take a qualifying examination in the area of their undergraduate major. The comprehensive examination tests their knowledge of both chemistry and physics. Certain requirements associated with the regular doctoral programs in the participating departments will be replaced by requirements in the complementary field; each student's program of course work and research will be individually planned according to the student's special needs.

The program is administered by an interdepartmental committee. For further information, contact the graduate program assistant in either the Department of Chemistry and Biochemistry or the Department of Physics.



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## 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 1113/1114 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

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

#### Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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—12/14
- 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 1113/1114 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 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—8
- 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—12/14
- 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 of the major.

## 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.

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

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.

## Minor Programs

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 1371 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 1371 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 corequisite of PHYS 1120.)—3
- CHEM 4611, Survey of Biochemistry, or both CHEM 4177 and 4731 Biochemistry 1 and 2—3-6

### 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 or chemistry/biochemistry double majors only. A list of these requirements may be obtained from the undergraduate chemistry and biochemistry office.

## 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 section. For information on the doctoral program in chemical physics offered jointly with the Department of Physics, see below. 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 consideration. Either the GRE subject test in chemistry or the test in

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

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biochemistry, cell, and molecular biology is optional, but highly recommended.

## Master's Degree

Students are not admitted for the master's degree but may be transferred to the MS plan in chemistry 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 thesis defense 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; both plans are 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.

## Doctoral Degree in Chemical Physics

Chemical physics is a discipline at the interface between chemistry and physics. Chemical physics applies physical methods and theory to study molecular and collective properties of matter. The focus is on understanding complex phenomena from gas phase molecular dynamics, to nanoscale, mesoscale, and biological phenomena, through model systems and fundamental physical principles.

Students wishing to pursue the doctoral degree in chemical physics should apply for admission to either the Department of Chemistry and Biochemistry or the Department of Physics.

The chemical physics program allows students to strike a balance between core courses and courses that are better suited to address the student's specific research goals and interests. Students must consult with the chemical physics graduate advisors in their parent departments, either chemistry and biochemistry or physics, to plan their formal course work.

After completing an approved curriculum of formal course work, the student advances to candidacy in chemical physics by passing an oral exam.

The program is administered by an interdepartmental committee. For further information, contact the graduate program assistant in either the Department of Chemistry and Biochemistry or the Department of Physics.

## Certificate Program

### Graduate Certificate in Molecular Biophysics

This program introduces 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. It 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.

## Requirements

- 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.
- 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.
- 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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## 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.

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 [classics.colorado.edu/undergraduate](http://classics.colorado.edu/undergraduate) for more information.

**Course codes for this program are CLAS, GREK, and LATN.**

### 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 should designate either Greek or Latin as the primary field of language study. The introductory sequence, 1013-1023 or 1014-1024, of the primary language does not count toward the major. If a student also takes the second language, all credits taken in that language as well as any other Greek and Latin credits above the 1000-level count toward the major. If a student has learned the equivalent of the introductory sequence in the primary language before beginning language study*

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Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

#### Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

at CU and begins language instruction in the department at the 2000-level or above, all credits in both languages immediately count toward the major.

- Electives (classical literature, culture and thought or ancient history, art and archaeology courses listed under Tracks II and III)—6

## 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, 4140, 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 should designate either Greek or Latin as the primary field of language study. The introductory sequence, 1013-1023 or 1014-1024, of the primary language does not count toward the major. If a student also takes the second language, all credits taken in that language as well as any Greek and Latin credits above the 1000-level count toward the major. If a student has learned the equivalent of the introductory sequence in the primary language before beginning language study at CU and begins language instruction in the department at the 2000-level or above, all credits in both languages immediately count toward the major.*

## Track III: History, Art, and Archaeology

### Required Courses and Semester Credit Hours

- 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) —18
- Classical literature, culture, and thought (CLAS 1010, 1030, 1100, 1110, 1115, 1120, 1140, 2020, 2100, 2110, 2610, 3820, 4040, 4110, 4120, 4130, 4140, 4840; HEBR 1030; PHIL 3000)—12
- Greek and/or Latin—6

*Note: Students should designate either Greek or Latin as the primary field of language study. The introductory sequence, 1013-1023 or 1014-1024, of the primary language does not count toward the major. If a student also takes the second language, all credits taken in that language as well as any Greek and Latin credits above the 1000-level count toward the major. If a student has learned the equivalent of the introductory sequence in the primary language before beginning language study at CU and begins language instruction in the department at the 2000-level or above, all credits in both languages immediately count toward the major.*

## 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

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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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A minimum 2.00 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:

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

## **Track I: Greek and/or Latin Language and Literature**

- Greek and/or Latin—12

*Note: Students should designate either Greek or Latin as the primary field of language study. The introductory sequence, GREK 1013-1023 or LATN 1014-1024, of the primary language does not count toward the minor. If a student also takes the second language, all credits taken in that language as well as any other Greek and Latin credits above the 1000-level count toward the minor. If a student has learned the equivalent of the introductory sequence in the primary language before beginning language study at CU and begins language instruction in the department at the 2000-level or above, all credits in both languages immediately count toward the minor.*

- 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, 4140, 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.*

- *Note: Students should designate either Greek or Latin as the primary field of language study. The introductory sequence, GREK 1013-1023 or LATN 1014-1024, of the primary language does not count toward the minor. If a student also takes the second language, all credits taken in that language as well as any Greek and Latin credits above the 1000-level count toward the minor. If a student has learned the equivalent of the introductory sequence in the primary language before beginning language study at CU and begins language instruction in the department at the 2000-level or above, all credits in both languages immediately count toward the minor.*

## **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).

Visit [classics.colorado.edu/graduate-degrees-classics](http://classics.colorado.edu/graduate-degrees-classics).

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

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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.

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.

## Doctoral Degrees in Classics

Candidates for the PhD in classics must meet the following requirements (see [classics.colorado.edu/classics/phd](http://classics.colorado.edu/classics/phd)):

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.

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## Cognitive Science Studies

The **Institute of Cognitive Science** offers academic programs for both graduate and undergraduate students. Cognitive science is the study of human knowledge, of which one aspect is the study of how knowledge is acquired, stored, and represented in the mind, including the mind's underlying biological mechanisms. Another aspect of cognitive science concerns how knowledge is understood, remembered, communicated, and used in the performance of activities, including the acquisition and application of skills and information. This latter aspect provides the practical applications of cognitive science, and thereby ensures a demand for graduates in both academic and industrial markets. Training for graduates in cognitive science prepares students admirably for many of the fields that are targeted as the major growth fields of the 21st century: **telecommunications, information processing, medical analysis, data retrieval, education, and multimedia services.**

The undergraduate program includes courses in the six core departments, with basic courses and two of four possible advanced skill sequences of courses. For more information on undergraduate study, visit [www.colorado.edu/ics/undergraduate-program](http://www.colorado.edu/ics/undergraduate-program).

### Graduate Degree Program(s)

## Graduate Study in Cognitive Sciences

CU graduate students can apply to a certificate program or a combined PhD in conjunction with their home department PhD program. The combined PhD program allows for interdisciplinary study that adds cognitive science or cognitive neuroscience to the PhD program in the student's home department. There are currently two graduate certificate programs: one has a general science focus, the other focuses on human language technology. Undergraduates may also apply for a certificate program. The Cognitive Science Academic Certificate Programs are interdisciplinary programs for majors in the Departments of Psychology; Philosophy; Linguistics; Education; Speech, Language, and Hearing Sciences; Computer Science; and Environmental Design.

For more information, either visit [ICS.colorado.edu](http://ICS.colorado.edu) or call Donna Caccamise at **303-735-3602**.

## 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

### Arts & Sciences

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Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

### Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

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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**, [cogsci@colorado.edu](mailto:cogsci@colorado.edu)

## Certificate Program

These certificate 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.

## Graduate Certificate in Cognitive Science

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.

## Graduate Certificate in Culture, Language, and Social Practice (CLASP)

Designed to complement the MA or PhD curriculum required by a student's home department, this graduate certificate encourages students to build interdisciplinary expertise across departments in the study of language and society. CLASP students acquire a variety of theoretical and methodological approaches to the sociocultural analysis of language. Students can earn the certificate by successfully completing 12 hours of graduate-level coursework: three hours of approved core courses on the subject of language and society; six hours of approved elective courses; and three hours of coursework in either social theory or research methods relevant to the student's academic goals. More information on the application process and program requirements can be found on the CLASP program website at [www.colorado.edu/clasp](http://www.colorado.edu/clasp).

## Graduate Certificate in Human Language Technology (HLT)

The 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).

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious Studies  
 Sociology  
 Spanish and Portuguese  
 Speech, Language, and Hearing Sciences  
 Theatre and Dance  
 Western American Studies  
 Western Civilization Studies  
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## 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.

There are optional programs in which students are encouraged to participate such as study abroad, internships, and graduating with honors.

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 upper division (3000 level or

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Economics

English

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Ethnic Studies

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: anthropology; business; English; ethnic studies; history; journalism and mass communication; linguistics; philosophy; political science; sociology; speech, language, and hearing sciences; and theatre and dance.

The department also encourages participation in optional programs such as study abroad, internships, and graduating with honors.

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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 Geography  
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## Comparative Literature

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, which 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 master's 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 Graduate 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 studies. Students receiving the MA from another institution or in another subject are

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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.

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

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Lesbian, Gay, Bisexual, Transgender, and Queer Studies

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## Computer Science

Computer science is an exciting and challenging field with impact on much of modern life. Computer scientists craft the technologies enabling the digital devices used every day; developing the large-scale software powering business and industry, advancing the computational techniques, and writing the software scientists use to identify and analyze patterns in the behavior of social groups and human behavior in social networks and the applications humanists and linguists use to research language development. Many new applications of computing technology remain to be discovered and 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 are used to store and process data, used in problem-solving, and used to assess the quality of solutions to problems.

Creating software for a variety of users requires understanding how software interacts with the hardware on which it runs. 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.

### Career Possibilities

Computer science graduates from CU-Boulder are engaged in a variety of jobs with organizations worldwide in fields such as communications, finance, publishing, and research. They are software developers, teachers, writers, doctors, lawyers, scientists, military leaders, and entrepreneurs. Many computer science graduates lead highly successful companies that they themselves have founded.

### Facilities, Programs, and Opportunities

The Department of Computer Science supports its own domain ([www.colorado.edu/cs](http://www.colorado.edu/cs)) and a modern computing infrastructure facilitating its research and educational missions. The department has a variety of computing facilities for use by faculty, staff, and students including general purpose computing labs provided by the university, additional instructional labs and administrative computing resources provided by the department, and specialized labs for individual research groups. The variety of computing resources provides students the opportunity to learn about and use cutting-edge equipment and software.

The Undergraduate Research Opportunities Program (UROP) offers students a chance to work alongside a faculty sponsor on original research. Students learn to write proposals, conduct research, pursue creative work, analyze data, and present the results. For more information, call UROP at **303-492-2596** or visit [enrichment.colorado.edu/urop](http://enrichment.colorado.edu/urop).

The department also provides students networking opportunities throughout the year with companies offering paid internships. CU's location near Boulder's tech start-up community, national research labs, and traditional tech companies such as Google, IBM, Oracle, and Microsoft, gives students with computer science skills many employment opportunities while earning their degrees.

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Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

The course code for this program is CSCI.

## Bachelor's Degree Program(s)

### BA in Computer Science

The bachelor of arts in computer science is granted by the College of Arts and Sciences. It may be earned by completing the general requirements of the College of Arts and Sciences, including approximately 46 semester hours of credit in the core curriculum, and the required courses listed below. Credits in the major may also apply toward these core courses. A student may not earn both the BS in computer science and the BA in computer science degrees from CU-Boulder. A student may not earn both the BA in computer science and the minor in computer science from CU-Boulder.

NOTE: In order for the College of Arts and Sciences four-year guarantee to apply, an arts and sciences student would need to have enrolled in the BA in computer science major and have taken Calculus 1 and CSCI 1300 by their second semester.

#### Required Courses and Semester Credit Hours

#### Foundation (all required)

- CSCI 1300 Computer Science 1: Programming—4
- CSCI 2270 Computer Science 2: Data Structures—4
- CSCI 2400 Computer Systems—4 CSCI 2824 Discrete Structures—3

#### Core Courses (choose four courses from below)

- CSCI 3104 Algorithms—4
- CSCI 3155 Programming Languages—4
- CSCI 3202 Artificial Intelligence—3
- CSCI 3287 Database and Information Systems—3
- CSCI 3308 Software Engineering Methods and Tools—3
- CSCI 3434 Theory of Computation—3
- CSCI 3656 Numerical Computation—3
- CSCI 3753 Operating Systems—4
- CSCI 4448 Object Oriented Analysis and Design—3
- CSCI 4839 User Centered Design—3

#### Mathematics

One of the following sequences:

- APPM 1350/APPM 1360—8
- MATH 1300/MATH 2300—10

One of the following courses:

- APPM 3310 Matrix Methods—3
- APPM 4570 Statistical Methods—3
- CSCI 2820 Linear Algebra with Computer Science Applications—3
- MATH 3130 Introduction to Linear Algebra—3
- MATH 3510 Probability and Statistics—3

#### Upper-Division

Three or four additional upper-division courses—12-15

For more information, visit the department in Engineering Center, ECOT 727 or visit [www.colorado.edu/cs](http://www.colorado.edu/cs).

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## Minor in Computer Science

The Department of Computer Science offers a minor in computer science. For more information, visit [www.colorado.edu/cs/bsms-degree/minor](http://www.colorado.edu/cs/bsms-degree/minor).

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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

Ecology seeks to understand the processes that control the abundance and distribution of organisms and how they interact with one another in a changing environment. Evolutionary biology provides a unifying conceptual framework for all of biology, including the characteristics of organisms and biological diversity. Taken together, ecology and evolutionary biology form a fundamental, broad, diverse, and interdisciplinary area of scientific inquiry. Study in both areas is necessary for understanding the complex biological issues of today, including fighting diseases, understanding of the responses of life and humankind to Earth's changing environment, and learning how species develop, thrive, and decline. Also, ecology and evolutionary biology are working toward solving some of the world's most demanding problems, including sustainability and the future of life on earth, human health and welfare, and wise stewardship of our planet. Students majoring in Ecology and Evolutionary Biology (EBIO) apply scientific approaches 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 light of the broad importance of ecology and evolution for fundamental understanding of living systems, the undergraduate EBIO degree emphasizes knowledge and problem-solving in areas 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 and emotion
- molecular evolution and population genetics
- developmental biology and the evolution of development
- conservation biology and management of ecosystems
- the relevance of mathematics, chemistry, and physics to biology
- the development of biological thought
- infectious disease ecology
- landscape and ecosystem ecology
- sustainability and human-nature systems
- energy and biofuels
- Darwinian medicine
- health and population genetics
- genetically engineered organisms

EBIO majors include students who:

- have strong and compelling interests in the natural world and who are interested in making a difference
- are interested in pursuing advanced graduate degrees in science, especially biology
- want careers in the areas of natural resources management, environmental consulting, environmental law, environmental science, science teaching and scientific journalism, among other professions

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### Ecology and Evolutionary Biology

Economics

English

Environmental Studies

- are passionate about making a difference in the lives of others by improving their physical and mental health
- are interested in many different areas of biology, from the molecular to ecosystem levels
- are fascinated with the complexity and diversity of nature

A bachelor of arts (BA) degree in EBIO provides excellent training, education, and experience, preparing students for many successful careers and for admission to and success in graduate study or medical school and other health professions:

- because ecology and evolution are subjects of central importance for understanding the ways all organisms live, grow and survive —everything from microbes to humans
- because the department and its classes provide students a broad learning experience in the biological sciences
- because the department's faculty provide EBIO majors with excellent classes and research opportunities

**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 3630 Parasitology
  - EBIO 3770 Animal Diversity: Vertebrates
  - EBIO 3850 Animal Diversity: Invertebrates
  - EBIO 4100 Mountain Research Station
  - EBIO 4500 Plant Biodiversity and Evolution
  - EBIO 4510 Plant Anatomy and Development
  - EBIO 4520 Plant Systematics
  - EBIO 4660 Insect Biology
  - EBIO 4750 Ornithology
  - EBIO 4760 Mammalogy
- EBIO 4000-level or above (at least 6 credits). \* Possible choices include:
  - EBIO 4030 Limnology
  - EBIO 4060 Landscape Ecology
  - EBIO 4140 Plant Ecology

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| Ethnic Studies   |
| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
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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 4630 Field Techniques

EBIO 4740 Biology of Amphibians and Reptiles

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 hours), MATH 1310 Calculus, Statistics, and Modeling (5 hours) or APPM 1350 Calculus 1 for Engineers (4 hours)
- MATH 2300 Mathematics for the Environment (5 hours) or APPM 1360 Calculus 2 for Engineers (4 hours)

*\* 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 2.00 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.
- 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

Environmental Design

Media, Communication and Information

Law

Music

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- 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 bachelor's (BA) and master's (MA) degree with thesis is offered for highly motivated undergraduate students. The BA/MA program allows students to take advanced courses at an accelerated pace, engage in an independent research project, and obtain both degrees in five years. In addition to preparing graduates for additional graduate study or medical school, the program is expected to position them for employment in areas such as environmental consulting, teaching at the high school or community college level, or by businesses with an environmental or biomedical emphasis. Applications from sophomores and juniors for the BA/MA degree are considered on a competitive basis. 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 both BA and MA degrees, a student must maintain a GPA of 3.00 or better and complete at least 144 credit hours. The BA/MA program requires 24 hours of graduate credit at the 5000-level or above and 4–6 hours of thesis credit. In addition to writing a thesis based on original research, students are examined by their thesis committee in the fifth year on general knowledge in ecology and/or evolutionary biology. The final examination consists of a defense of the thesis before the committee; it should be scheduled by the end of the fifth year.

Students interested in this program are encouraged to consult with the EBIO associate chair for graduate studies 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 EBIO department offers programs leading to the master of arts (MA) and doctor of philosophy (PhD) degrees in a wide variety of biological disciplines ranging from biogeochemistry to community ecology to evolutionary genetics and others (*see description of the undergraduate program above*). Modern laboratory facilities for graduate study are located in the Ramaley 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 student support is available in the form of fellowships, part-time instructorships, teaching assistantships, research assistantships, and research grants.

Admission information is provided on the EBIO website ([ebio.colorado.edu/index.php/graduate-admissions](http://ebio.colorado.edu/index.php/graduate-admissions)). Foreign applications are due by December 1 and U.S. domestic applications by December 31 for consideration for admission during the subsequent academic year. A completed domestic application includes a statement of intent, three letters of recommendation, official transcripts, and scores on the GRE General Test. Applicants are encouraged to communicate with potential faculty sponsors well before the application deadline. Applications for spring semester admission are not accepted. Students are required to have a bachelor's degree in biology or an equivalent.

### MA I Program

The EBIO MA I program (with thesis) is intended to be a two year course of study that prepares students for admission to PhD programs, teaching positions, or a variety of forms of employment as professional biologists. MA I students' studies are focused on a research project culminating in a thesis. Prospective students are urged to consult with faculty advisors to determine whether application for the MA I or PhD program is more 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 in the second semester of the program, and the committee administers in the third semester an examination on general knowledge in ecology and/or evolutionary biology. The final examination consists of the thesis defense, which should be scheduled during the second year for full-time students.

## MA II Program

A non-thesis master's degree is offered through the EBIO department's MA II program for students interested in furthering their knowledge of ecology and/or evolutionary biology but not in graduate training beyond the MA. This program is suitable for secondary school teachers and others whose career choices do not require a research thesis. Applicants are required to attain sponsorship from a faculty member prior to submitting application materials. Applicants are considered on a competitive basis; 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. An examination on general knowledge in ecology and/or evolutionary biology is administered by the advisory committee in the third semester, and this committee may also require a final oral examination.

## PhD Program

The PhD is a research degree, involving the production of a major piece of original research (the dissertation). The program is intended to be a five year course of study that produces graduates who subsequently teach and conduct research at colleges or universities or hold research or leadership positions at other private or government institutions. Applicants are encouraged to communicate directly with potential advisors before applying. Applications are considered on a competitive basis and academic year stipends (teaching or research assistantships) are provided to students in good standing. Students are expected to form a dissertation committee of five faculty members (including one from outside EBIO) after beginning their studies. This committee aids the student in designing a research program and choosing relevant coursework. In addition to the final examination upon completion of the dissertation, the dissertation committee administers an examination (typically in the third semester) on general knowledge in ecology and/or evolutionary biology and a comprehensive examination (typically in the fifth semester) on a written research proposal submitted by the student.

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 dissertation credits must also be taken. PhD students are required to teach for at least one academic year, typically as a teaching assistant for one of the many laboratory courses offered by the department.



General Information
  Programs of Study
  Colleges & Schools
  Admission
  Courses

## 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 with **total credits required for the major of 38-44**

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

#### **Economics (total 32-33)**

- ECON 2010 Principles of Microeconomics and ECON 2020 Principles of Macroeconomics—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, ECON 4848 Applied Econometrics, or ECON 4858 Financial Econometrics—3
- Electives in 4000-level ECON courses—12

#### **Math (total 6-10)**

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

### Economics

English

Environmental Studies

Ethnic Studies

- ECON 1078 Math Tools for Economists 1 and ECON 1088 Math Tools for Economists—6
- MATH 1071 Finite Mathematics and MATH 1081 Calculus for Social Science/Business—6
- MATH 1150 Precalculus and MATH 1300 Analytic Geometry and Calculus—9
- Mathematics at or above the level of MATH 1300 (or APPM 1350) plus any one mathematics course above the level of MATH 1300 (MATH 2380 Probability and Statistics courses not applicable)—6-10

Students who enter the program with just an approved, equivalent calculus course but not ECON 1078, MATH 1071, MATH 1150, or other finite-level/precalculus equivalent must either complete MATH 2300 Calculus 2 (or APPM 1360) for their second required math course or a second quantitative economics course (ECON 4070, 4808, 4818, 4838, 4848, or 4858).

Note that ECON 4818, 4848, and 4858 cannot be used to simultaneously meet this requirement and the major's requirement for ECON 4818, 4848, and 4858.

*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, 4848, or 4858 by the end of the sixth semester.
- Complete at least 12 credit hours of additional upper-division economics credit by the end of the eighth semester.

## 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.

## 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 Principles of Microeconomics and ECON 2020 Principles of 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. ECON 3818 and equivalent substitutes and **not** allowed to count 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 2.00 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 a combined 7 credits for both courses, an additional upper-division elective will be added to the requirements for a minor.

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

Students may elect to take the 3000-level ECON courses that are designed for non-economics majors (e.g., ECON 3403, 3535, 3545, and 3784).

ECON 3070, 3080, and all 4000-level ECON courses 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.

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.

## 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 intermediate-level courses (ECON 3070, 3080, and/or 3818) with a minimum of 3.00 GPA in these courses, and must also have a minimum of 3.00 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 public 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 doctorate. See more information below.

### Doctoral Degree in Economics

**Admission.** An applicant for admission as a regular degree student must:

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

- 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, three-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, and public 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 who fail to pass all three preliminary examinations within two-and-one-half years of beginning the PhD program must exit the

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 with a 3.00 GPA, 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.

## Certificate Program

### Graduate Certificate in Population Studies

For information on this certificate, see [Geography](#).

University Catalog 2014-2015

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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 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)

## Bachelor of Arts 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.

Note: For the Advanced Placement examination in English literature and composition, students will receive credit for ENGL 1500 for an

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

**English**

Environmental Studies

Ethnic Studies

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 2102 Literary Analysis—3
- ENGL 2112 Introduction to Literary Theory—3
- One course from any two of the following: British literature to 1660, British literature after 1660, and American literature—15
- Two courses from: genre, media, and advanced writing—6
- ENGL 4039 Critical Thinking in English Studies—3
- Two elective courses in English—6
- 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 2102 and an English elective for the first semester, and ENGL 2112 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 2102 Literary Analysis—3
- ENGL 2112 Introduction to Literary Theory—3
- One course from any two of the following: British literature to 1660, British literature after 1660, and American literature—6
- One course from genre, media, and advanced writing—3
- ENGL 4039 Critical Thinking in English Studies—3
- Six creative writing workshops taken in progressive order, 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 sequence of creative writing workshops must begin with ENGL 1191 Introduction to Creative Writing and proceed through the 2000-level, 3000-level, and 4000-level workshops.

Students declare the creative writing track when declaring their English major with the help of a student advisor. Students must have completed or be in the process of completing at least 6 hours of writing within the program before being allowed to declare. Students should declare no later than the second semester of their junior year. In order to take a workshop beyond the 2000-level, students who have not declared the creative writing track or the creative writing minor must submit a manuscript to the Department of English prior to registration. Each workshop may be taken three times for credit, except for ENGL 1191. All students completing the creative writing track must take and complete a 4000-level writing workshop. Students may not take two poetry or two fiction workshops in the department in the same semester. Students must satisfy all prerequisites required for a given workshop beyond the 1000-level with a grade of a *B-* or better before moving on to the workshop at the next level.

## 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 or creative writing track, cannot declare a creative writing minor. Students are subject to those minor requirements in effect at the time they formally declare the minor.

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

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 Introduction to Creative Writing. Three hours of transfer workshop credits can be applied with department approval. Students should ideally apply no later than the second semester of their junior year.

Each workshop may be taken three times for credit, except for ENGL 1191. All students completing a creative writing minor must take and complete a 4000-level writing workshop. Students may not take two poetry or two fiction workshops in the department in the same semester. Students must satisfy all prerequisites required for a given workshop beyond the 1000-level with a grade of a *B-* or better before moving on to the workshop at the next level.

## **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 2102, 2112, an English elective, and any 2000-level course for the major. For creative writing track majors, this includes ENGL 2102, 1191, 2112, 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.

## **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. For additional information, visit [teaching licensure](#).

## **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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

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 Hellem's 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).



## Environmental Studies

The interdisciplinary Environmental Studies major is administered through the Environmental Studies Program and draws courses from 16 departments and four colleges on the CU-Boulder campus. The major teaches the integration of science, policy, and values as applied to environmental issues. Students acquire an awareness of the complexity of factors relating to human interaction with the environment. They will become acutely aware that environmental problems have both human and biophysical components, and they gain knowledge of the general principles of human-environmental interaction, global habitability, environmental change, and sustainable human societies.

To complete the ENVS major, students take foundational courses in sciences, policy, ethics, economics, writing, math, an internship or field course, a cornerstone course, and a capstone course. Students take 12 credits of upper-division course work to specialize in an area of interest.

See the program website at [www.colorado.edu/envs/current-students/undergraduate-students/curriculum](http://www.colorado.edu/envs/current-students/undergraduate-students/curriculum) for details of the program requirements and current courses.

**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.

### Required Courses and Semester Credit Hours

#### 1. Natural Sciences Requirements

*Purpose: Understand the scientific process in the natural sciences, understand how this process generates knowledge, and be able to apply the results of natural scientific research to problems and questions as they relate to what is broadly called the environment.*

#### Introductory Course—mandatory:

- ENVS 1000 Introduction to Environmental Studies—4

#### Biology Sequence—complete one sequence and applicable lab(s):

- EBIO 1030 and EBIO 1040 + EBIO 1050 Biology: A Human Approach and lab—7
- EBIO 1210 + EBIO 1230 and EBIO 1220 + EBIO 1240 General Biology and labs—8

#### Chemistry or Physics Course—complete one course and lab, if lab is corequisite:

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

**Environmental Studies**

Ethnic Studies

- CHEM 1011 Environmental Chemistry—3
- CHEM 1113 + CHEM 1114 General Chemistry 1 and lab—5
- PHYS 1110 General Physics—4
- PHYS 2010 General Physics with lab—5

**Earth Science Sequence—complete one sequence and associated lab(s):**

- ATOC 1050 and ATOC 1060 + ATOC 1070 Weather and the Atmosphere/Our Changing Environment: El Niño, Ozone, and Climate and lab—7
- GEOG 1001 and GEOG 1011 Environmental Systems with labs—8
- GEOL 1010 and GEOL 1060 (or GEOL 1020 or GEOL 1040) + GEOL 1030 Introduction to Geology and Global Change: An Earth Science Perspective (or Introduction to Earth History or Geology of Colorado) and lab—7

**Intermediate Natural Science—complete one course:**

- ENVS 2000 Introduction to Applied Ecology for Environmental Studies—4
- ATOC 3600/ENVS 3600/GEOG 3601 Principles of Climate—3
- CVEN/ENVS 3434 Applied Ecology—3
- EBIO 2040 Principles of Ecology with lab—4
- GEOG 3511 Hydrology with lab—4

**2. Social Sciences Requirement**

*Purpose: Develop a familiarity with the drivers of human actions regarding social-ecological systems.*

**Intermediate Social Science—complete one course:**

- ENVS 3030 Topics in Environmental Social Sciences—3
- ENVS 3032 Environment, Media and Society—3
- SOCY 2077 Environment and Society—3

**3. Values Requirements**

*Purpose: Examine the economic drivers and the underlying moral beliefs, personal and social ethics, principles, and theoretical commitments that might be informing environmental discourse and also driving human actions and decisions.*

**Introductory Economics—mandatory:**

- ECON 2010 Principles of Microeconomics—4

**Intermediate Economics—complete one course:**

- ECON 3535 Natural Resource Economics—3
- ECON 3545 Environmental Economics—3

**Ethics—complete one course:**

- ENVS/PHIL 3140 Environmental Ethics—3
- GEOG 3422 Conservation Thought—3
- PSCI 3064 Environmental Political Theory—3

**4. Policy Requirement**

|  |
|--|
| 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                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

*Purpose: Learn to systematically analyze environmental problems and critically assess the ways in which public policies may help to address these problems. Students will learn a basic knowledge of existing environmental laws and policies and the processes through which environmental policies are made and implemented.*

### **Intermediate Policy—complete one course:**

- PSCI 2106 Introduction to Public Policy Analysis—3
- PSCI 2116 Introduction to Environmental Policy—3
- PSCI 3206 The Environment and Public Policy—3

## **5. Math Requirement**

*Purpose: Learn to use mathematical systems as a tool to quantify and understand complex issues and to use mathematical systems to help solve problems.*

### **Choose between Statistics or Calculus 1 and complete one course:**

#### **Statistics**

- EBIO 4410 Biometry—4
- GEOG/GEOL 3023 Statistics for Earth Sciences—4
- MATH 2510 Introduction to Statistics—3
- PSCI 2075 Quantitative Research Methods—3
- PSCI 3105 Designing Social Inquiry: An Introduction to Analyzing Political Phenomena—3
- PSYC 3101 Statistics and Research Methods in Psychology—4
- SOCY 2061 Introduction to Social Statistics—3

#### **Calculus 1**

- APPM 1350 Calculus 1 for Engineers—4
- MATH 1300 Analytic Geometry and Calculus 1—5
- MATH 1310 Calculus, Stochastics, and Modeling—5

## **6. Writing Requirement**

*Purpose: Develop an understanding of rhetorical situations in professional writing and be able to apply critical thinking skills when delivering or receiving information. Learn to frame a problem and develop an idea from knowledge based on research.*

### **Complete one course:**

- ENVS 3020 Advanced Writing in ENVS—3
- EBIO 3940 Argument in Scientific Writing—3

## **7. Application Requirement**

*Purpose: Acquire practical and “hands-on” experience applying knowledge and skills outside the classroom. Improve the ability to integrate the knowledge and skills taught in the ENVS major and emphasize their real-world applications.*

### **Complete one course:**

- ENVS 2100 Topics in Applied Environmental Studies—3
- ENVS 3001 Sustainable Solutions Consulting—3

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- ENVS 3100 Topics in Applied Environmental Studies—3
- ENVS 3103 Mining 4 Corners—3
- ENVS/CVEN 3434 Applied Ecology—3
- ENVS 3930 Internship—3
- EBIO 4090 Coral Reef Ecology—2
- EBIO 4100 Mountain Research Station field course—3
- EBIO/ENVS/MUSM 4795 Museum Field Methods/Zoology and Botany—3
- EVEN 4100 Environmental Sampling and Analysis—3
- GEOL 2700 Introduction to Field Geology—2

## 8. Cornerstone Requirement

*Purpose: A foundation course to synthesize lower-division environmental science, policy, and values courses into a cohesive knowledge base to prepare students for specialization and capstone courses.*

### Complete one course:

- ENVS 3525 Intermediate Environmental Problem Analysis: Topical Cornerstones—3
- ENVS 3621 Energy, Policy, and Society—3

## 9. Specialization Requirement

*Purpose: Allow upper-division students to focus on one aspect of environmental studies to develop a deeper understanding. To explore suggested focus areas and learn how to select courses that align with a student's interests, see the ENVS Guidance Documents at: [www.colorado.edu/envs/current-students/undergraduate-students/curriculum/guidance-documents](http://www.colorado.edu/envs/current-students/undergraduate-students/curriculum/guidance-documents).*

### Complete a minimum of 12 credits from the following list:

- ENVS/EBIO 3040 Conservation Biology—3
- ENVS/PHYS 3070 Energy and the Environment—3
- ENVS/GEOL 3520 Environmental Issues in Geosciences—3
- ENVS 3521 Climate, Politics, and Policy—3
- ENVS/SOCY 4027 Inequality, Democracy, and the Environment—3
- ENVS 4100 Special Topics in Environmental Studies—3
- ENVS 4120 Special Topics in Environmental Studies—4
- ENVS/GEOG 4201 Biometeorology—3
- ATOC 3300/GEOG 3301 Analysis of Climate & Weather Observations—3
- ATOC 3500 Air Chemistry and Pollution—3
- ATOC 4215 Descriptive Physical Oceanography—3
- ATOC 4700 Weather Analysis and Forecasting—3
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics—3
- ATOC 4750 Desert Meteorology and Climate—3
- ATOC 4800 Policy and Climate—3
- CVEN 4404 Water Chemistry—3
- CVEN 4414 Water Chemistry Laboratory—1
- EBIO 3190 Tropical Marine Ecology—3
- EBIO 3270 Ecosystem Ecology—3
- EBIO 4020 Stream Biology—3
- EBIO 4030 Limnology—3
- EBIO 4060 Landscape Ecology—3
- EBIO 4140 Plant Ecology—3
- EBIO/ENVS/GEOL 4160 Introduction to Biogeochemistry—3
- ECON 3403 International Economics and Policy—3

- ECON 3784 Economic Development and Policy—3
- ENVD 4023 Environmental Impact Assessment—3
- GEOG 3053 Cartography: Visualization and Information Design—4
- GEOG 3251 Mountain Geography—3
- GEOG 3351 Biogeography—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/GEOL 4093 Remote Sensing of the Environment —4
- GEOG/GEOL 4241 Principles of Geomorphology—4
- GEOG 4271 The Arctic Climate System—3
- GEOG 4321 Snow Hydrology—3-4
- GEOG 4371 Forest Geography: Principles and Dynamics—3
- GEOG 4501 Water Resources and Water Management of Western US—3
- GEOG 4632 Development Geography—3
- GEOG 4712 Political Geography—3
- GEOG 4732 Population Geography—3
- GEOG 4852 Health and Medical Geography —3
- GEOL 3030 Introduction to Hydrogeology—3
- GEOL 3040 Global Change: The Recent Geological Record—3
- GEOL 3320 Introduction to Geochemistry—3
- GEOL 4060 Oceanography—4
- HIST 4417 Environmental History of North America—3
- PHIL 2140 Environmental Justice—3
- PSCI 3206 The Environment & Public Policy—3
- PSCI 4012 Global Development—3
- RSEI 4150 Energy Policy Project—3
- SOCY 3002 Population and Society—3
- SOCY 4007 Global Human Ecology—3
- SOCY 4117 Food and Society—3

**Additional notes regarding approved ENVS specialization courses:**

1. Topics courses may apply to the ENVS specialization requirement, although offerings will vary semester by semester. The current semester course list includes topics classes.

Visit to see applicable subtopics: [www.colorado.edu/envs/current-students/undergraduate-students/curriculum/current-courses](http://www.colorado.edu/envs/current-students/undergraduate-students/curriculum/current-courses).

2. Topics course numbers that may apply to the ENVS major, depending upon course content, include: ANTH 4020 Explorations in Anthropology; ATOC 4500 Special Topics in Atmospheric and Oceanic Sciences; EBIO 4460 Special Topics; GEOG 4100, 4110, and 4120 Special Topics in Geography; SOCY 4047 Topics in Environment and Society.

**10. Capstone Requirement**

*The capstone requirement provides an opportunity for students to pursue intellectual integration of the multiple scientific disciplines and allows students to demonstrate competence in integrative analysis and problem solving.*

**Complete one course:**

- ENVS 3800 The Art of Research—3
- ENVS 4800 Capstone: Critical Thinking in Environmental Studies—3
- ENVS 4990 Senior Thesis—3
- ATOC 4800 Policy Implications of Climate Controversies—3
- EBIO 4800 Critical Thinking in Biology (includes Conservation Medicine, Ecosystem Management, Land Use Sustainability, Microbial Ecology, Novel Ecosystems, Soil Ecology, Intervention Ecology)—3
- GEOG 4430 Conservation Trends (includes Hazard and Risk Assessment; Food; Landscape, Society, and Meaning)—3

- GEOG 4742 Environment and Peoples—3
- PSCI 4732 Critical Thinking in Development—3

#### **Additional Notes**

1. These major requirements apply to students who declared the major in fall 2013 or later.

## **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 sciences, policy, and values and theory. Particular programs of study are limited only by course offerings and faculty expertise. A Graduate Certificate in Environment, Policy, and Society is also available (*see below*).

For more information, consult the website at [envs.colorado.edu/grad\\_program](http://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 [www.colorado.edu/envs/current-students/graduate-students/degree-programs/masters-degree](http://www.colorado.edu/envs/current-students/graduate-students/degree-programs/masters-degree).

### **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 32 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 [www.colorado.edu/envs/current-students/graduate-students/degree-programs/phd-programs](http://www.colorado.edu/envs/current-students/graduate-students/degree-programs/phd-programs).

### **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 [www.colorado.edu/envs/current-students/graduate-students/degree-programs/dual-degrees/envsbusiness](http://www.colorado.edu/envs/current-students/graduate-students/degree-programs/dual-degrees/envsbusiness).

#### **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 [www.colorado.edu/envs/current-students/graduate-students/degree-programs/dual-degrees/envslaw](http://www.colorado.edu/envs/current-students/graduate-students/degree-programs/dual-degrees/envslaw).

### **Certificate Program**

## Certificate in Energy

This undergraduate certificate program is intended to supplement, not replace, undergraduate students' degree programs. Graduates from this certificate program—regardless of their undergraduate major—will have a strong understanding of energy science and technologies, energy alternatives, energy markets and business, and energy policy. They will be well-prepared to apply their disciplinary knowledge to the energy challenge/ This certificate 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 economics; coupled with electives on energy and environment, journalism, ethics, and other topics, give students the skills and knowledge to tackle society's pressing energy problems. Solving society's energy-related problems is not just a technical challenge. It will require contributions from law, business, humanities, journalism, and other disciplines as well.

In order to earn the certificate, students must apply to and be accepted into the program. The certificate program requires 18 hours of coursework: 9 for core courses, and 9 for electives.

### Required:

- ENVS/PHYS 3070 Energy and the Environment provides an understanding of energy science and technology: resources, units of measurement, physical principles and limits, conversion technologies, and environmental impacts.
- ENVS 3621 Energy Policy and Society provides an understanding of energy politics, policy, and economics: how society makes decisions about energy, what are the policy tools that can influence energy use and how do they work, how stakeholders interact to yield energy policy decisions.
- RSEI 4150 Energy Policy is a projects course, in which students' energy knowledge is applied to a specific energy challenge or problem.

These core courses are followed by electives, which allow students to focus on specific areas that are of interest. These electives are varied, however they all share a focus on energy.

Students must take an additional 9 credits of qualifying electives.

## Graduate Certificate in Environment, Policy, and Society

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 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 Program in Environmental Design, the Leeds School of Business, the College of Engineering and Applied Science, the Journalism and Mass Communication Program, 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 coursework 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 [www.colorado.edu/envs/current-students/graduate-students/environment-policy-and-society-certificate](http://www.colorado.edu/envs/current-students/graduate-students/environment-policy-and-society-certificate).

## Graduate Certificate in Science and Technology Policy

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).



- General Information
- Programs of Study
- Colleges & Schools
- Admission
- Courses

## Ethnic Studies

The field of ethnic studies was born of, and is dedicated to, the struggles for social justice for all people.

The Department of Ethnic Studies at the University of Colorado Boulder draws on this tradition of engaged scholarship to examine how race and the interrelated categories of ethnicity, gender, class, and sexuality impact the lives of people in the United States and around the globe.

Our interdisciplinary department offers an undergraduate major and minor, a doctoral degree, and a graduate certificate in comparative ethnic studies.

Our faculty members engage in a wide variety of research on the cultures, histories, epistemologies, and experiences of African American, Asian American, Chicana/o, and Native American and indigenous peoples in the U.S. and beyond. Their research and teaching address these topics through critical transnational, queer, and comparative perspectives.

### 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 Australia, Bolivia, Cuba, Dominican Republic, Ecuador, Ghana, Japan, Mexico, Morocco, Peru, South Africa, Spain, and Taiwan.

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 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.

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

**Ethnic Studies**

**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 2001 Foundations of Ethnic Studies no later than the fourth 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)****PhD in Comparative Ethnic Studies**

This interdisciplinary program provides students with broad training that enables them to research and analyze the intersectional and relational workings of race, ethnicity, gender, class, and sexuality in national and transnational contexts. It draws theoretically and methodologically in interdisciplinary fields including: ethnic studies, women's and gender studies, cultural studies, literary and film studies, border studies, and American studies, as well as traditional disciplines including anthropology, history, philosophy, and sociology.

In addition, the department offers a 12-credit interdisciplinary Graduate Certificate in Comparative Ethnic Studies (*see below*). The certificate provides specialized training in race/ethnicity and gender studies, Africana studies, Asian American studies, Chicana/o studies, Native American/indigenous studies, comparative ethnic studies, race and sexuality studies, and transnational/hemispheric ethnic studies.

**Ethnic Studies Faculty Involvement in Graduate Studies**

Faculty actively work to recruit African American, native American, Asian American, and Chicana/o students for graduate studies at the

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

INVEST Community Studies

Jewish Studies

Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

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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, native American/indigenous 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.

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# Actuarial Studies and Quantitative Finance Certificate Programs

The Actuarial Studies and Quantitative Finance Certificate Program is an interdisciplinary program provided by the College of Arts and Sciences 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

### Certificate in Actuarial Studies

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 requirement is 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 pass the first actuarial examination (*see also our website below*).

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).

### Certificate in Quantitative Finance

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 2.87 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

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met to earn the certificate. 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 [jerry.madigan@colorado.edu](mailto:jerry.madigan@colorado.edu). Additional information can be found at [www.colorado.edu/asqf](http://www.colorado.edu/asqf).

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## Biological Sciences

Course work and degree programs in the biological sciences are offered through the following departments:

- Ecology and Evolutionary Biology (formerly the Department of Environmental, Population, and Organismic Biology)
- Molecular, Cellular, and Developmental Biology
- Integrative Physiology

Students should refer to program and course descriptions listed for each department.

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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 research materials for dissertation research, and offers travel fellowships for graduate students.

For more information, contact the Center for British and Irish Studies at [katherine.eggert@colorado.edu](mailto:katherine.eggert@colorado.edu). For more information go to [www.colorado.edu/artssciences/british](http://www.colorado.edu/artssciences/british).

### Certificate Program

## Certificate in British and Irish Studies

Undergraduates interested in the literature, history, and culture of Britain are encouraged to develop an interdisciplinary concentration in British and Irish Studies. Completed in addition to a regular departmental major, this work will lead to a Certificate in British and Irish Studies. The certificate demonstrates that the student has done serious work in several aspects of British and Irish Studies and will be advantageous when applying to graduate school or for jobs. It is open to students in arts and sciences and the professional colleges (e.g., business).

Students will gain a diverse perspective of Britain. Upon successful completion of requirements, students will be awarded an official Certificate in British Studies, signed by the Director of the Center for British Studies and the Dean of Arts and Sciences. The certificate may be used by the student in applying for graduate school or employment, as evidence of a sustained interdisciplinary concentration in British Studies.

### Requirements

Total of 24 credits in British Studies (normally 8 courses of 3 hours each) with a grade of C- or better in all classes. The courses should be distributed as follows:

- In the department of primary focus (either English or history, depending on the student's own interests), any four courses in British or Irish studies. CBIS will provide a list of possible courses (*see below*).
- In the secondary department (either History, English, or political science, depending upon primary area), a minimum of two courses and a maximum of four courses. CBIS will provide a list of possible courses (*see below*).
- Students may take one or two courses in departments other than English, history, or political science, chosen from the list below, in place of courses in the secondary department. Students are encouraged, to do some work of an explicitly interdisciplinary nature such as team-aught courses offered by two departments (e.g.: ENGL 3162/HIST 3163 or ENGL 4112/HIST 4113, or doing an independent study or honors thesis spanning two disciplines).
- Studying in Britain or Ireland would be a fine addition to the certificate. Contact the Office of International Education, Environmental

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Design Building 1B45, 303-492-6016, for information on CU's Study Abroad programs.

## Approved Courses

- ECON 4514-3
- ENGL 1500-3, 2222-3, 2502-3, 2512-3, 3000-3, 3164-3, 3543-3, 3553-3, 3563-3, 3573-3, 3583-3, 4113-3, 4224-3, 4513-3, 4523-3, 4533-3, 4544-3, 4554-3, 4564-3, 4674-3
- HIST 2103-3, 2123-3, 3113-3, 3133-3, 4053-3, 4063-3, 4123-3, 4125-3, 4133-3, 4153-3, 4164-3
- COML/HUMN 2133-3,
- PSCI 2004-3, 4002-3

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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.

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.**

### Certificate Program

## Certificate in Central and East European Studies (CEES)

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.

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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

### Literature and the Arts Requirement

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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.

### 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 Form, Structure, and Narrative Analysis—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
- 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

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- Museum and Field Studies
- Peace and Conflict Studies
- Philosophy
- Physics
- Political Science
- Psychology and Neuroscience
- Religious Studies
- Sociology
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- 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

### 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 after Fall 2012

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 2.75 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 3.40. 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.

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| Graduate School                      |
| Other Academic Programs              |

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.

### **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—2
- FILM 3525 Editing Workshop—2
- 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 Introduction to the Screenplay—3
- FILM 2610 Animation Production—3
- FILM 2900 Lighting Workshop—3
- FILM 3010 Film Production Topics (Note 6)—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—1-6
- 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 Form, Structure, and Narrative Analysis—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

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 (2 credit hours), 3525 (2 credit hours), 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 (BA/MA)

**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 have 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

- 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
- follow with reasonable comprehension French broadcasts or film.

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

## 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)

### Bachelor of Arts 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.

Film Studies

#### French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

INVEST Community Studies

Jewish Studies

Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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

**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 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 of Arts in Italian**

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

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

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 1
- Choose one from the following three courses:  
ITAL 3025 Advanced Composition 2  
ITAL 3030 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 and 21st Centuries  
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.

## **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 or research—3
- One semester following ITAL 4840 in ITAL 4940 Senior Honors Thesis—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 [www.colorado.edu/aac/pas.html](http://www.colorado.edu/aac/pas.html) and make an appointment with the Italian advisor.

### **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 and 21st Centuries—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 internship opportunities to geography majors.

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).

**The course code for this program is GEOG.**

### Bachelor's Degree Program(s)

### Undergraduate Study in Geography

Students must complete the general requirements of the College of Arts and Sciences and the 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

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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 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
- 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

### Note

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 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.

|  |
|--|
| Film Studies   |
| French and Italian                                     |
| <b>Geography</b>                                       |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| IVST Community Studies                                 |
| Jewish Studies   |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

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.

## 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.

## 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](#) section.

## 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)

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- 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)
- 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

## 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.

## Certificate Program

### Graduate Certificate in Development Studies

The department offers an interdisciplinary graduate certificate in development studies. Development Studies is a well-established, interdisciplinary field of research with institutional centers at a number of major universities and several scholarly journals dedicated to its study. The certificate provides interdisciplinary training in development studies to graduate students through a structured yet flexible program built around courses taught by CU faculty in a number of social science departments. Because development issues such as agrarian change, labor migration, new social movements, industrial growth, urban planning, and natural resource use cut across disciplinary divides, the study of development demands interdisciplinary approaches. For more information, visit [geography.colorado.edu/grad\\_program/certificates](http://geography.colorado.edu/grad_program/certificates).

### Graduate Certificate in Population Studies

Offered through the Population Program of the **Institute of Behavioral Science (IBS)**, the Graduate Certificate in Population Studies 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
- SOCY 6012 Population Issues, Problems, and Policies

Students are granted a certificate on the basis of the three core courses, their independent 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/lbs/pop](http://www.colorado.edu/lbs/pop); or [cupc@colorado.edu](mailto:cupc@colorado.edu).

**University Catalog 2014-2015**

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University of Colorado Boulder

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## Geological Sciences

The options available in the undergraduate program in geological sciences are geology and geophysics and lead to the BA degree. Both options provide a strong basis for understanding the functioning of the Earth system. Students who are uncertain as to which option best suits their needs should contact a departmental advisor or faculty member. In each option, 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 honors thesis as part of their undergraduate studies.

The two options available in the undergraduate major offer different focus areas of instruction. Both 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 Earth and the planetary system

The **geology option** emphasizes processes that function both in the solid earth and at Earth's surface:

- 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 function of the integrated Earth system including the atmosphere, hydrosphere, biosphere, 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

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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 1010 Introduction to Geology 1 or GEOL 2100 Environmental Geology—3
- 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 2001 Planet Earth—4
- GEOL 2005 Earth Materials—4
- GEOL 2700 Introduction to Field Geology 2—2

One of the following solid earth courses:

- 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

One of the following surface processes courses:

- GEOL 3030 Introduction to Hydrogeology—3
- GEOL 3320 Introduction to Geochemistry—3
- GEOL 3410 Introduction to Paleobiology—3
- GEOL 3430 Sedimentology and Stratigraphy—4
- GEOL 3820 Fluid Earth—3
- GEOL 4060 Oceanography—3
- GEOL 4160 Biogeochemistry—3
- GEOL 4241 Geomorphology—3

One of the following quantitative geoscience courses:

- GEOL 3010 Introduction to Mineralogy—3
- GEOL 3030 Introduction to Hydrogeology—3
- GEOL 3820 Fluid Earth—3
- GEOL 4130 Principles of Geophysics—3
- GEOL 4241 Geomorphology—3

Two of the following advanced-field modules:

|  |
|--|
| Film Studies   |
| French and Italian                                     |
| Geography  |
| <b>Geological Sciences</b>                             |
| 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                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

- 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
- GEOL 4717 Field Seminar in Geology and Tectonics—2
- GEOL 4721 Field Methods in Active Tectonics—2
- EBIO 4630 Field Techniques—3
- EVEN 4100 Environmental Sampling and Analysis—3

Upper-division electives—Sufficient additional upper-division course work from following list to total 27 upper-division credits. (Of these, a minimum of 18 UD credits must be GEOL.)

Any GEOL 3000- to 4000-level course except for:

- 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

Or approved non-GEOL courses from following list:

- APPM 3050 Scientific Computing in Matlab—3
- ASTR 3710 Formation and Dynamics of Planetary Systems—3
- ASTR 3720 Planets and Their Atmospheres—3
- ASTR 3750 Planets, Moons, and Rings—3
- ASTR 4800 Space Science: Practice and Policy—3
- ATOC 4720 Introduction to Atmospheric Physics and Dynamics—3
- ATOC 4800 Policy Implications of Climate Controversies—3
- CHEM 4511 Physical Chemistry 1—3
- CVEN 4404 Water Chemistry—3
- CVEN 4718 Mechanics and Dynamics of Glaciers—3
- EBIO 3080 Evolutionary Biology—4
- EBIO 3270 Ecosystem Ecology—3
- EBIO 3770 Animal Diversity: Vertebrates—4
- EBIO 3850 Animal Diversity: Invertebrates—4
- EBIO 4030 Limnology—3
- EBIO 4060 Landscape Ecology—3
- EBIO 4410 Biometry—4
- EBIO 4500 Plant Biodiversity and Evolution—4
- EBIO 4570 Advanced Plant Physiology—3
- EBIO 4630 Field Techniques in Environmental Science—2-6
- ECON 3403 International Economics and Policy—3
- ENVD 4023 Environmental Impact Assessment—3
- ENVS 3434 Introduction to Applied Ecology—3
- ENVS 4201 Biometeorology—3 (same as GEOG 4201)
- EVEN 4100 Environmental Sampling and Analysis—3
- GEOG 4201 Biometeorology—3 (same as ENVS 4201)
- GEOG 4251 Fluvial Geomorphology—4
- GEOG 4261 Glaciers and Permafrost—3

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- GEOG 4321 Snow Hydrology—3-4
- GEOG 4401 Soils Geography—3
- MCDB 4350 Microbial Diversity and the Biosphere—3
- MUSM 4914 Museum Practicum in Geology—3
- PSCI 4183 International Law—3

Note: A maximum of 3 of these credits may consist of a policy course from the following list:

- ASTR 4800 Space Science: Practice and Policy—3
- ATOC 4800 Policy Implications of Climate Controversies—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 2001 Planet Earth—4
- GEOL 2005 Earth Materials—4
- GEOL 2700 Introduction to Field Geology 2—2

Geophysics option students must also take the following solid earth, surface processes, and quantitative geoscience courses:

- GEOL 3010 Introduction to Mineralogy—3
- GEOL 3020 Petrology or GEOL 3320 Introduction to Geochemistry—3
- GEOL 3120 Structural Geology—4
- GEOL 4130 Principles of Geophysics—3
- GEOL 4714 Field Geophysics—2

The following non-GEOL courses:

- APPM 2350 Calculus 3 for Engineers or MATH 2400 Calculus 3—4
- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- PHYS 2130 General Physics 3—3
- PHYS 2210 Classical Mechanics and Mathematical Models 1—3

Any two of the following non-GEOL courses:

- APPM 4350 Fourier Series and Boundary Value Problems—3
- MATH 4470 Partial Differential Equations 1—3
- PHYS 3210 Classical Mechanics and Mathematical Methods 2—3
- PHYS 3310 Principles of Electricity and Magnetism 1—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 two major options. Detailed information is available from the department office, but in general these requirements include:

- Declare a geology major and begin coursework 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 option; 44 credit hours for geophysics option) required for the major by the end of the fourth semester.
- Complete at least 47 credit hours (geology option; 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.

## 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.

## 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:

- GEOL 2001-4 Planet Earth
- GEOL 2700-2 Introduction to Field Geology
- GEOL 3010-3 Introduction to Mineralogy
- GEOL 3023-3 Statistics for Earth Sciences
- GEOL 3120-4 Structural Geology
- GEOL 3410-3 Paleobiology
- GEOL 3430-4 Sedimentology and Stratigraphy
- GEOL 4060-4 Oceanography
- GEOL 4093-4 Remote Sensing of the Environment
- GEOL 4130-3 Principles of Geophysics
- GEOL 4241-4 Principles of Geomorphology

3. Any additional courses at the 3000-level to bring the total hours in geology to 18.

## 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 department at [www.colorado.edu/GeolSci](http://www.colorado.edu/GeolSci).

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 in Geological Sciences

Candidates for the master's degree in geological sciences must complete at least 30 credit hours of graduate course work either with a thesis (Plan I) or without a thesis (Plan II). At least 24 credit hours must be completed at the 5000-level or above. For those students completing a Plan I degree, these 24 credit hours must include a minimum of 4, but no more than 6, master's thesis credit hours.

The Plan II option requires at least 3 hours of GEOL 6960 (Plan II Master's Research) under the supervision of the advisory committee. A maximum of 6 credit hours may be completed at the 3000- or 4000-level at the discretion of the associate chair for graduate studies and the principle advisor.

## Doctoral Degree in Geological Sciences

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 credit hours of GEOL 8990 Doctoral Dissertation, with not more than 10 of these taken in any one semester and not more than 10 dissertation credit hours taken before the semester during which the comprehensive examination is passed.

The Department of Geological Sciences participates in the interdepartmental PhD program in geophysics and hydrologic sciences.

## Interdisciplinary 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).

## 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 [hydrosociences.colorado.edu/about/index.php](http://hydrosociences.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).

## Certificate Program

### Graduate Certificate in Geophysics

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 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.

## 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.



## Germanic and Slavic Languages and Literatures

Undergraduate students may choose to major in either **German studies** or **Russian studies**; minors are offered in both. The department also offers courses in **Hebrew studies** and courses 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, 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.

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.

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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

## Bachelor of Arts in 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**

## German Language Courses (13 semester hours minimum above the GRMN 2010 level)

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.

## 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.

### **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

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

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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 &amp; Sciences

Business

Education

Engineering &amp; Applied Science

- 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.

### **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
- GSSL 1108 Introduction to Jewish History (core: historical context)—3
- GSSL 3401 The Heart of Europe: Filmmakers and Writers in 21st Century Central Europe—3
- JWST 4544 History of Yiddish Culture—3

### **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.*

### **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).

### **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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

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

### 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, there 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 Introduction 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
- SCAN 3301 Radical Nationalism in Northern Europe (core: ideals and values)—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 2900/3900 are not currently being offered by GSSL. SWED 1110, 1120, and 2010 are currently being offered by GSSL.

\*\* 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.

**Bachelor of Arts in 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 do not count 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 or heritage speakers may enter the program at the upper-division level, up to RUSS 4010, 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. Any substitutions to major course work must be pre-approved by the Russian faculty advisor.
- Study abroad is recommended after the second year of language study.

*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 2241 The Vampire in Literature and the Visual Arts—3
  - 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 6 credits of 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.

## **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 2241 The Vampire in Literature and the Visual 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 4401 The Russian Jewish Experience (core: literature and the arts)—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 4841 The History of Modern Russian Drama—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 or upper-division study abroad language classes (6 credit hours)

### **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 for one or more years when their family lived there, 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 a specific plan for their major.

- 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 2241 The Vampire in Literature and the Visual 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 4401 The Russian Jewish Experience (core: literature and the arts)—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 4841 The History of Modern Russian Drama—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

## 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).

## Minor Program in Russian Studies

Declaration of a minor in Russian studies 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 21—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

1. 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.

## 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 3.25 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

The new interdisciplinary PhD in German studies is designed so that students can complete their course work and their dissertation in four years for applicants who may want to pursue careers in academics, government, business, and the non-profit sector. In Germany,

Austria, Switzerland, and many other European countries, it is a strongly held conviction that a doctorate demonstrates to potential employers intellectual independence, superior research and writing skills, the perseverance and ingenuity to complete an original piece of scholarship, and deep familiarity with a different culture. These qualities are equally valuable in the 21st-century American economy, and indeed in the global marketplace.

This program provides intensive and personalized mentoring, directed reading advice, and clinics devoted to dissertation- and conference-paper writing, digital and archival research, oral presentation, and interview preparation. Our PhD strongly emphasizes interdisciplinary work within a secondary concentration area of the student's choice, and includes one year spent abroad at CU-Boulder's partner universities of Göttingen and Regensburg or at other leading institutions in the German-speaking world. A wide range of graduate-level course offerings is designed to ensure content coverage and to move research projects into publishable scholarship. The expanded graduate faculty includes scholars in disciplines such as political science, comparative literature, Jewish studies, business, and library science.

For more information, contact the department for information at [gsl@Colorado.edu](mailto:gsl@Colorado.edu) or see their website at [gsl.colorado.edu](http://gsl.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 in Critical Theory

This certificate 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 [gsl.colorado.edu](http://gsl.colorado.edu).

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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 beginning with 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 3020 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 two 1000-level survey courses—6  
 HIST 1010 Western Civilization 1 and HIST 1020 Western Civilization 2  
 HIST 1015 History of the United States to 1865 and HIST 1025 History of the United States since 1865  
 HIST 1018 Introduction to Early Latin American History to 1820 and HIST 1028 Introduction to Modern Latin American History since 1820  
 HIST 1051 World of the Ancient Greeks and HIST 1061 The Rise and Fall of Ancient Rome  
 HIST 1113 Introduction to British History to 1660 and HIST 1123 Introduction to British History since 1660  
 HIST 1218 Introduction to Sub-Saharan African History to 1800 and HIST 1228 Introduction to Sub-Saharan African History since 1800  
 HIST 1518 Introduction to South Asian History to 1757 and HIST 1528 Introduction to South Asian History since 1757  
 HIST 1618 Introduction to Chinese History to 1644 and HIST 1628 Introduction to Chinese History since 1644  
 HIST 1818 Introduction to Jewish History, the Bible to 1492 and HIST 1828 Introduction to Jewish History since 1492  
 (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, 1308, 1218, 1228, 1518, 1528, 1618, 1628, 1708, 1818, or 1828
- HIST 1800 Introduction to Global History—3

#### Arts & Sciences

Policies & Requirements

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Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

## Upper-division Requirements

- HIST 3020 Historical Thinking and Writing—3
- One 4000-level United States history course—3
- 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 one of the following lower-division written communication courses with a grade of C- or better:

- **Lower-division Written Communication:** ARSC 1080 College Writing and Research, ARSC 1150 Writing in Arts and Sciences, CLAS 1020 Argument from Evidence: Critical Writing about the Ancient World, PHIL 1500 Reading, Writing, and Reasoning, WRTG 1100 Extended First-Year Writing and Rhetoric, WRTG 1150 First-Year Writing and Rhetoric, WRTG 1250 Advanced First-Year Writing and Rhetoric—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 2.00 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 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

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages  
and Literatures

## History

Humanities

Integrative Physiology

International Affairs

INVEST Community Studies

Jewish Studies

Lesbian, Gay, Bisexual,  
Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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

### Freshman Year: total 9

- Any two of the required 1000-level HIST survey courses—6
- The ancillary lower-division written communication course—3

### Sophomore Year: total 12

- The two remaining required 1000-level HIST survey courses—6
- HIST 1800 Introduction to Global History—3
- HIST 3020 Historical Thinking and Writing—3

### Junior Year: total 12

- Four 4000-level HIST lecture courses—12

### Senior Year: total 12

- Three 4000-level HIST lecture courses—9
- One 3000-level Senior Seminar—3

### Grand total all terms: 45

## 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 four following geographical areas: the United States, Europe, World Areas (specific areas outside of Europe and North America), and Global or Comparative.

### 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 3020 and all 3000-level Senior Seminars 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 to

[http://history.colorado.edu/sites/default/files/HIST\\_minor\\_requirement\\_checklist\\_2013\\_fillable.pdf](http://history.colorado.edu/sites/default/files/HIST_minor_requirement_checklist_2013_fillable.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 or by visiting the departmental website at [history.colorado.edu/graduate-program](http://history.colorado.edu/graduate-program).

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

**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.



- General Information
- Programs of Study
- Colleges & Schools
- Admission
- Courses

## 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
- 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

### Arts & Sciences

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Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

*(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.

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

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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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## 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, independent study, and research projects on such topics as applied exercise science, biochemical basis of performance, cellular and systemic cardiovascular 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**

- 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. —13
- EBIO 1210-1240 General Biology 1 and 2 with labs or MCDB 1150 and 1151 Introduction to Molecular Biology with lab and

### Arts & Sciences

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Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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 second semester of their junior year. To apply, students must have a minimum GPA of 3.30, one letter of recommendation, and a faculty mentor. 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 116 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 students to complete their undergraduate requirements (116 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

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

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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

knowledge base that would be obtained by completing human anatomy lecture and lab, as well as human physiology lecture and lab courses.

Satisfactory scores on the Graduate Record Examination (general) 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 faculty 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 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.

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

**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
- PSCI 2012 Introduction to Comparative Politics—3

### Arts & Sciences

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Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- 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 topics only)  
 ANTH 4500 Cross-cultural Aspects of Socioeconomic Development  
 COMM 3410 Intercultural Communication  
 ECON 3784 Economic Development  
 ECON/GEOG 4292 Migration, Urbanization, and Development  
 ECON 4774 Economic Reform in Developing Countries  
 ECON 4784 Economic Development  
 ECON 4794 Economic Growth  
 GEOG 3682 Geography of International Development  
 GEOG 4632 Development Geography  
 GEOG 4852 Medical Geography  
 IAFS/JWST 3600 Global Secular Jewish Societies  
 JOUR 4201 Media, Culture, and Globalization (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/WMST 3012 Women and 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, 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 New Institutional Economics  
 ECON 4545 Environmental Economics  
 FNCE 4060 London Summer in International Finance  
 IAFS 3300 Society in the Middle East (Global Seminar)  
 INBU 3300 International Business and Management  
 INBU 3450 International Business and Marketing  
 INBU 4200 International Financial Management  
 PSCI 4193 International Political Economy

#### **Political Geography, International Security, Foreign Policy (Functional Area III)**

ANTH/JWST 4580 The Holocaust  
 GEOG 3742 Place, Power, and Contemporary Culture  
 GEOG 4712 Political Geography  
 GEOG 4742 Peoples and Environments (approved topics only)

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

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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 &amp; Sciences

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Education

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HIST 4126 U.S. Diplomatic History since 1940  
 HIST 4146 Military History  
 HIST 4166 The War in Vietnam and its Legacy  
 IAFS 3500/HIST 4190 French Connections (Global Seminar)  
 IAFS/JWST 3650 History of Arab-Israeli Conflict  
 PHIL 3190 War and Morality  
 PSCI 3123 War, Peace, and Strategic Defense  
 PSCI 3143 Problems in International Relations  
 PSCI 3163 American Foreign Policy  
 PSCI 3193 International Behavior

### ***International Institutions, Rights, and Norms (Functional Area IV)***

HIST 4820 Human Rights: Historical Perspectives  
 JOUR 4341 International Media and Global Crises (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 4252 Politics of Ethnicity and Nationalism  
 PSCI 4783 Global Issues  
 SOCY/ENVS 4027 Inequality, Democracy, Environment  
 SOCY 4111/INVS 4402 Nonviolent Social Movements  
 SOCY 4121 Sociology of Religion  
 WMST 3220 Women in Islam  
 WMST 3710 Topics in Global Gender and Sexuality (approved topics only)  
 WMST 4010/SOCY 4000 Gender, Genocide, and Mass Trauma

### **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 concentration no later than the beginning of their junior year.

Geographic concentration coursework 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](http://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 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.

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- 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 fall semesters and during 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](http://iafs.colorado.edu) for more details. IAFS 4930 could count for major elective and/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 3.40 major GPA and a 3.30 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](http://iafs.colorado.edu) for more details. IAFS 4810 could count for either an upper-division functional area and/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 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

### Certificate in International Media

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 2.75 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 reflects the core goals of Colorado's flagship university: to provide an outstanding liberal arts education, to foster critical thought, and to instill a keen appreciation of humanity's interrelatedness and diversity. At its core, the major trains students to be global citizens by studying the world's oldest global people.

With a major in Jewish Studies, students will develop fundamental skills in critical thinking, comparative analysis, oral and written expression, and a well-rounded perspective of the diversity of the Jewish experience. CU-Boulder's major in Jewish Studies is designed to encourage students to explore all facets of Jewish life in the context of the larger global society. With internationally acclaimed faculty engaged in cutting-edge research and opportunities to study with leading artists, scholars, and professionals working in the field of Jewish Studies, the program offers an innovative and contemporary curriculum designed to provide a strong foundation in cultural education and to connect Jewish thought and text to action and people's lives.

As a major, students will have the opportunity to take courses that explore Jewish history, modern Jewish experience in a variety of countries and cultures, Jewish literature, and secular Jewish societies. Courses are offered on a wide array of topics and issues including Jewish culture, the history of the Arab/Israeli conflict, the Holocaust, gender and sexuality in Judaism, Israeli literature, the history of Yiddish culture, and cultures of Israel and Palestine. The study of Jewish culture, society, history, and religion is, by its nature, comparative. This program offers many cross-listed classes with other departments on campus to facilitate a well-rounded learning experience. **The program is open to students of all backgrounds.**

**Course code for this program is JWST.**

### Bachelor's Degree Program(s)

## Bachelor of Arts in Jewish Studies

In addition to the general requirements of the College of Arts and Sciences, students must complete 36 credit hours of Jewish Studies requirements, of which 18 credit hours must be upper division (3000/4000 level) courses. 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/artsscience/students/undergraduates/core\\_curriculum.html](http://colorado.edu/artsscience/students/undergraduates/core_curriculum.html).

### Required Courses (6 credit hours)

- JWST/HEBR 2350 Introduction to Jewish Culture—3
- JWST 4000 Methods in Jewish Studies (Senior Capstone)—3

### Language Requirement

#### Arts & Sciences

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Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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/HIST 1818 Introduction to Jewish History, Bible to 1492—3
- JWST/HIST 1828 Introduction to Jewish History since 1492—3
- JWST/HEBR 2551 World Jewish Literature—3
- JWST/RLST 3100 Judaism—3
- JWST/AFS 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
- HEBR 1030 Biblical Hebrew—3
- HEBR 1040 Biblical Hebrew—3
- HEBR 2121 Intermediate Hebrew—4
- HUMN/GRMN 2601 Kafkaesque—3

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/HEBR 3202 Women, Gender, and Sexuality in Jewish Texts and Traditions—3
- JWST/ENGL 3312 The Bible as Literature—3
- JWST/GRMN 3501 German Jewish Writers—3
- JWST/AFS 3610 Topics in International Affairs and Jewish Studies—3
- JWST/AFS 3650 Arab-Israeli Conflict—3
- JWST/ENGL 3677 American Jewish Writers—3
- JWST/ANTH 4050 Topics in Jewish Anthropology—3
- JWST/HEBR 4101 Topics in Hebrew Literature—3
- JWST/RLST 4260 Topics in Judaism—3
- JWST/HEBR 4301 Venice: The Cradle of European Jewish Culture—3
- JWST 4302 Justice, Human Rights, and Democracy in Israel—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 4454 Jewish Intellectual History—3
- JWST/HIST 4544 History of Yiddish Culture—3
- JWST/ANTH 4580 The Holocaust—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
- HEBR 3010 Third-Year Hebrew, First Semester—3

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| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| INVST Community Studies                                |
| <b>Jewish Studies</b>                                  |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

- HEBR 3020 Third-Year Hebrew, Second Semester—3
- HIST 4433 Nazi Germany—3
- WRTG 3020 After the Holocaust—3

## Minor Programs

Minors are offered in Jewish Studies and Hebrew and Israel Studies. Declaration of a minor is open to 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 [jewishstudies.colorado.edu/courses/major-and-minors-jewish-studies](http://jewishstudies.colorado.edu/courses/major-and-minors-jewish-studies).

### Minor in Jewish Studies (18 credit hours)

- Complete JWST/HIST 1818 Introduction to Jewish History, Bible to 1492 or JWST/HIST 1828 Introduction to Jewish History since 1492—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/HEBR 3202 Women, Gender and Sexuality in Jewish Texts and Traditions
  - JWST/ENGL 3312 The Bible as Literature
  - JWST/GRMN 3501 German Jewish Writers
  - JWST/AFS 3600 Global Secular Jewish Societies
  - JWST/AFS 3610 Topics in International Affairs and Jewish Studies
  - JWST/AFS 3650 Arab-Israeli Conflict
  - JWST/ENGL 3677 American Jewish Writers
  - JWST 3930 Internship in Jewish Studies (not repeatable for minor)
  - JWST/ANTH 4050 Topics in Jewish Anthropology: Cultures of Israel and Palestine
  - JWST/ANTH 4050 Topics in Jewish Anthropology: World of Hidden Jews
  - JWST/HEBR 4101 Topics in Hebrew Literature
  - JWST/RLST 4260 Topics in Judaism
  - 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 4454 Jewish Intellectual History
  - JWST/HIST 4544 History of Yiddish Culture
  - JWST/ANTH 4580 The Holocaust
  - JWST/HIST 4803 Topics: European Jewish History
  - JWST/HIST 4804 Modern European Jewish History
  - JWST/HIST 4827 Modern American Jewish History
  - HIST 4433 Nazi Germany
  - 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, second semester—4
  - HEBR 3010 Advanced Hebrew, first semester—3
  - HEBR 3020 Advance Hebrew, second 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/AFS 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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
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most current course information.

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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 32 hours of study in general linguistics, including 5 in a 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.

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

**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- (2.00) or better a minimum of 5 credit hours of study of a natural language other than English (including signed languages used by deaf communities). The 5 credit hours offered in satisfaction of this requirement must be at the 3000 level or above for widely-taught languages (French, German, Latin, Spanish), or at the 2000 level or above for less-widely-taught languages (Arabic, American Sign Language, Chinese, Farsi, Greek, Hebrew, Hindi, Indonesian, Italian, Japanese, Korean, Norwegian, Portuguese, Russian, Swedish). Only courses taught in the language in question, and focused specifically on language learning, may be used for this requirement. A list of all the approved courses is available from the Department of Linguistics or the departmental undergraduate advisor. 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 15 elective hours must be completed with a grade of C- (2.00) or better. Courses may be chosen from the following:

- FREN 3020 French Phonetics through Musical Performance—3
- FREN 3010 French Phonetics and Pronunciation—3
- JPNS 4030 Japanese Syntax—3
- JPNS 4080 Kanji in Japanese Orthography—3
- JPNS 4070 Second Language Acquisition of Japanese—3
- LING 1000 Language in U.S. Society—3
- LING 1010 Study of Words—3
- LING 1020 Languages of the World—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 4450 Introduction to Formal Syntax—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

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

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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 &amp; Sciences

Business

Education

Engineering &amp; Applied Science

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).

## 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.*

## 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.

## 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 2.00 (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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

- 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 1020 Languages of the World—3
- LING 2400 Language and Gender—3
- LING 3005 Cognitive Science—3
- 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 4450 Introduction to Formal Syntax—3
- LING 4560 Language Development—3
- LING 4610 English Structure for TESOL—3
- LING 4800 Language and Culture—3

*NOTE: At least 3 credit hours of the electives must be an upper-division course.*

## 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.

See copy below for graduate Certificate in Culture, Language, and Social Practice (CLASP)

## 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 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 7030 Phonetic Theory, LING 7410 Phonological Theory, LING 7420 Syntactic Theory, LING 7430 Semantic Theory, or LING 7570 Diachronic Theory.
- The remaining six 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.

## Certificate Program

### Graduate Certificate in Culture, Language, and Social Practice (CLASP)

The University of Colorado Boulder is home to the Program in Culture, Language, and Social Practice (CLASP). This program provides an interdisciplinary forum on language and society for CU students and faculty. This is facilitated through regular colloquia on the subject of language and society, as well as a diverse curriculum of courses offered toward the CLASP Graduate Certificate.

The CLASP program brings cohesion to empirical and theoretical research currently conducted on campus in varied analytic traditions that focus on the study of culture, language, and social practice. These traditions include sociolinguistics, linguistic anthropology, literacy, bilingualism, second language acquisition, language endangerment and revitalization, narrative studies, symbolic interactionism, language variation and change, ethnography of speaking, and diverse forms of discourse analysis, such as conversation analysis, critical discourse analysis, interactional sociolinguistics, and multimodal discourse analysis.

The program currently has over twenty affiliated faculty members from a variety of schools and departments, among them anthropology, communication, education, French and Italian, German and Slavic, linguistics, political science, Spanish and Portuguese, sociology, and speech, language, and hearing science.

More information on the application process and program requirements can be found on the CLASP program website at [www.colorado.edu/clasp](http://www.colorado.edu/clasp).

## Graduate Certificate in Human Language Technology (HLT)

For information on this interdisciplinary certificate, see [Cognitive Science Studies](#).

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# 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 the 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:

- move from concrete to abstract thinking and back with facility;
- recognize patterns and connections between areas of mathematics and between mathematics and other subjects;
- organize and construct a logical argument, provide evidence to support arguments, and articulate arguments clearly and succinctly, both verbally and in writing.

**Course code for this program is MATH.**

## Bachelor's Degree Program(s)

### Bachelor's Degree in Mathematics

The Department of Mathematics offers four 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 six mathematics core courses and the five additional courses for one of the four tracks (described below). Students must earn a grade of C- or better in each of the mathematics core courses and the five 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, MATH 1310, or APPM 1350)—4-5
- Calculus 2 (e.g., MATH 2300 or APPM 1360)—4-5
- Calculus 3 (e.g., MATH 2400 or APPM 2350)—4
- MATH 2001 Introduction to Discrete Mathematics—3
- MATH 3001 Analysis 1—3
- MATH 3130 Introduction to Linear Algebra—3

### Comprehensive Track

Aimed at students seeking a general background in mathematics or intending to pursue graduate work in mathematics.

#### Arts & Sciences

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[British and Irish Studies](#)

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[Chemistry and Biochemistry](#)

[Classics](#)

[Cognitive Science Studies](#)

[Communication](#)

[Comparative Literature](#)

[Computer Science](#)

[Distributed Studies Program](#)

[Ecology and Evolutionary Biology](#)

[Economics](#)

[English](#)

[Environmental Studies](#)

[Ethnic Studies](#)

### Additional Courses Required

- MATH 3140 Abstract Algebra 1—3
- One of MATH 4140 Abstract Algebra 2 or MATH 4001 Analysis 2—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 and/or applicable mathematics.

### Additional Courses Required

- MATH 4510 Introduction to Probability Theory—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

- MATH 3110 Introduction to the Theory of Numbers or MATH 3140 Abstract Algebra 1—3
- MATH 3120 Functions and Modeling—3
- MATH 3210 Euclidean and Non-Euclidean Geometry 1—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
- CSCI 3104 Algorithms—3
- MATH/APPM 4650 Intermediate Numerical Analysis 1—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. To maintain adequate progress in mathematics, students in each of the four tracks should meet the following requirements.

### 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.

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

- 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, Calculus 3, 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 4820 by 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/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.

## 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. To earn a minor in mathematics, students must complete the following courses with a grade of C- or better in each course, and they must have at least a C (2.00) average for all attempted work in mathematics.

- 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 Introduction to Discrete Mathematics—3
- MATH 3130 Introduction to 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 for PhD students.

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 5820.

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

## 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.
- 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 or MS 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, and at least 18 credit hours must be approved inside the mathematics department.

## Doctoral Degree in Mathematics

Before being admitted to candidacy for the PhD degree in mathematics, a student must take two graduate courses each in algebra, real analysis, and geometry/topology en route to passing two out of three preliminary exams in these fields. In addition, the student must take a course in complex analysis. The student must then pass a comprehensive exam. The basic requirements for a PhD degree in mathematics are as follows:

- Complete at least 30 credit hours of approved graduate coursework and 30 credit hours of thesis work
- Prepare a written thesis that contains substantial original contributions to mathematics
- Successfully complete a final examination.

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General Information
  Programs of Study
  Colleges & Schools
  Admission
  Courses

## 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
- Upper-division electives in MCDB. Two courses must be lecture courses. One of these must be a 4000-level, scientific reasoning MCDB course (see department for approved courses.)—11-12
- CHEM 1113/1114; CHEM 1133/1134; CHEM 1251/1271, or CHEM 1351/1371 General Chemistry 1 and 2 lecture and lab—10
- CHEM 3311 Organic Chemistry 1 and CHEM 3321 Laboratory in Organic Chemistry 1 or CHEM 3351 Organic Chemistry 1

#### Arts & Sciences

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Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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) or statistics (MATH 2510, PSYC 3101, or IPHY 2800—3-5)
- 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 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.

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

### Molecular, Cellular, and Developmental Biology

Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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

**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

**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.

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

**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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## Museum and Field Studies

Museum courses listed in this catalog may be taken with the approval of the student's major department and the course instructor, although no undergraduate major is offered in museum 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.

**Course code for this program is MUSM.**

### Graduate Degree Program(s)

## Graduate Study in Museum and Field Studies

Graduate training in anthropology, art history, history, botany, entomology, paleontology, and zoology is provided under the direction of museum faculty in cooperation with cognate departments and the museum and field studies program. Areas of study include, but are not limited to:

- anthropological interpretation
- diatom taxonomy, systematics, and ecology
- southwestern archaeology and ethnology
- plant taxonomy, evolution, and phytogeography
- vertebrate paleontology and Cenozoic stratigraphy
- biology of aquatic invertebrates
- systematics and population biology of insects of the Rocky Mountain Region

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- plant–insect interactions

Museum assistantships include support from the Walker Van Riper fund and research support from the Collie and William Henry Burt museum funds. Other financial assistance is available to selected students. Students interested in working toward advanced degrees under the direction of museum faculty should write the University of Colorado Museum, Museum and Field Studies, University of Colorado Boulder, 218 UCB, Boulder, CO 80309-0218, e-mail [mfsinfo@colorado.edu](mailto:mfsinfo@colorado.edu), or visit [cumuseum.colorado.edu/graduate-program](http://cumuseum.colorado.edu/graduate-program).

## Master of Science 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. Applicants accepted for graduate work by museum faculty must be admitted to the Graduate School

**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 and Field Studies 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/graduate-program](http://cumuseum.colorado.edu/graduate-program).

## Certificate Program

### Professional Certificate in Museology

Providing professional museum training for CU-Boulder graduate students and for museum professionals who seek to upgrade their skills and credentials, the Professional Certificate in Museology 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

The Professional Certificate in Museology requires a minimum of 12 credit hours. It is supplemented by a 75-hour internship, which may be waived if comparable professional experience is demonstrated.

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

INVEST Community Studies

Jewish Studies

Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and Developmental Biology

#### Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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

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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, no fewer than 18 of which must be upper division, earning 33 hours with a grade of C- or better in each course in philosophy and a C (2.00) average for all work attempted in philosophy. No fewer than 12 of those credit hours must be completed on the Boulder campus. No more than 8 hours of independent study may count toward the minimum requirement.

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

The Department of Philosophy offers three distinct ways of completing the philosophy major.

### General Track

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

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

### History (three courses)—9

- PHIL 3000 History of Philosophy: Ancient
- PHIL 3010 History of 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 4250 Marxism

### Logic (one of the following courses)—3

- PHIL 2440 Symbolic Logic
- PHIL 4440 Topics in Logic (Math Logic)
- PHIL 4460 Modal 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—3
- One of the following additional courses—3
  - PHIL 2140 Environmental Justice
  - PHIL 2200 Major Social Theories
  - PHIL 2220 Philosophy and Law
  - PHIL 2270 Philosophy and Race
  - 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 4120 Philosophy and Animals
  - 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
- 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)

|  |
|--|
| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| INVEST Community Studies                               |
| Jewish Studies   |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| <b>Philosophy</b>                                      |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious 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                          |

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.*

## Values and Social Policy Track

### Group I: Required courses

- PHIL 1440 Introductory Logic or PHIL 2440 Symbolic Logic Philosophy
- PHIL 2200 Major Social Theories
- PHIL 3000 History of Philosophy: Ancient
- PHIL 3010 History of Philosophy: Modern
- PHIL 3100 Ethical Theory
- PHIL 3200 Social and Political Philosophy

### Group II: Choose any four courses

- PHIL 2140 Environmental Justice
- PHIL 2220 Philosophy and the Law
- PHIL 2270 Philosophy and Race
- PHIL 2290 Philosophy and Women
- PHIL 3110 Feminist Practical Ethics
- PHIL 3140 Environmental Ethics
- PHIL 3160 Bioethics
- PHIL 3190 War and Morality
- PHIL 3260 Philosophy and the International Order
- PHIL 3930 Internship in Social Philosophy
- PHIL 4110 Contemporary Moral Theory
- PHIL 4120 Philosophy and Animals
- PHIL 4200 Contemporary Political Philosophy
- PHIL 4250 Marxism
- PHIL 4260 Philosophy of Law
- Other courses with advisor's approval

### Group III: 15 of approved courses in allied fields

For further information, see the Department of Philosophy advisor.

## Law and Society Track

### Group I: Required courses (27 hours)

- PHIL 1440 Introductory Logic or PHIL 2440 Symbolic Logic
- PHIL 2200 Major Social Theories
- PHIL 2220 Philosophy and the Law
- PHIL 3000 History of Philosophy: Ancient
- PHIL 3010 History of Philosophy: Modern
- PHIL 3100 Ethical Theory
- PHIL 3180 Critical Thinking: Contemporary Topics or PHIL 3480 Critical Thinking and Writing
- PHIL 3200 Social and Political Philosophy
- PHIL 4260 Philosophy of Law

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

## Group II: Recommended courses

- PHIL 2140 Environmental Justice
- PHIL 2290 Philosophy and Women
- PHIL 3110 Feminist Practical Ethics
- PHIL 3140 Environmental Ethics
- PHIL 3160 Bioethics
- PHIL 3260 Philosophy and the International Order
- PHIL 4110 Contemporary Moral Theory
- PHIL 4200 Contemporary Political Philosophy
- PHIL 4250 Marxism

## Group III: Required Courses

Twelve hours of approved courses from other departments. For further information, see the Department of Philosophy advisor.

## 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 an 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 2.00 (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
- PHIL 3000 History of Philosophy: Ancient (prereq., 6 hours PHIL course work)
- PHIL 3010 History of Philosophy: Modern (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)
- 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 of Arts 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.

#### 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**

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- 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 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
- 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
- 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:

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  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy

## Physics

Political Science  
 Psychology and Neuroscience  
 Religious 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

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 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  
 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

### 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

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

## 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.*

## Bachelor of Science in Engineering Physics

The bachelor of science majoring in engineering physics is granted by the College of Engineering and Applied Sciences through the Department of Physics in the College of Arts and Sciences. See [Engineering Physics](#).

## 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, fundamental measurements, liquid crystal science and technology, biophysics, and physics education research.

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.** Students must pass a two-part Comprehensive Exam. Part I consists of passing any five of the following six courses with a *B-* or better: PHYS 5210 Theoretical Mechanics, PHYS 7230 Statistical Mechanics, PHYS 5250 and 5260 Quantum Mechanics I and II, and PHYS 7310 and 7320 Electromagnetic Theory I and II. The associate chair may waive courses for students with graduate level equivalents. Part II is a three-section examination that includes a formal research review paper and a formal presentation, followed by a question and answer oral session.

#### 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 passing any five of

the following six courses with a *B-* or better: PHYS 5210 Theoretical Mechanics, PHYS 7230 Statistical Mechanics, PHYS 5250 and 5260 Quantum Mechanics I and II, and PHYS 7310 and 7320 Electromagnetic Theory I and II. The associate chair may waive courses for students with graduate level equivalents. Part II is a three-section examination that includes a formal research review paper and a formal presentation, followed by a question and answer oral session. Part III consists of a thesis prospectus presented to the thesis committee.

Part II of the comprehensive examination must be taken after successful completion of the six required courses described in the next section, but no later than the student's sixth enrolled regular semester. Part III will generally take place the semester following Part II. Parts II and III of the comprehensive examination may be taken a second time, no more than one semester after the first attempt.

**Course Requirements.** To earn a PhD, candidates must complete 30 credit hours of graduate courses and 30 hours of dissertation credit. At least 27 of the 30 credit hours of course work must be 5000-level or above physics courses. All courses, required or otherwise, must be passed with a grade of *B-* or better, and a course may be repeated only once.

**University Catalog 2014-2015**

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University of Colorado Boulder

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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. The department's mission is to understand the political world and to equip students and their community with the skills for a lifetime of inquiry and engagement.

The mission of the undergraduate program in political science is to provide students with the knowledge and tools to understand important political ideas, political institutions (both domestic and international), and political actors themselves. The curriculum is designed to provide a base of knowledge and the skills necessary to understand and operate effectively in our political world. Students learn the philosophical basis of justice, equality, and representation and how that relates to current trends and developments. Understanding the challenge of diversity and its consequences is an important area of study. A strong grasp of the American political system and political society is coupled with learning about how other countries and societies organize politically. Another important component of the major includes understanding global forces and why some countries cooperate while others engage in conflict. Finally, the major exposes students to real-world problems that require political solutions.

Areas of inquiry emphasized in our program include:

- democracy
- environmental politics
- European politics
- international conflict and cooperation
- Latin American politics
- political behavior and survey research
- political economy
- political methodology
- representation

The program is designed to prepare students for study at the graduate level in political science, law, and other cognate disciplines, as well as to equip students with the tools and knowledge essential for work in government agencies, non-governmental organizations, non-profits, and business.

### Undergraduate Learning Outcomes

The political science curriculum is designed to develop the following learning outcomes:

- a solid grounding in politics and the ideas that motivate them at the national and international level
- the ability to both clearly and persuasively articulate ideas and arguments in oral presentation and in written form
- the ability to analyze problems using logical inference based on quantitative and qualitative evidence
- the ability to critically evaluate arguments both in political science research and in our current political world

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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.

#### 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 2.00. 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
- Of the required 21 upper-division hours, students must take one course in at least four of the primary fields. 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

*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.

- 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

Film Studies

French and Italian

Geography

Geological Sciences

Germanic and Slavic Languages and Literatures

History

Humanities

Integrative Physiology

International Affairs

INVEST Community Studies

Jewish Studies

Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Linguistics

Mathematics

Medieval and Early Modern Studies

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

#### Political Science

Psychology and Neuroscience

Religious 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

2.00. 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  
PSCI 2075 Quantitative Research Methods—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 at least one upper-division course in American Politics and one course (lower- or upper-division) in political theory, in addition to the regular minor requirements.

## Graduate Degree Program(s)

### Graduate Study in Political Science

#### PhD in Political Science

The Department of Political Science at CU-Boulder has a long tradition of excellence in training graduate students. A diverse faculty of nearly 30 professors trains graduate students to conduct original research in six areas of political science:

- American government and politics
- comparative politics
- international relations
- political theory
- public policy
- research methods

Admission is highly competitive with approximately 15 new students enrolled each fall. This ensures a high faculty-student ratio and close mentoring opportunities. In addition, the department holds an outstanding placement record. 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.

#### Program Requirements

- course work
- qualifying research paper and defense (before end of fourth semester)
- comprehensive examinations (take before end of sixth semester)
- doctoral prospectus defense (before end of seventh semester)
- final dissertation defense (before end of tenth semester)
- minimum 30 dissertation credit hours

The Department of Political Science offers graduate-level courses in the above mentioned six fields of study. While students take a wide range of courses, they must demonstrate mastery of three different fields: the major or first field, the minor or second field, and the third field. Students must complete a minimum of 42 hours of course work with a *B* average or better. Of these 42 hours, 39 must be at the 7000 level or higher and 35 hours must be taken in the political science department. Students must also take a minimum of 30 dissertation credit hours.

Students must take the core seminar in each of the three fields they pick to study: PSCI 7011 American Politics,

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

PSCI 7012 Comparative Politics, PSCI 7013 International Politics, PSCI 7004 Political Theory, or PSCI 7016 Public Policy. During a student's first semester in residence, students are required to take two introductory courses: PSCI 7075: Introduction to Professional Political Science and PSCI 7085: Introduction to Political Data Analysis.

As a condition of funding, all students appointed as graduate assistants are required to enroll in two one-credit hour courses during the first year (PSCI 7008 Teaching Political Science I and PSCI 7028 Teaching Political Science II). Funded students must complete a minimum of nine credit hours per semester for their first five semesters or until they have passed comprehensive exams.

The department does not accept applications for a terminal MA in political science. Students in the PhD program earn a MA in Political Science after the completion of a successful qualifying paper and defense at the end of the second year in the program.

Students wishing to pursue graduate work toward this degree should carefully read the Graduate School requirements and review courses offered in this catalog. Requirements for the political science graduate program are clarified in more detail in the *Guide to Graduate Studies* posted under the graduate tab on the Department of Political Science website: <http://polsci.colorado.edu>.

## Admission Requirements

Online applications must be submitted by the December deadline.

Applicants for the graduate program in political science must submit the following:

- Official transcripts and a cumulative undergraduate grade point average of at least 3.00 (out of 4.00) from an accredited university in the United States, or equivalent credentials from a non-U.S. institution, or a graduate cumulative grade point average of at least 3.50 on a 4.00 scale.
- A cumulative score on the Graduate Record Examination of at least 300 (verbal + quantitative), with a score of at least 153 on the verbal examination. (This equates to 1100 and 500, respectively, under the old scoring system.)
- Three letters of recommendation from members of the profession who can judge the student's ability to participate in a graduate program.
- A statement of professional and academic goals and intent.
- International applicants must supplement their application by presenting TOEFL scores or other proof of English proficiency. The department requires minimum scores of 90 for TOEFL and 7.0 for IELTS.

To apply to our program, please visit the online application: <http://www.colorado.edu/admissions/graduate/apply>

Decisions regarding admission and financial aid are typically completed during February of each year.



## Psychology and Neuroscience

At the undergraduate level, this department offers a major in psychology and a major and a certificate in neurosciences. 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 in 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 Degrees in Psychology and Neuroscience

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

In order to graduate with a degree in neuroscience, 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 NRSC 2100 and NRSC 2200, the genetics and statistics requirements and the ancillary biology, chemistry and calculus sequences during the first two years of study.

#### Required Courses and Semester Credit Hours

- NRSC 2100 Introduction to Neuroscience—4
- NRSC 2200 Laboratory Techniques in Neuroscience—2

#### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- Complete one of the following genetics courses: EBIO 2070 Genetics: Molecules to Populations or MCDB 2150 with 2151 or 2161 Principles of Genetics with Lab. (Please check all prerequisites and corequisites before enrolling in courses.)—4
- Statistics/computation requirement (complete one of the following):—3-4  
 BCOR 1020 Business Statistics  
 ECON 3818 Introduction to Statistics with Computer Applications  
 IPHY 2800 Introduction to Statistics  
 MATH 2510 Introduction to Statistics  
 MATH 2520 Introduction to Biometry  
 PSYC 3101 Statistics and Research Methods in Psychology

### Upper-division Neuroscience Requirements

- Complete MCDB 3135 Molecular Cell Biology 1—3
- Complete at least three of the following:—9-10  
 NRSC 4032 Neurobiology of Learning and Memory  
 NRSC 4052 Behavioral Neuroscience  
 NRSC 4132 Neuropharmacology  
 NRSC 4092 Behavioral Neuroendocrinology  
 NRSC 4072 Clinical Neuroscience
- Complete 9 hours of upper-division elective course work by taking additional courses from upper-division requirements above or from the following neuroscience and general science electives with a maximum of 6 hours allowed from courses outside of psychology and neuroscience. (Please check all prerequisites and corequisites before enrolling courses.)  
 CHEM 4611 Survey of Biochemistry  
 CHEM 4711 General Biochemistry 1  
 ECEN 3030 Electrical/Electronic Circuits Non-Major  
 ECEN 4120 Neural Network Design  
 ECEN 4811 Neural Signals and Functional Brain Imaging  
 ECEN 4821 Neural Systems and Physiological Control  
 ECEN 4831 Brains, Minds and Computers  
 EBIO 3240 Animal Behavior  
 IPHY 3410 Human Anatomy  
 IPHY 3430 Introduction to Human Physiology  
 IPHY 3470 Human Physiology 1  
 IPHY 4200 Physiological Genetics and Genomics  
 IPHY 4580 Sleep Physiology  
 IPHY 4720 Neurophysiology  
 MCDB 3140 Cell Biology Lab  
 MCDB 3280 Molecular Cell Physiology  
 MCDB 4201 From Bench to Bedside: The Role of Science in Medicine  
 MCDB 4426 Cell Signaling and Developmental Regulation  
 MCDB 4444 Cellular Basis of Disease  
 MCDB 4680 Mechanisms of Aging  
 NRSC 4011 Senior Thesis  
 NRSC 4015 Affective Neuroscience  
 NRSC 4062 Neurobiology of Stress  
 NRSC 4155 Cognitive Neuroscience/Neuropsychology  
 NRSC 4542 Neurobiology of Mental Illness  
 NRSC 4545 Neurobiology of Addiction  
 PSYC 4021 Psychology and Neuroscience of Exercise  
 PSYC 4142 Brain Injury, Plasticity and Recovery: From Neuron to Behavior  
 PSYC 4165 Psychology of Perception  
 PSYC 4175 Computational Cognitive Neuroscience

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|--|
| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| INVEST Community Studies                               |
| Jewish Studies   |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| <b>Psychology and Neuroscience</b>                     |
| Religious 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                          |

## Ancillary Foundation Courses

- Ancillary molecular biology requirement: EBIO 1210 with 1230 General Biology 1 with Lab or MCDB 1150 with 1151 or 1161 Introduction to Cellular and Molecular Biology with Lab—4
- Ancillary calculus requirement: MATH 1300 Analytical Geometry and Calculus 1 or MATH 1310 Calculus, Statistics, and Modeling—5
- 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
- Ancillary organic chemistry requirement: CHEM 3311 Organic Chemistry 1 or CHEM 3351 Organic Chemistry 1-4 for BCHM/CHEM majors. Students planning graduate/medical school or work in the biotechnology industry should plan to take CHEM 3331 and CHEM 3341, Organic Chemistry II with Lab-4. Students should verify program requirements for any additional chemistry prerequisites.

## 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 neuroscience, students should meet the following requirements:

- The 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 and Laboratory Techniques in Neuroscience must be completed by the end of the second year.
- The neuroscience major requires at least 55 hours of required course work. Thus, at least 14 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, 2606, and 3101 by the end of the sophomore year, and 3111 by the end of the junior year.

### Required Courses and Semester Credit Hours

- PSYC 1001 General Psychology—3
- 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
- PSYC 3111 Psychological Sciences II: Research Methods—4
- One of the following:
  - PSYC 3102 Behavioral Genetics—3
  - PSYC 3303 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

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

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 34, but not more than 45, of which at least 18 must be upper division. (Students are encouraged to use independent study to gain field or laboratory experience. However, independent study hours are *pass/fail* credit only and cannot be used toward the 34 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
- One of the following MATH courses with a grade of C- or better:
  - MATH 1011 College Algebra
  - MATH 1071 Finite Math
  - MATH 1150 Pre-Calculus
  - MATH 1300 Calculus

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.

## 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, and 2606 and natural science sequence during the first two years of study.
- Complete the 2-semester sequence of PSYC 3101 and PSYC 3111 by the end of the fifth semester.
- Complete 3102 or 3303, a 4000-level 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 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, gene expression, and epigenetics). 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 and Cognitive Neuroscience PhD Program investigates how humans process information and includes laboratories focusing on perception, attention, learning and memory, reading and language processing, skill acquisition, expertise, categorization, executive control, and child development. Researchers use a variety of methods, including behavioral measures, neuroimaging techniques (e.g., fMRI, EEG), computational and mathematical modeling, patient studies, and genetic analysis. 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.

### 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.

## PhD in Neuroscience

The neuroscience community at the University of Colorado Boulder is made up of over 80 faculty and research associates rostered in 13 departments and institutes. Neuroscience activities on the campus are coordinated by the **Center for Neuroscience**. The University of Colorado at Boulder offers a PhD in Neuroscience, as well as graduate and undergraduate certificates in Neuroscience

that can be combined with a variety of majors.

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

### Certificate in Neurosciences

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 3.20 or better.

For more information, see [www.colorado.edu/neuroscienceprogram](http://www.colorado.edu/neuroscienceprogram).

### Graduate Certificate in Neuroscience and Behavior

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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## 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 of the select area including how the three courses taken interrelate and how the area of concentration

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Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

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Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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.

## 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 3.30 overall grade point average and 3.50 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.

## 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.

## 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 3.00, and a 3.50 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 3.25, and 3.50 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.

## 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 Introduction 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.

Film Studies  
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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  
 Molecular, Cellular, and Developmental Biology  
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 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience

### Religious Studies

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 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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## 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 list item 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:
  - a) 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.
  - b) 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:
  - a) 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.
  - b) 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.
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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# 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 2.00.

#### **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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Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

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.

In addition, to be admitted to the graduate degree programs of the department, students must have satisfactory scores (as determined by the department) on the Graduate Record Examination, including both the verbal and quantitative sections.

The deadline for applications is December 1 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, 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).

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 Lesbian, Gay, Bisexual, Transgender, and Queer Studies  
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 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
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- A student must have passed all first-year work with a 3.50 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 on the department website at [sociology.colorado.edu](http://sociology.colorado.edu).

## Certificate Program

### Graduate Certificate in Population Studies

For information on this certificate, see [Geography](#).

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## Spanish and 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 below*), as well as a Portuguese minor. 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 and of Spanish American literature;
- the major creative writers in both Spanish and Spanish American literature;
- basic critical methodologies in the study of poetry, drama, narrative fiction, and nonfiction; and
- the cultural and historical contexts in which Spanish-speaking societies 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 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.

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;

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Economics

English

Environmental Studies

Ethnic Studies

- 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)

### Bachelor of Arts 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**

- 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.

- 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**

- 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).—3
- Upper-division SPAN or PORT literature, culture, and/or language (may include Hispanic linguistics requirement)—6
- "Major Works and Trends" 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.*

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

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious 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 &amp; Sciences

Business

Education

Engineering &amp; Applied Science

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 which includes the completion of the business minor. 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 years.

Declaration of the major and the business minor 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 and a C- or better in a statistics or calculus course, (the statistics or calculus class will also count as one of the LD area courses described below). SPAN 3040 and SPAN 4070 must be taken at CU-Boulder. A 2.00 GPA or better is required for the Leeds courses.

### 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

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- Upper-division elective (recommended: SPAN 3050, 3310, 3340, 4930)—3

**Courses in Economics and the Leeds School of Business for College of Arts and Sciences students** (no substitutions allowed): **15 credit hours:**

- ECON 3403 International Economics and Policy (prereq., ECON 1000 or ECON 2010 and 2020)—3
- BUSM 2001 Management/Marketing—3
- BUSM 2002 Accounting/Finance—3
- BUSM 3XXX Track (any one of three)—3
- BUSM 4XXX Strategy/CES and Business Plan—3

*NOTE: To enroll in Leeds Business minor courses, arts and sciences students must have a minimum 2.00 GPA and must apply for the business minor after completing statistics or calculus with C- and 26 hours (12 hours at CU or with transfer work). In addition, they must attend a five hour "On-Boarding Experience" before the first BUSM class and pay applicable course fees. For complete information and application forms visit [leeds.colorado.edu/minor#overview](http://leeds.colorado.edu/minor#overview).*

**Courses in Leeds School of Business for Double Degree students:**

15 credit hours of BCOR classes, which cover comparable functional areas as those in the BUSM courses will be approved for the business course component and the 12 credit area course requirement will be covered by other courses required for the Leeds degree. See faculty director of the international Spanish for the profession major for approval of specific courses.

**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 certificate program, second major or degree. These may include courses in business, economics, computer science, linguistics, another foreign language, Chicano/a studies, Latin American studies, international affairs, any course dealing with the Hispanic world from anthropology, history, political science and geography. Often some of these courses can be fulfilled on study abroad. Courses meeting this requirement must be approved by the faculty director of the major.

Six credits may be taken in lower-division courses and three of these credits can be the statistics or calculus class taken as the prerequisite to the BUSM courses.

Six credits 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 student may not take more than 45 credit hours in Spanish, but rather that one must have at least 75 credit hours in courses other than Spanish. PORT 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 economics, business and area courses) must be at least 2.00.*

## 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 "Major Works and Trends" courses listed above, on the Boulder campus.

## Minor Program in Portuguese

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/undergraduates/minors.html](http://www.colorado.edu/artssciences/students/undergraduates/minors.html).

## Concurrent Bachelor's/Master's Program

### Concurrent BA/MSIB in Spanish

This program is designed for 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 the 15 credit hours of economics and business courses from the undergraduate degree count toward prerequisites for the MS program.

**Admission Procedures:** Students apply for the MSIB program during their third year by declaring their intention to the international Spanish for the professions faculty director, 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 and 21st century peninsular, colonial and 19th century Spanish American, and 20th and 21st 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 it also provides a strong academic foundation for students with other professional goals.

The undergraduate degree in speech, language, and hearing sciences emphasizes knowledge 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 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. Majors must present a minimum of 35 credit hours of course work.

### Required Courses and Semester Credit Hours

- LING 2000 Introduction to Linguistics—3
- SLHS 2000 Introduction to Communication Disorders—3
- SLHS 2010 Human Communication Science—3
- SLHS 3006 Phonetics or LING 3100 Sound Structure of Language—3
- SLHS 3106 Hearing Science—3
- SLHS 3116 Speech Science—3
- SLHS 4502 Language Disorders: Child and Adult—3

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Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

SLHS 4512 Speech Disorders—3

- SLHS 4560 Language Development—3
- SLHS 4704 Audiological Evaluation—3
- SLHS 4714 Audiological Rehabilitation—3
- SLHS 4918 Introduction to Clinical Practice—2
- PSYC 1001 (as prerequisite for SLHS 4560)—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 the Department of 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 1001—by the end of spring semester of sophomore year.

## 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.

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 18 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. Students may also pursue a dual PhD with SLHS and Neuroscience or SLHS and Cognitive Psychology.

The AuD program is a four-year post-baccalaureate program consisting of academic course work, clinical practicum experiences,

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

Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

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**Speech, Language, and Hearing Sciences**

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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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## 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 Chris Aiken and Angie Hauser, 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, John Scott, TeenaMarie Custer, and Shelley Senter in dance; Ami Dayan, Terry Berliner, Lee Blessing, Jill CDonne, Elizabeth Dowd, Melanie Marnich, 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;
- the history of theatrical production—its styles, conventions, and socially related mores—from ancient civilizations 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 collaborative member of a production team in the preparation of regularly scheduled public productions.

### Dance

The University of Colorado Boulder has an exciting and diversified dance program which offers BA, BFA, and MFA degrees. We are a contemporary dance program—one that values and provides study in a range of styles that influence the multifaceted nature of

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concert dance today. Our training reflects the influences of both West African traditional dance and Western European (ballet) folk dance traditions. Our curriculum is designed to develop concrete skills in performance and choreography and to instill 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 undergraduate degrees in dance:

- physical investigation of a myriad of styles including: contemporary, hip-hop, ballet, jazz, African and fusion forms, to deepen the somatic awareness and technical refinement of today's contemporary dancer;
- 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;
- function constructively as a member of a dance community in the preparation of regularly scheduled public productions; and
- connect and collaborate with communities outside the department through dance outreach.

BA and BFA students are expected to take a variety of technique styles. A minimum of three different styles, as well as African dance, are required. 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

#### Bachelor of Arts 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, as well as an overall theatre GPA of 2.00.

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

- THTR 1003 Acting 1—3
- 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

Film Studies  
 French and Italian  
 Geography  
 Geological Sciences  
 Germanic and Slavic Languages and Literatures  
 History  
 Humanities  
 Integrative Physiology  
 International Affairs  
 INVT Community Studies  
 Jewish Studies  
 Lesbian, Gay, Bisexual, Transgender, and Queer Studies  
 Linguistics  
 Mathematics  
 Medieval and Early Modern Studies  
 Molecular, Cellular, and Developmental Biology  
 Museum and Field Studies  
 Peace and Conflict Studies  
 Philosophy  
 Physics  
 Political Science  
 Psychology and Neuroscience  
 Religious 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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- THTR 2021 Development of Theatre 2: Modern Theatre and Drama—3
- THTR 2105 Introduction to Theatre Design—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 3053 Acting 2
  - THTR 4039 Musical Theatre Repertory
  - 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 (6 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 1003 Acting 1—3
- THTR 1011 Development of Theatre 1—3
- THTR 1019 Theatre Foundations—3
- THTR 1105 Stage Technologies—3
- THTR 1115 Costume Technologies—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 1003, 1011, 1019, 1105, 1115, 2021, and 2105 by the end of the fourth semester
- Complete THTR 3149, 3 upper-division credit hours plus 2 credits of THTR 3035 by the end of the fifth semester
- Complete 8 additional upper-division credit hours, including 2 more credits of THTR 3035 by the end of the sixth semester
- Complete THTR 4149, 6 additional upper-division credit hours, plus all 3 credits in dance by the end of the seventh semester
- Complete THTR 4021, 3 upper-division credit hours, and 1 credit of THTR 3035 by the end of the eighth semester

## Bachelor of Fine Arts 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.

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
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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 audition/interviews for these BFA tracks.

The college counts a maximum of 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, as well as an overall theatre GPA of 2.00.

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.)

## Concentration in Performance

67 credit hours are required in THTR, plus 9 in other disciplines (3 dance; 6 dramatic literature). 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 theatre season productions each semester.

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

- 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

## Concentration in Design, Technology, and Management

64 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:

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

- THTR 4085 Theatre Management—3
- THTR 4555 Production Studio (1–2 credits repeated for a total of 5)—5
- Four Advanced Technical Theatre electives (as advised)—12
- As advised, courses in other departments in drawing, painting, drafting, sculpture, art history, communication, film, media, business management, environmental design, and/or physics—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](http://www.colorado.edu/theatredance/theatre).

### **Theatre/Dance**

- THTR 1003 Acting 1—3

- THTR 1019 Theatre Foundations—3
- THTR 1105 Stage Technologies—3
- THTR 1115 Costume Technologies—3
- THTR 3011 Development of American Musical Theatre—3
- THTR 3035 Production Practicum (including section 821 Tech Studio)—5
- 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. Auditions and interviews for the performance concentration occur in the second semester and for the design/technology concentrations take place in the third semester of study. Students who are accepted into one of 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 1003, 1011, 1019, 1105, 1115, 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, 4033, 4193. Students are also encouraged to complete EMUS 1184 (voice).
- All students in this concentration must audition for all main season theatre 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 2015 Introduction to Performance Design, 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](http://www.colorado.edu/TheatreDance/theatre)). Students who are accepted into the BFA musical theatre concentration must confirm their decision to enroll as TBFA-MUS major immediately upon acceptance following the audition. They must also meet immediately with a departmental advisor.

## Minor in Theatre

The minor in theatre is designed to provide the student with a broad overview of theatre. Requirements include a minimum of 19 credit hours from the courses below; 9 hours of which must be upper division with a minimum grade of C- in each THTR course and a minimum of 2.00 GPA for all THTR courses. Transfer students may apply a maximum of 9 transfer hours with a maximum of 6 upper-division hours to the theatre minor. Students select courses from the theatre curriculum based on their interests and course availability.

### Required Courses (total 18 credit hours) to include:

- One of the following:
  - THTR 1003 Acting for Nonmajors—3
  - THTR 1009 Introduction to Theatre—3
  - THTR 2105 Introduction to Theatre Design—3
- One of the following:
  - THTR 1011 Development I—3
  - THTR 2021 Development 2—3
  - THTR 3011 Development of American Musical Theatre—3
  - THTR 4021 Development 4—3
- One of the following:
  - THTR 1105 Stage Technologies—3
  - THTR 1115 Costume Technologies—3
- THTR 3035 Production Practicum (including 1 run crew). THTR 3033 Acting Practicum is acceptable in place of one of the 3 credits.—3
- Dance class—1
- Theatre electives (must be upper division)—6

## Dance

BA and BFA students are expected to take a variety of technique styles. A minimum of three different styles, as well as African dance, are required. 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 of Arts in Dance

### Required Courses and Semester Credit Hours

- DNCE 1012 Dance Production—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 (2) or DNCE 3041 (2) or DNCE 4061 Major Technique (2) (Note 1)—total 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 or DNCE 4047 Hip Hop Dance History—3
- DNCE 4939 Senior Project: Internship—1
- THTR 1115 Costume Technologies—3
- THTR 3035 Practicum—2
- THTR 4029 Dance and Community Engagement—2
- THTR 4081 Senior Seminar—3
- Electives in dance technique courses ending in "1"—6
- General 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 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 1012, 1013, 1027, 2005, 2014, and 2033; THTR 1115, 3035, and 4029.
- Complete during junior and senior years: DNCE 4015, 4016 or 4036, 4017, and 4037 or 4047.
- 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 3 hours of dance electives at appropriate time with the advice of the advisor.

## **Bachelor of Fine Arts 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—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 or DNCE 4047 Hip Hop Dance History—3
- DNCE 4053 Advanced Composition—3
- DNCE 5052 Studio Concert—3
- THTR 1003 or DNCE 4023 Performance Improvisation Techniques—2-3
- THTR 1115 Costume Technologies—3
- THTR 3035 Practicum—1
- THTR 4029 Dance and Community Engagement—3
- THTR 4081 Senior Seminar—3
- Electives in dance technique courses ending in "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, 4047, 4053; 1 credit of THTR 4029.
- 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.

## **Minor in Dance**

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 2.00 GPA for all dance and approved non-dance courses. Transfer students may apply a maximum of 9 transfer hours with a maximum of 6 upper-division hours to the dance minor. Students select courses from the dance curriculum based on their interests and course availability.

### **Required Courses (total 10 credit hours) to include:**

- Two of the following courses:  
DNCE 1017 Dance and Popular Culture—3  
DNCE 1027 Introduction to Dance and Popular Culture—3  
DNCE 4017 History and Philosophy of Dance—3  
DNCE 4037 Looking at Dance—3  
DNCE 4047 Hip Hop Dance History—3
- Plus 4 additional credits of dance technique (courses ending in 0 or 1), which could include DNCE 1013 Improvisation

### **Elective Courses (total 10 credit hours)**

## 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 January 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, 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.** Four 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 & 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.



## 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. (A Graduate Certificate in Women and Gender Studies is also offered, *see below*.) 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 audiences
- employ creative problem solving techniques, especially with regard to research and analysis of the issues noted in the previous section

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Actuarial Studies and Quantitative Finance Certificate Programs

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Biological Sciences

British and Irish Studies

Central and East European Studies

Chemistry and Biochemistry

Classics

Cognitive Science Studies

Communication

Comparative Literature

Computer Science

Distributed Studies Program

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

- 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 (Note 1)—3

#### Course Note

1. This course is ONLY offered in spring semesters. Students graduating in the fall should take this course in the prior spring semester.

#### 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 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 Courses

(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.

|  |
|--|
| Film Studies   |
| French and Italian                                     |
| Geography  |
| Geological Sciences                                    |
| Germanic and Slavic Languages and Literatures          |
| History  |
| Humanities   |
| Integrative Physiology                                 |
| International Affairs                                  |
| INVT Community Studies                                 |
| Jewish Studies   |
| Lesbian, Gay, Bisexual, Transgender, and Queer Studies |
| Linguistics  |
| Mathematics  |
| Medieval and Early Modern Studies                      |
| Molecular, Cellular, and Developmental Biology         |
| Museum and Field Studies                               |
| Peace and Conflict Studies                             |
| Philosophy   |
| Physics  |
| Political Science                                      |
| Psychology and Neuroscience                            |
| Religious Studies                                      |
| Sociology  |
| Spanish and Portuguese                                 |
| Speech, Language, and Hearing Sciences                 |
| Theatre and Dance                                      |
| Western American Studies                               |
| Western Civilization Studies                           |
| <b>Women and Gender Studies</b>                        |
| Writing and Rhetoric, Program for                      |
| Faculty: Arts & Sciences                               |
| Business   |
| Education  |
| Engineering & Applied Science                          |

### 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/PSCI 3311 Gender and U.S. Politics—3
- WMST 3505/ETHN 3502 Historical and Contemporary Issues of African American Women—3
- WMST 3600 Latinas: History, Culture, and Social Activism—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/GRMN 4301 Gender, Race, and Immigration in Germany and Europe—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
- ITAL 4730 Italian Feminisms: Culture, Theory, and Narratives of Difference—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/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

|                                      |
|--------------------------------------|
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |

- 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 4616 History of Women in the U.S. to 1890—3
- WMST/HIST 4626 History of Women in the U.S. since 1890—3

## 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 U.S. 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

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 9 additional credit hours of major requirements by the end of the fourth semester.
- Complete WMST 3100 and 27 additional 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, 3710, and 4000); see advisor or department for more information.

**Cognate Areas (6 credit hours from two areas)****Gender/Sexuality**

- 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/PSCI 3311 Gender and U.S. Politics—3
- WMST 3505/ETHN 3502 Historical and Contemporary Issues of African American Women—3
- WMST 3600 Latinas: History, Culture, and Social Activism—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/GRMN 4301 Gender, Race, and Immigration in Germany and Europe—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/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/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 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 offers CU graduate students a cutting-edge, interdisciplinary education in gender and sexuality studies. It provides a thorough grounding in feminist theory and methodology, as well as the opportunity to explore a range of topics in gender and sexuality studies. Designed to help graduate students from a wide range of different CU departments and programs navigate the conceptual gap between discipline-specific studies and interdisciplinary work in gender and sexuality studies. This certificate has proven especially useful to graduate students seeking to demonstrate their expertise in gender and sexuality studies to prospective employers in academia, government, and the private sector.

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 more details, visit [wgst.colorado.edu/graduate](http://wgst.colorado.edu/graduate), or e-mail [wgst@colorado.edu](mailto:wgst@colorado.edu).





## INVST Community Studies

Consistent with their vision for a just and sustainable world, INVST Community Studies program develops 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 February. For more information, call **303-492-7719**.

**Course code for this program is INVS.**

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## Lesbian, Gay, Bisexual, Transgender, and Queer Studies

The Lesbian, Gay, Bisexual, Transgender, and Queer Studies certificate program is designed to help students develop a social, historical, and cross-cultural understanding of gender and sexuality. By exploring the historical and contemporary experiences of lesbians, gay men, bisexuals, and transgendered people, the courses in the program encourage students to think critically about the function of sexuality and gender in the world around them. In doing so, students will be able to analyze the relationships between queer and normative sexualities and gender identities.

By developing an understanding of diverse sexual and gender identities, certificate program students apply the meaning and function of sexuality to a broad range of historical and contemporary institutions and societies.

Open to any student in the university, this interdisciplinary program consists of two required courses and a number of relevant courses offered by different departments.

For more information about the LGBTQ Studies certificate program, visit the program's website [lgbt.colorado.edu](http://lgbt.colorado.edu) or call **303-492-8923**.

**Course code for this program is LGBT.**

### Certificate Program

## Certificate in Lesbian, Gay, Bisexual, Transgender, and Queer Studies

Completion of the Certificate in LGBTQ Studies requires 18 credit hours (9 upper division) of study including:

- LGBT 2000 Introduction to LGBT Studies
- LGBT 3796 Queer Theory
- 12 additional hours of approved elective courses, with at least 6 hours of upper-division electives

Approved elective courses are listed on the program website each semester. Students are encouraged to meet with the program directors early in their course of study and again in the semester prior to the semester of graduation, to ensure that program requirements are met.

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## Medieval and Early Modern Studies

To the Middle Ages, the modern world owes the preservation and transmission of Latin and Greek; the development of a host of vernaculars; the evolution of Judaism and Christianity, and the rise of Islam; the renewed study of Roman law; the growth of a mercantile class; the creation of musical notation; the erection of ecclesiastical monuments; the foundations of constitutional government; and the institution of universities. The early modern period inherited and elaborated all these institutions and inventions, adapting them to fit new conceptions of man (and woman), church, and state.

The Center for Medieval and Early Modern Studies is founded on the convictions that the period from c. 400 to c. 1800, conceived in a global context, is a dynamic cultural continuum and ever-evolving system; that study of both periods in tandem sheds new light on each; and that the unity and diversity of the premodern world can be understood and appreciated only from an interdisciplinary perspective. Medieval and Early Modern Studies therefore crosses boundaries of period, nation, language, and discipline, and the center's prime function is to facilitate and encourage interdepartmental study and teaching.

Courses throughout the curriculum are available to students whose area of specialization within a given department is the medieval and/or early modern period(s) and who wish to broaden their knowledge of the cultures of the period. With the approval of the major department, a coherent group of these courses may be accepted as a related program of study and as part of the requirements for an undergraduate degree. For additional details concerning these courses, see departmental listings.

For more information, and to inquire about the undergraduate certificate program (*see below*), consult Professor Scott G. Bruce, director, Center for Medieval and Early Modern Studies, Department of History, University of Colorado Boulder, 234 UCB, Boulder, CO 80309-0234, or [cmems@colorado.edu](mailto:cmems@colorado.edu).

**Course code for this program is MEMS.**

### Certificate Program

## Certificate in Medieval and Early Modern Studies

### Requirements (24 hours):

- Lower-division introductory survey (EALL 1011, ARTH 1300/1409, HIST 1010, HUMN 1010/1020)
- Senior-level seminar (MEMS 4030 or equivalent)
- Capstone seminar (MEMS 4020 or equivalent) with a minimum grade of *B*
- Five electives, at least four of which must be upper division
- Two of the above electives must be in disciplines other than the major
- Substitutions for MEMS 4020 and 4030 may be made at the discretion of the MEMS advisor or faculty chair

For more information, and to inquire about the undergraduate certificate program, consult Professor Scott G. Bruce, director, Center for Medieval and Early Modern Studies, Department of History, University of Colorado Boulder, 234 UCB, Boulder, CO 80309-0234, or [cmems@colorado.edu](mailto:cmems@colorado.edu).

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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.

For information or application go to the program's website: [www.colorado.edu/peacestudies](http://www.colorado.edu/peacestudies).

**Course code for this program is PACS.**

### Certificate Program

## Certificate in Peace and Conflict Studies

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

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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.

**Course code for this program is CAMW.**

### Certificate Program

## Certificate in Western American Studies

The interdisciplinary certificate draws 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.

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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.

**Course code for this program is CWCV.**

### Certificate Program

#### Certificate in Foundations of Western Civilization

The interdisciplinary curriculum of 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 12 credit hours must be at the upper-division level. Up to three courses (or 9 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).

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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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Women and Gender Studies

**Writing and Rhetoric,  
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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  |
| BERNSTEIN, Robin M.   | associate professor  | BA, Rutgers University; MA, Boston College; PhD, University of Illinois, Champaign-Urbana   |
| CAMERON, Catherine M. | professor  | BA, University of California, Berkeley; MA, University of New Mexico; PhD, University of Arizona                                  |
| 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  |
| HAMMONS, Christian S. | instructor   | BA, University of Colorado; MA, New York University; MFA, PhD, University of Southern California                                  |
| HESTER, James J.      | professor emeritus   |   |
| JONES, Carla          | associate professor  | BA, MA, University of California, Berkeley; PhD, University of  |

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|                          |   |   |
|--------------------------|---|---|
|                          |   | North Carolina at Chapel Hill   |
| JOYCE, Arthur A.         | professor   | BA, University of Delaware; MA, PhD, Rutgers University   |
| KASCHUBE, Dorothea V.    | professor emerita   |   |
| KELSO, Alec J.           | professor emeritus  |   |
| LEIGH, Steven R.         | dean of college; professor  | BA, Northwestern University; MA, University of Tennessee, Knoxville; PhD, Northwestern University     |
| LEKSON, Steven H.        | professor; curator of museum studies  | BA, Case Western Reserve University; MA, Eastern New Mexico University; PhD, University of New Mexico |
| McCABE, J. Terrence      | professor   | BA, University of Notre Dame; MA, PhD, State University of New York at Binghamton.                    |
| McGILVRAY, Dennis B.     | professor emeritus  |   |
| 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                               |
| ORTMAN, Scott C.         | assistant professor   | BA, Stanford University; MA, PhD, Arizona State University  |
| 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 emeritus  |   |
| WALKER JR.,              | professor emeritus  |   |

|  |
|--|
| Geography                                      |
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| Global Studies RAP                             |
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| INVST Community                                |
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| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
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| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
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| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
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Deward E.

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## Faculty: Applied Mathematics

| Name              | Title  | Education   |
|-------------------|--|---|
| ABLOWITZ, Mark J. | department chair;<br>College Professor of<br>Distinction | 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      | associate 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                  |
| COX, Murray       | instructor   |   |
| CROKE, Ryan       | instructor   |   |
| CURRY, James H.   | professor  | BA, MA, PhD, University of California, Berkeley   |
| DOUGHERTY, Anne   | associate chair; senior<br>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                 |

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Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                        |                                     |  |
|------------------------|-------------------------------------|--|
| KETELSEN, Christian    | instructor                          |  |
| 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.     | associate professor                 | BS, Universidad de Chile; MS, University of Wisconsin; PhD, Ohio State University  |
| MANTEUFFEL, Thomas     | professor                           | BS, University of Wisconsin; MS, PhD, University of Illinois   |
| MARTINSSON, Per-Gunnar | graduate chair; 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.        | professor                           | BS, University of Washington; MA, PhD, University of California, Berkeley  |
| NORRIS II, J. Adam     | senior 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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- Geological Sciences
- Germanic and Slavic Languages and Literatures
- Global Studies RAP
- History
- Honors
- Honors RAP
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- INVST Community
- Integrative Physiology
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- Museum and Field Studies
- Peace and Conflict Studies
- Philosophy
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## Faculty: Art and Art History

| Name                 | Title                       | Education  |
|----------------------|-----------------------------|--|
| ALHADEFF, Albert     | associate professor         | AB, Columbia University; MA, PhD, New York University  |
| AMBROSE, Kirk        | chair; 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 |
| DURESSÉ, 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 emerita |  |

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Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                        |                              |   |
|------------------------|------------------------------|---|
| GECK, Francis J.       | professor emeritus           |   |
| GREGORIO, Alvin        | assistant professor          | BFA, California State 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-Maximilians-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 |
| 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  |
| ROTH, Yumi Janairo     | associate professor          | BA, Tufts University; BFA, School of Museum 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       | associate professor          | AA, Haskell Indian Junior College; BFA, Wichita State University; MFA, Indiana University                       |
| 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           |   |

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Peace and Conflict Studies  
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Religious Studies  
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Sustainability and Social Innovation RAP  
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Theater and Dance  
Western American Studies  
Women and Gender Studies  
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Education

|                          |                     |  |
|--------------------------|---------------------|--|
| WOMACK,<br>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,<br>Elizabeth A. | professor emerita   |  |
| WOODMAN,<br>George E.    | professor emeritus  |  |
| YAZZIE, Melanie          | professor           | BA, Arizona State University, Tempe; MFA, University of Colorado Boulder           |

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## Faculty: Asian Languages and Civilizations

| Name                     | Title                                   | Education   |
|--------------------------|---|---|
| ATHERTON, David          | assistant professor of Japanese         | BA, Harvard University; MA, University of Wisconsin-Madison; MA, PhD, Columbia University                     |
| BAHOORA, Haytham         | assistant professor of Arabic           | BA, University of Michigan; MA, PhD, New York University  |
| BROWN, Janice            | department chair; professor of Japanese | BA, MA, PhD, University of British Columbia   |
| CASS, Victoria B.        | associate professor emerita             |   |
| CHEN, Jin                | instructor of Chinese                   | BA, Yunnan Normal University; MA, University of Colorado Boulder  |
| FAROKHFAL, Reza          | instructor of Farsi                     | BA, Pahlavi University, Iran; MA, Concordia University  |
| HSU, Chun-ling           | instructor of Chinese                   | BA, Soochow University, Taiwan; MEd, University of Wisconsin-River Falls                                      |
| KANEYASU, Michiko        | instructor of Japanese                  | BA, MA, PhD, University of California, Los Angeles  |
| 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          |
| KNAPCZYK, Peter          | instructor of Hindi                     | BA, Indiana University; MA, Brown University; MA, PhD, University of Texas at Austin                          |
| KROLL, Paul W.           | professor of Chinese                    | BA, MA, PhD, University of Michigan   |
| MATSUNAGA,               | senior instructor of                    | BA, Kagawa University; MA, PhD University of Wisconsin, Madison   |

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Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                          |                                |  |
|--------------------------|--------------------------------|--|
| Yumiko                   | Japanese                       |  |
| MUHAMMED, Randa          | instructor of Arabic           | BA, South Valley University, Egypt; MA, the American University, Cairo                             |
| RICHTER, Antje           | assistant professor of Chinese | PhD, Munich University   |
| RICHTER, Matthias        | associate professor of Chinese | PhD, Hamburg University  |
| RODD, Laurel Rasplica    | professor of Japanese          | BA, DePauw University; MA, PhD, University of Michigan   |
| SON, Suyoung             | assistant professor of Chinese | BA, Yonsei University; MA, University of Illinois, Urbana-Champaign; PhD, University of Chicago    |
| STUCKEY, 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             |  |
| ZAHROUNI, Rafika         | instructor of Arabic           | BA, Faculty of Letters and Human Sciences in Sousse, Tunisia; MA, Washington University, St. Louis |

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## Faculty: Asian Studies

| Name                  | Title   | Education  |
|-----------------------|---|--|
| OAKES,<br>Timothy S.  | director; professor of geography  | BA, Colby College; MA, PhD, University of Washington                     |
| WESTON,<br>Timothy B. | associate director and Asian Studies faculty advisor;<br>associate professor of history | BA, University of Wisconsin; MA, PhD, University of California, Berkeley |

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- Asian Studies**
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  - Atmospheric and Oceanic Sciences
  - Baker RAP
  - Behavioral Genetics
  - Chemistry and Biochemistry
  - Classics
  - Communication
  - Communication and Society RAP
  - Comparative Literature
  - Ecology and Evolutionary Biology
  - Economics
  - English
  - Environmental Studies
  - Ethnic Studies
  - Farrand RAP
  - Film Studies
  - French and Italian

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Jewish Studies  
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Peace and Conflict Studies  
Philosophy  
Physics  
Political Science  
Psychology and Neuroscience  
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Sewall RAP  
Sustainability and Social Innovation  
RAP  
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## Faculty: Astrophysical and Planetary Sciences

| Name                  | Title                         | Education  |
|-----------------------|-------------------------------|--|
| ARMITAGE, Philip      | 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                         |
| BROWN, Benjamin       | assistant professor           | BS, Harvey Mudd College; MS, PhD, University of Colorado Boulder                     |
| CASH, Webster C.      | professor                     | BS, Massachusetts Institute of Technology; PhD, University of California, Berkeley   |
| COMERFORD, Julia M.   | assistant professor           | AB, Princeton University; MA, PhD, University of California, Berkeley                |
| CONTI, Peter S.       | professor emeritus            |  |
| DARLING, Jeremiah K.  | assistant professor           | BS, California Institute of Technology; PhD, Cornell University                      |
| DÉSSERT, Jean-Michel  | assistant professor           | BS, MS, University of Orleans; PhD, University of Paris VI                           |

### Arts & Sciences

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Communication and Society RAP

Comparative Literature

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Film Studies

French and Italian

|                        |                                  |   |
|------------------------|----------------------------------|---|
| 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, Robert          | professor                        | BS, MS, Cornell University; PhD, University of California, Berkeley   |
| ESPOSITO, Larry W.     | professor                        | BS, Massachusetts Institute of Technology; PhD, University of Massachusetts   |
| GLENN, Jason           | 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 |   |
| 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 emeritus               |   |
| SPEISER, Theodore W.   | professor emeritus               |   |
| STOCKE, John T.        | professor                        | AB, Princeton University; PhD, University of Arizona  |

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| Geography                                      |
| Geological Sciences                            |
| Germanic and Slavic Languages and Literatures  |
| Global Studies RAP                             |
| History  |
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| Honors RAP                                     |
| Humanities                                     |
| INVST Community                                |
| Integrative Physiology                         |
| International Affairs                          |
| Jewish Studies                                 |
| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
| Miramontes Arts and Sciences Program (MASP)    |
| Molecular, Cellular, and Developmental Biology |
| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

|                 |                    |  |
|-----------------|--------------------|--|
| THOMAS, Gary E. | professor emeritus |  |
| TOOMRE, Juri    | professor          | BS, MS, MSc, Massachusetts Institute of Technology; PhD, Trinity College, Cambridge University |

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Environmental Design

Media, Communication and Information

Law

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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  |
| 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 |
| 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                   |   |
| KAY, Jennifer E.     | assistant professor                  | BA, Brown University; MS, PhD, University of Washington   |
| 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   |
| RANDALL, Cora E.     | chair; professor                     | BA, State University of New York, College at Purchase; MS, PhD, University of California, Santa Cruz            |

### Arts & Sciences

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Faculty: Arts & Sciences

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

### Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                   |   |   |
|-------------------|---|---|
| SOLOMON, Susan    | professor adjunct                       | BS, Illinois Institute of Technology; MS, PhD, University of California, Berkeley |
| TOOHEY, Darin W.  | director, Global Studies RAP; 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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| Geography                                      |
| Geological Sciences                            |
| Germanic and Slavic Languages and Literatures  |
| Global Studies RAP                             |
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| Honors RAP                                     |
| Humanities                                     |
| INVST Community                                |
| Integrative Physiology                         |
| International Affairs                          |
| Jewish Studies                                 |
| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
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| Molecular, Cellular, and Developmental Biology |
| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
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| Education                                      |

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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, Baker RAP; 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                              |
| SOUDER, Heidi        | instructor   | BA, Ohio Dominican University; MA, PhD, University of South Florida                  |

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  - Asian Languages and Civilizations
  - Asian Studies
  - Astrophysical and Planetary Sciences
  - Atmospheric and Oceanic Sciences

### Baker RAP

- Behavioral Genetics
- Chemistry and Biochemistry
- Classics
- Communication
- Communication and Society RAP
- Comparative Literature
- Ecology and Evolutionary Biology
- Economics
- English
- Environmental Studies
- Ethnic Studies
- Farrand RAP
- Film Studies
- French and Italian

Geography  
Geological Sciences  
Germanic and Slavic Languages  
and Literatures  
Global Studies RAP  
History  
Honors  
Honors RAP  
Humanities  
INVST Community  
Integrative Physiology  
International Affairs  
Jewish Studies  
Libby RAP  
Linguistics  
Mathematics  
Miramonte Arts and Sciences  
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Molecular, Cellular, and  
Developmental Biology  
Museum and Field Studies  
Peace and Conflict Studies  
Philosophy  
Physics  
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Psychology and Neuroscience  
Religious Studies  
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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.

While no undergraduate degree is currently offered, the Undergraduate Research Opportunities Program (UROP) enables students to work closely with a professor on the research of their choice, preparatory to graduate work in behavioral genetics. For more information, see [enrichment.colorado.edu/urop](http://enrichment.colorado.edu/urop).

### Graduate Degree Program(s)

#### Graduate Study in Behavioral Genetic

The graduate 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)
- 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/lbg/education\\_and\\_training/affiliated.html](http://www.colorado.edu/lbg/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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#### Behavioral Genetics

Chemistry and Biochemistry

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Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

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Geological Sciences

Germanic and Slavic Languages  
and Literatures

Global Studies RAP

History

Honors

Honors RAP

Humanities

INVST Community

Integrative Physiology

International Affairs

Jewish Studies

Libby RAP

Linguistics

Mathematics

Miramonte Arts and Sciences  
Program (MASP)

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious Studies

Sewall RAP

Sustainability and Social Innovation  
RAP

Sociology

Spanish and Portuguese

Speech, Language, and Hearing  
Sciences

Theater and Dance

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Women and Gender Studies

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## Faculty: Chemistry and Biochemistry

| Name                    | Title                            | Education   |
|-------------------------|----------------------------------|---|
| AHN, Natalie            | college professor of distinction | 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.        | 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               |   |
| CARLON, Nabilah         | instructor                       | BS, Indiana University, Purdue University Indianapolis; PhD, University of Colorado Boulder |
| 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         | associate professor              | BS, University of Pennsylvania; PhD, University of California, Berkeley                     |
| 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                                |
|                         |                                  |   |

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Baker RAP

Behavioral Genetics

### Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                     |                              |  |
|---------------------|------------------------------|--|
| FELDHEIM, Daniel    | professor                    | BA, San Jose State University; PhD, Colorado State University.   |
| GEORGE, Steven M.   | professor                    | BS, Yale University; PhD, University of California, Berkeley   |
| 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  |
| HENDRICKSON, Susan  | senior instructor            | BA, Bates College; PhD, Colorado State University  |
| HYNES, James T.     | distinguished 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         | professor                    | BSc, University of Otago; PhD, Princeton University  |
| KOCH, Tad H.        | 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     | associate 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  |
| McKAY, David        | research professor           | BS, California Institute of Technology; PhD, University of Chicago   |
| 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       | research professor           | BChE, Cornell University; MS, PhD, Yale University   |
| OLD, William        | research assistant professor | BS, University of Texas at Austin; PhD, University of Colorado Boulder   |

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 Sociology  
 Spanish and Portuguese  
 Speech, Language, and Hearing Sciences  
 Theater and Dance  
 Western American Studies  
 Women and Gender Studies  
 Writing and Rhetoric, Program for  
 Business  
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|                        |  |   |
|------------------------|--|---|
| PALMER, Amy            | associate professor                                | BA, Dartmouth College; MA, PhD, Stanford University   |
| PARDI, Arthur          | professor  | AB, University of California, San Diego; PhD, University of 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  |
| RUMBLES, Garry         | professor adjoint                                  | BSc., University of Southampton; PhD, University of London  |
| SAMMAKIA, Tarek        | chair; professor                                   | BS, University of North Carolina; PhD, Yale University  |
| SHOEMAKER, Richard     | research professor                                 | BA, Midland Lutheran College, Fremont, Nebraska; PhD, University of Nebraska, Lincoln                 |
| SIEVERS, Robert E.     | director, environmental studies 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   |
| STEPHEN, Ricardo       | instructor   | BS, University of Waterloo, Canada; PhD, University of Colorado Boulder                               |
| 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   |
|                        |  |   |

Engineering &amp; Applied Science

Environmental Design

Media, Communication and Information

Law

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|--------------------|---------------------|--|
| WILSON, Irwin B.   | professor emeritus  |  |
| WUTTKE, Deborah S. | professor           | BS, University of Rochester; PhD, California Institute of Technology |
| YIN, Hang          | associate professor | BS, Peking University; PhD, Yale University                          |
| 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     |
| DUSINBERRE, Elspeth R. M. | associate professor                   | AB, Harvard University; PhD, University of Michigan                                  |
| ELLIOTT, Jacqueline M.    | associate 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               | 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                      |
| KING, Joy K.              | associate professor emerita           |  |
| KNOX, Peter E.            | professor                             | AB, Harvard College; PhD, Harvard University   |
| LANDSFORD, Tyler          | instructor                            | BA, University of Colorado Boulder; MA, PhD, University of Washington, Seattle       |
| LENSKI, Noel E.           | department chair; 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                                  |
| REITZAMMER, Laurialan B.  | assistant professor                   | BA, Brown University; MA, PhD, University of California, Berkeley                    |
|                           |                                       |  |

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|                                |                   |   |
|--------------------------------|-------------------|---|
| 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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| Geography                                      |
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| INVST Community                                |
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| Peace and Conflict Studies                     |
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| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
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## Faculty: Communication

| Name                     | Title  | Education  |
|--------------------------|--|--|
| ASHCRAFT, Karen L.       | director, Communication and Society RAP; 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  |
| CAIN, Melinda            | instructor   | BA, Mills College, Oakland; MA, American University, Washington, DC; MA, PhD, University of Denver                           |
| 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   |
| FLORES, Lisa A.          | associate professor                                | BA, Berry College; MA, Northern Illinois University; PhD, University of Georgia  |
| FREY, Lawrence R.        | professor  | BS, Northwestern University; MA, PhD, University of Kansas   |
| HAUSER, Gerard A.        | professor emeritus                                 |  |

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

Programs of Study

Faculty: Arts & Sciences

Anthropology

Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

### Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                       |                             |   |
|-----------------------|-----------------------------|---|
| 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  |
| JAHN, Jody            | assistant professor         | BS, University of Idaho; MA, PhD, University of California, Santa Barbara                             |
| KOSCHMANN, Matthew A. | assistant professor         | BA, University of Wisconsin-Madison; MA, University of New Mexico; PhD, University of Texas at Austin |
| KUHN, Timothy R.      | associate professor         | BA, MA, University of Minnesota; PhD, Arizona State University  |
| 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.      | professor                   | BA, University of Massachusetts Amherst; MS, PhD, University of Utah                                  |
| TOMPKINS, Elaine V.   | senior instructor emerita   |   |
| TOMPKINS, Phillip K.  | professor emeritus          |   |
| TRACY, Karen          | department chair; 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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| Geography                                      |
| Geological Sciences                            |
| Germanic and Slavic Languages and Literatures  |
| Global Studies RAP                             |
| History  |
| Honors   |
| Honors RAP                                     |
| Humanities                                     |
| INVST Community                                |
| Integrative Physiology                         |
| International Affairs                          |
| Jewish Studies                                 |
| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
| Miramontes Arts and Sciences Program (MASP)    |
| Molecular, Cellular, and Developmental Biology |
| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
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| Education                                      |

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## Faculty: Communication and Society RAP

| Name            | Title                                | Education  |
|-----------------|--------------------------------------|--|
| ASHCRAFT, Karen | director; professor of communication | BA, California State University; PhD, University of Colorado                     |
| BABICZ, Martin  | instructor                           | BA, University of Connecticut; MA, Brown University; PhD, University of Colorado |
| GALE, Kendra    | instructor                           | BA, St. Olaf College; MA, PhD, University of Minnesota                           |
| JAMIESON, Sara  | instructor                           | BA, San Diego State University; MA, PhD, University of New Mexico                |

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    - Asian Studies
    - Astrophysical and Planetary Sciences
    - Atmospheric and Oceanic Sciences
    - Baker RAP
    - Behavioral Genetics
    - Chemistry and Biochemistry
    - Classics
    - Communication
  - Communication and Society RAP**
  - Comparative Literature
    - Ecology and Evolutionary Biology
    - Economics
    - English
    - Environmental Studies
    - Ethnic Studies
    - Farrand RAP
    - Film Studies
    - French and Italian

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Germanic and Slavic Languages  
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Honors RAP  
Humanities  
INVST Community  
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International Affairs  
Jewish Studies  
Libby RAP  
Linguistics  
Mathematics  
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Developmental Biology  
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Peace and Conflict Studies  
Philosophy  
Physics  
Political Science  
Psychology and Neuroscience  
Religious Studies  
Sewall RAP  
Sustainability and Social Innovation  
RAP  
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Speech, Language, and Hearing  
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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   | BA, PhD, Trinity College, Dublin  |
| COX, Jeffrey             | vice provost and 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                        |
| 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 humanities   | 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   |
| 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                           |
| 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                                       |

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Art and Art History

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Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

### Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                                       |   |   |
|---------------------------------------|---|---|
| LEIDERMAN<br>(LIPOVETSKY),<br>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  |
| MULLER-<br>SIEVERS, Helmut            | professor of German; director, center for<br>humanities and the art | BA equivalent, University of Düsseldorf; MA, Free<br>University of Berlin; PhD, Stanford University           |
| RIVERS, Jr., J.<br>E.                 | professor of English  | AB, Davidson College; MA, PhD, University of Oregon   |
| SIMONSON,<br>Peter                    | associate professor of communication                                | AB, AM, Stanford University; PhD, University of Iowa  |
| STIMILLI, Davide                      | associate professor of German                                       | BA, Laurea, University of Pisa; MA, PhD, Yale University  |
| WEBER, Beverly                        | assistant professor of German                                       | BA, Gustavus Adolphus College; MA, Pennsylvania State<br>University; PhD, University of Massachusetts Amherst |
| WHITE, Eric                           | associate professor of English                                      | BA, Columbia University; MA, Cambridge University; MA,<br>PhD, University of California, Berkeley             |
| ZEMKA, Sue                            | professor of English  | BA, Saint Louis University; PhD, Stanford University  |

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- Honors RAP
- Humanities
- INVEST Community
- Integrative Physiology
- International Affairs
- Jewish Studies
- Libby RAP
- Linguistics
- Mathematics
- Miramontes Arts and Sciences  
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Developmental Biology
- Museum and Field Studies
- Peace and Conflict Studies
- Philosophy
- Physics
- Political Science
- Psychology and Neuroscience
- Religious Studies
- Sewall RAP
- Sustainability and Social Innovation  
RAP
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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                                   |   |

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  - Baker RAP
  - Behavioral Genetics
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  - Classics
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  - Communication and Society RAP
  - Comparative Literature

### Ecology and Evolutionary Biology

- Economics
- English
- Environmental Studies
- Ethnic Studies
- Farrand RAP
- Film Studies
- French and Italian

|                        |   |   |
|------------------------|---|---|
| CRUZ, Alexander        | professor   | BS, City College of New York; PhD, University of Florida  |
| CUNDIFF, Milford F.    | associate professor   | BA, PhD, University of Colorado   |
| DAVIES, Kendi          | assistant professor   | BSc, PhD, Australian National University  |
| DEMMIG-ADAMS, Barbara  | professor   | BA, PhD, Dr. rer. nat. habil., Universität Würzburg, Germany  |
| FIERER, Noah           | associate professor   | BA, Oberlin College; PhD, University of California, Santa Barbara                                     |
| FLAXMAN, Samuel M.     | assistant professor   | BS, PhD, Cornell University   |
| 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.  | associate professor   | BS, Stanford University; PhD, University of Wisconsin   |
| KANE, Nolan            | assistant professor   | ScB, Brown University; PhD, Indiana University, Bloomington   |
| KEARNS, Carol          | senior instructor   | BS, Southampton College; MS University of New Hampshire; PhD, University of Maryland                  |
| KOCIOLEK, J. Patrick   | director, Museum of Natural History; 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,              | assistant professor   | BS, University of Hawaii; PhD, California Institute of  |

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| Geological Sciences                            |
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| Global Studies RAP                             |
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| International Affairs                          |
| Jewish Studies                                 |
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| Mathematics                                    |
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| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

|                       |                             |   |
|-----------------------|-----------------------------|---|
| Daniel                |                             | Technology  |
| MELBOURNE, Brett A.   | assistant professor         | BSc, PhD, Australian National University  |
| MITTON, Jeffrey B.    | professor                   | BA, University of Connecticut; PhD, State 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          |   |
| SMITH, Stacey D.      | assistant professor         | BA, BS, Virginia Polytechnic Institute; MPhil, Universities of Reading and Birmingham, UK; PhD, University of Wisconsin-Madison |
| SOUTHWICK, Charles H. | professor emeritus          |   |
| TOWNSEND, Alan        | professor                   | BA, Amherst College; PhD, Stanford University   |
| TRIPP, Erin A.        | assistant professor         | BA, University of North Carolina; PhD, Duke 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  |
| 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           | professor emeritus          |  |

### Arts & Sciences

Policies & Requirements

Programs of Special Interest

Residential Academic Programs (RAPs)

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Faculty: Arts & Sciences

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Chemistry and Biochemistry

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Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

### Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                           |   |  |
|---------------------------|---|--|
| R.                        |   |  |
| GRAVES,<br>Philp E.       | professor   | BA, Indiana University; MA, PhD, Northwestern University                               |
| GREENWOOD,<br>Michael J.  | professor   | BA, De Paul University; MA, PhD, Northwestern University                               |
| HOWE,<br>Charles W.       | professor emeritus  |  |
| HSIAO, Frank<br>S. T.     | professor emeritus  |  |
| HUGHES,<br>Jonathan       | assistant professor   | BS, Duke University; MS, Cornell University; PhD,<br>University of California, Davis   |
| YIGUN, Murat<br>F.        | professor   | BS, Hacettepe University, Turkey; MBA, Boston University;<br>MA, PhD, Brown University |
| KAEMPFER,<br>William H.   | vice provost and associate vice chancellor for<br>academic affairs, budget, and planning;<br>professor                  | BA, College of Wooster; MA, PhD, Duke University                                       |
| KAPLAN,<br>Jules          | senior instructor   | BS, University of Maryland; MA, PhD, University of<br>Colorado Boulder.                |
| KELLER,<br>Wolfgang       | professor   | Diploma in Economics, University of Freiburg, Germany;<br>PhD, Yale University         |
| KIM, Jin-Hyuk             | assistant professor   | BA, Yonsei University; MA, Cornell University; PhD, Cornell<br>University              |
| LILLYDAHL,<br>Jane        | professor emerita   |  |
| LIU, Xiaodong             | assistant professor   | Fudan University; MA, PhD, Ohio State University                                       |
| MARKUSEN,<br>James R.     | university distinguished professor  | BA, PhD, Boston College  |
| MARTINS-<br>FILHO, Carlos | professor   | BS, Federal University of Ceara, Brazil; MA, PhD,<br>University of Tennessee          |
| MASKUS,<br>Keith E.       | associate dean for the social sciences, College of<br>Arts and Sciences; college professor of<br>distinction; professor | BA, Knox College; MA, PhD, University of Michigan                                      |
| McKINNISH,<br>Terra G.    | associate professor   | BA, University of Richmond; MS, PhD, Carnegie Mellon<br>University                     |
| McNOWN,<br>Robert F.      | professor   | BA, University of California, Los Angeles; PhD, University<br>of California, San Diego |
| MERTENS,<br>William       | instructor  | BA, University of Michigan; MA, PhD, University of<br>Colorado Boulder                 |
|                           |   |  |

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 Western American Studies  
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 Writing and Rhetoric, Program for  
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|                    |  |   |
|--------------------|--|---|
| 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                                   |   |
| 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                      |
| BELL, Michael       | professor emeritus   |  |
| BICKMAN, Martin E.  | professor  | BA, 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                                 |

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Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

### English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                          |  |  |
|--------------------------|--|--|
| 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, John           | assistant professor                                    | BA, University of California, Riverside; MA, PhD, Rice University  |
| GARRITY, Jane            | associate professor                                    | BA, MA, PhD, University of California, Berkeley; MA, Queen Mary College, University of London  |
| GLIMP, David             | associate professor                                    | BS, Texas A&M University; PhD, University of Colorado; MA, PhD, Johns Hopkins University   |
| GOLDFARB, Sidney         | professor emeritus                                     |  |
| GOODMAN, Nan             | 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, 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        | associate 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         | professor emeritus                                     |  |

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Sustainability and Social Innovation RAP

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Speech, Language, and Hearing Sciences

Theater and Dance

Western American Studies

Women and Gender Studies

Writing and Rhetoric, Program for

Business

Education

|                      |                                       |  |
|----------------------|---------------------------------------|--|
| B.                   |                                       |  |
| 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, Philip 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.     | associate 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   |
| LYONS, Thomas        | senior instructor emeritus            |  |
| MATTAR, Karm         | assistant professor                   | BA, University College, London; MA, University of Warwick; MA, University of Sussex; MA, University of Virginia, DPhil, University of Oxford |
| 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  |

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- Environmental Design
- Media, Communication and Information
- Law
- Music
- Graduate School
- Other Academic Programs



## Faculty: Environmental Studies

| Name             | Title  | Education   |
|------------------|--|---|
| BLANKEN, Peter   | associate professor (joint with 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                            |
| CARRICO, Amanda  | assistant professor  | BA, Transylvania University; MA, PhD, Vanderbilt University   |
| COLLINGE, Sharon | director, professor (joint with 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                                |
| DOAK, Danel      | professor  | BA, Swarthmore College; PhD, University of Washington   |
| HALE, Benjamin   | associate professor  | BS, Kalamazoo College; MPA, University of Arizona; PhD, State University of New York at Stony Brook |
| HARTTER, Joel    | associate professor  | BS, BSE, University of Michigan; MS, Oregon State University; PhD, University of Florida            |
| LITT, Jill       | assistant professor (joint with 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  |

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Comparative Literature

Ecology and Evolutionary Biology

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Film Studies

French and Italian

|                    |  |  |
|--------------------|--|--|
| NEMERGUT, Diana    | associate professor (joint with 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                        |
| 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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  - Molecular, Cellular, and Developmental Biology
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  - Peace and Conflict Studies
  - Philosophy
  - Physics
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  - Psychology and Neuroscience
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  - Sewall RAP
  - Sustainability and Social Innovation RAP
  - Sociology
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## Faculty: Ethnic Studies

| Name                      | Title                                    | Education  |
|---------------------------|--|--|
| ALDAMA, Arturo J.         | associate chair;<br>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                                     |
| HOLMES, Kwame             | assistant professor                      | BA, Florida A&M University; PhD, University of Illinois, Champaign-Urbana                                      |
| KING, William M.          | professor emeritus                       |  |
| MAEDA, Daryl              | department chair,<br>associate professor | BS, Harvey Mudd College; MA, San Francisco University; MA, University of Michigan; PhD, University of Michigan |
| 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   |
| WITHYCOMBE, Jenny Lind    | instructor                               | BA, MA, Willamette University; PhD, University of Tennessee, Knoxville   |

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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                            |
| 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                        |
| AUGUSTE, 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                               |
| 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     | associate 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 Linguistics | BA, Harvard University; MA, PhD, University of California, Berkeley   |
| FERME, Valerio                | associate professor                             | BA, Brown University; MA, Indiana University; PhD, University of California, Berkeley                             |
| FREY, Julia B.                | professor emerita                               |   |
| MAGNANINI, Suzanne            | department chair; associate professor           | BA, Washington University; MA, PhD, University of Chicago   |
| MAYER, Edgar N.               | professor emeritus                              |   |
| MORTIMER, Mildred             | professor emerita                               |   |
| MURPHY, Kiernan               | assistant professor                             | BA, University of Minnesota; MA, PhD, University of California, Santa Barbara                                     |
| REED, Cosetta Seno            | assistant professor                             | Laurea, University of Macerata, Italy; MA, University of Virginia; PhD, University of California, Berkeley        |
| 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; professor          | BS, Syracuse University; MS, PhD, University of Colorado Boulder  |
| 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 University                     |
| ERICKSON, Kenneth A.    | professor emeritus   |   |
| FLURI, Jennifer         | associate professor  | BFA, Rosemont College; MS, PhD, Pennsylvania State College  |
| FOOTE, Kenneth E.       | professor emeritus   |   |
| GOLDMAN, Mara           | assistant professor  | BA, Clark University; MA, University of California, Los Angeles; MS, PhD, University of Wisconsin–Madison |
| 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.   | director, Center for Asian Studies; 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.    | director, National Snow and Ice Center; 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 emeritus                                |   |
| 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 emeritus           |  |
| 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 |
| 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.      | associate professor          | BS, College of William and Mary; MS, University of Utah; PhD, Massachusetts Institute of Technology      |

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[Film Studies](#)

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|                          |  |  |
|--------------------------|--|--|
| GE, Shemin               | professor  | BSc, Wuhan University of Technology, China; MASc., The University of British Columbia, Canada; MA, PhD, Johns Hopkins University |
| GOETZ, F. H. Alexander   | professor emeritus                                 |  |
| HYNEK, Brian M.          | associate 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                 |
| MILLER, Gifford H.       | professor  | BA, PhD, University of Colorado  |
| MOJZSIS, Stephen J.      | 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   |
| 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   |

|  |
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| INVST Community                                |
| Integrative Physiology                         |
| International Affairs                          |
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| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

|                               |   |  |
|-------------------------------|---|--|
| SMYTH,<br>Joseph R.           | professor   | BS, Virginia Polytechnic Institute; MS, PhD, University of Chicago                         |
| SPETZLER,<br>Hartmut A.<br>W. | professor emeritus  |  |
| STERN,<br>Charles R.          | professor   | BS, MS, PhD, University of Chicago   |
| SYVITSKI,<br>James P. M.      | professor   | BSc, HBCS, Lakehead University; PhD, University of British Columbia                        |
| TEMPLETON,<br>Alexis S.       | associate professor   | BA, MS, Dartmouth College; PhD, Stanford University  |
| TILTON, Eric                  | professor   | BA, Williams College; PhD, University of California at Santa Cruz                          |
| TUCKER,<br>Gregory E.         | professor   | BA, Brown University; PhD, Pennsylvania State University                                   |
| WALKER,<br>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,<br>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                                       | 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 |
| HOECKER, Arne                   | assistant professor                                     | MA, Humboldt University; PhD, Johns Hopkins University   |
| KOSTOGLODOVA, Elena Y.          | senior instructor                                       | BA, Uppsala College; MA, PhD, University of Colorado   |
| LEE, C. Nicholas                | professor emeritus                                      |  |
| LEIDERMAN (LIPOVETSKY), 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 at Purchase; MA, Indiana University; PhD, Yale University       |

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Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                        |   |  |
|------------------------|---|--|
| PICKFORD, Henry        | assistant professor   | BA, Dartmouth College; MA, Stanford University; PhD, Yale University                                       |
| PLANK, D. L.           | professor emeritus  |  |
| RIVLIN, Eyal           | instructor  | BA, Tel Aviv University; MA, Naropa University   |
| ROMANOV, Artemi        | associate professor   | BA, MA, PhD, Leningrad University  |
| SALYS, Rimgaila        | professor   | BA, University of Pennsylvania; MA, PhD, Harvard University  |
| SAMPSON, Earl D.       | associate professor 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                         |
| SENDEROVICH, Sasha     | assistant professor   | BA, University of Massachusetts Amherst; PhD, Harvard University   |
| STIMILLI, Davide       | chair, Germanic and Slavic Languages and Literatures; associate professor of German literature and comparative literature | BA, Laurea, University of Pisa; MA, 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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- Sewall RAP
- Sustainability and Social Innovation RAP
- Sociology
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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        |
| TOOHEY, Darin    | director, Global Studies RAP; professor of oceanic and atmospheric sciences | BA, BS, California State University, Fullerton; MS, PhD, Harvard University |

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    - Atmospheric and Oceanic Sciences
    - Baker RAP
    - Behavioral Genetics
    - Chemistry and Biochemistry
    - Classics
    - Communication
    - Communication and Society RAP
    - Comparative Literature
    - Ecology and Evolutionary Biology
    - Economics
    - English
    - Environmental Studies
    - Ethnic Studies
    - Farrand RAP
    - Film Studies
    - French and Italian

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Humanities

INVST Community

Integrative Physiology

International Affairs

Jewish Studies

Libby RAP

Linguistics

Mathematics

Miramonte Arts and Sciences  
Program (MASP)

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious Studies

Sewall RAP

Sustainability and Social Innovation  
RAP

Sociology

Spanish and Portuguese

Speech, Language, and Hearing  
Sciences

Theater and Dance

Western American Studies

Women and Gender Studies

Writing and Rhetoric, Program for

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## Faculty: History

| Name                    | Title                                       | Education  |
|-------------------------|---|--|
| ANDERSON, Fred W.       | College Professor of Distinction; 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                  |
| ANDREWS, Thomas G.      | associate professor                         | BA, Yale University; MA, PhD, University of Wisconsin-Madison  |
| 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           | associate professor                         | BA, MA, PhD, Yale University   |
| CHRISTENSEN, Carl C.    | professor emeritus                          |  |
| CIARLO, David           | associate professor                         | BA, Oberlin College; MA, University of Cincinnati; PhD, University of Wisconsin-Madison                    |
| 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             |  |
| FENN, Elizabeth A.      | associate professor                         | BA, Duke University; MA, PhD, Yale University  |
| 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        |

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Chemistry and Biochemistry

Classics

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Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                           |   |   |
|---------------------------|---|---|
| GERBER, Matthew D.        | associate professor                               | BA, Yale University; MA, PhD, University of California, Berkeley  |
| GONZALEZ, Fredy           | assistant professor                               | BA, University of California, Berkeley; MA, PhD, Yale University  |
| GROSS, David L.           | professor   | BA, St. Ambrose College; MA, PhD, University of Wisconsin   |
| HALPERIN, Liora           | assistant professor                               | BA, Harvard; MA, PhD, University of California, Los Angeles   |
| 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.           | associate professor                               | BA, Brown University; MA, PhD, Princeton University   |
| LIM, Sungyun              | assistant professor                               | BA, Seoul National University; MA, Seoul National University; MA, PhD, University of California, Berkeley |
| LIMERICK, Patricia Nelson | director, Center for the American West; professor | BA, University of California, Santa Cruz; MA, M.Phil., PhD, Yale University                               |
| MAIN, Gloria L.           | professor emerita                                 |   |
| MANN, Ralph               | associate professor emeritus                      |   |
| McINTOSH, Marjorie K.     | distinguished professor emerita                   |   |
| MUKHERJEE, Mithi          | associate professor                               | BA, Presidency College, Calcutta; MA, Jawaharlal Nehru University; PhD, University of Chicago             |
| OSBORNE, Myles            | assistant professor                               | BA, Columbia University; MA, PhD, Harvard University  |
|                           |   |   |

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Lobby RAP

Linguistics

Mathematics

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Molecular, Cellular, and Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious Studies

Sewall RAP

Sustainability and Social Innovation RAP

Sociology

Spanish and Portuguese

Speech, Language, and Hearing Sciences

Theater and Dance

Western American Studies

Women and Gender Studies

Writing and Rhetoric, Program for

Business

Education

|                        |  |   |
|------------------------|--|---|
| PARADIS, David H.      | instructor   | BA, University of Virginia; MA, PhD, Emory University                             |
| PHILLIPS, George H.    | professor emeritus                                     |   |
| PITTENGER, Mark A.     | professor  | BA, Denison University; MA, PhD, University of Michigan                           |
| RUESTOW, Edward G.     | associate professor emeritus                           |   |
| SCAMEHORN, Howard Lee  | professor emeritus                                     |   |
| SCHULZINGER, Robert D. | College Professor of Distinction; professor emeritus   |   |
| SHINEER, David         | director of Jewish Studies; professor                  | 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                                   |
| TALLY, Patrick         | senior instructor, advisor                             | BA, Ohio Wesleyan University; MA, PhD, University Of Wisconsin-Madison            |
| WEI, William           | professor  | BA, Marquette University; MA, PhD, University of Michigan                         |
| WESTON, Timothy        | associate director, Asian Studies; 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 |
| WOOD, Peter H.         | professor adjunct                                      | BA, Harvard College; MA, Oxford University; PhD, Harvard University               |
| YONEMOTO, Marcia A.    | associate professor                                    | BA, MA, PhD, University of California, Berkeley                                   |

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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 University  |
| BREED, Michael D.   | interim director Honors Program; professor of ecology and evolutionary biology | BA, Grinnell College; MA, PhD, University of Kansas   |
| BUCHWALD, Robert    | instructor   | BS, University of Texas at Austin; PhD, University of Colorado Boulder  |
| COLE, Penelope      | instructor   | BA, Hamline University; MA, University of Oregon; PhD, University of Colorado                                 |
| DIKE, Steven        | instructor   | BA, University of Colorado Boulder; MA, University of Virginia; PhD, University of Colorado Boulder           |
| GERLAND, Oliver     | associate director of Honors RAP; associate professor of theatre and dance     | BA, Swarthmore College; PhD, Stanford University  |
| HICKCOX, Abby       | instructor   | BA, Eartham College; MS, University of Wisconsin-Madison; PhD, University of Colorado                         |
| 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  |
| MILLER, Olivia      | instructor   | BA, University of California, Santa Barbara; MA, University of Colorado Boulder; PhD, SUNY-Binghamton         |
| MOLINARO, Nina L.   | associate director of honors; associate professor of Spanish                   | BA, Scripps College; MA, PhD, University of Kansas  |
| MOORE, George       | senior instructor  | BS, Lewis & Clark College, Portland, Oregon; MA, PhD, University of Colorado                                  |
| STROM, Paul         | senior instructor  | BA, University of Colorado Boulder; MDiv, Austin Presbyterian Theological Seminary; PhD, University of Denver |

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  - Baker RAP
  - Behavioral Genetics
  - Chemistry and Biochemistry
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Peace and Conflict Studies

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## Honors RAP

| Name                | Title  | Education   |
|---------------------|--|---|
| ANDERSON, Fred W.   | director of Honors RAP; professor of history                               | BA, Colorado State University; AM, PhD, Harvard University  |
| BUCHWALD, Robert    | instructor   | BS, University of Texas at Austin; PhD, University of Colorado Boulder                                |
| COLE, Penelope      | instructor   | BA, Hamline University; MA, University of Oregon; PhD, University of Colorado                         |
| DIKE, Steven        | instructor   | BA, University of Colorado Boulder; MA, University of Virginia; PhD, University of Colorado Boulder   |
| GERLAND, Oliver     | associate director of Honors RAP; associate professor of theatre and dance | BA, Swarthmore College; PhD, Stanford University  |
| HICKCOX, Abby       | instructor   | BA, Eartham College; MS, University of Wisconsin-Madison; PhD, University of Colorado                 |
| JONES, Daniel C. L. | senior instructor  | BA, Sonoma State University; MM, PhD, University of Colorado  |
| MILLER, Olivia      | instructor   | BA, University of California, Santa Barbara; MA, University of Colorado Boulder; PhD, SUNY-Binghamton |
| MOORE, George       | senior instructor  | BS, Lewis & Clark College, Portland, Oregon; MA, PhD, University of Colorado                          |
| STROM, Paul         | faculty-in-residence of Honors RAP; 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 RAP  | 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, Santa Barbara; PhD, University of Colorado Boulder |
| CATLOS, Brian      | associate professor of Spanish and religious studies  | BA, MA, PhD, University of Toronto   |
| COX, Jeffrey       | vice provost and 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, Universidad Nacional de Rosario (Argentina); MA, PhD, University of Pittsburgh   |
| FERRIS, David      | professor of humanities   | BA, University of Leeds, England; PhD, State University of New York at Buffalo   |
| GANGULY, Suranjan  | professor of film   | BA, St. Xavier College, India; MA, Jadavpur University, India; PhD, Purdue University  |
| 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,            | associate professor of ethnic studies   | BFA, University of the Arts; MA, PhD, Temple University  |

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| Reiland               |                       |  |
| SCHÜTRUMPF,<br>Eckart | professor of classics | PhD, Habilitation in Classics, University of Marburg |
| ZEMKA, Sue            | professor of English  | BA, St. Louis University; PhD, Stanford University   |

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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                                |
| BEKOFF, Anne C.        | professor  | BA, Smith College; PhD, Washington University  |
| BYRNES, William C.     | associate professor                                      | BS, Manhattan College; MA, Appalachian State University; PhD, University of Wisconsin      |
| CAREY, Cynthia         | director, Baker RAP; 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.        | 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                             |  |
| GLEESON, Todd          | director, Health Professions RAP; professor              | BS, University of California, Riverside; PhD, University of California, Irvine             |
| GREENWOOD, Benjamin N. | assistant research professor                             | BA, MS, PhD, University of Colorado Boulder  |
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| HEISLER, Ruth E.        | senior instructor                              | BS, University of Minnesota; MA, University of Colorado  |
| 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 professor                            | BS, Brooklyn College; PhD, University of Massachusetts   |
| LOWRY, Christopher A.   | associate 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 emeritus                             |  |
| 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           | department chair; 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       | professor (joint with Department of Political Science)              | BA, Davidson College; PhD, Ohio State University                                      |
| CAIN, Melinda       | instructor (joint with Department of Communication)                 | BA, Mills College; MA, PhD, University of Denver                                      |
| CHESTER, Lucy       | associate professor (joint with Department of History)              | BA, MPhil, PhD, Yale University   |
| DUNN, Elizabeth     | associate professor (joint with 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 Global Studies Residential Academic Program) | BA, Northwestern University; PhD, University of Colorado Boulder                      |
| ZEILER, Thomas      | program director; professor of history                              | BA, Emory University; MA, PhD, University of Massachusetts                            |
| ZHANG, Shuang       | assistant professor (joint with Department of Economics)            | BA, Shanghai University; MA, Fudan University; PhD, Cornell University                |

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## Faculty: Jewish Studies

| Name                | Title   | Education  |
|---------------------|---|--|
| CATLOS,<br>Brian A. | associate professor of religious studies  | BA, University of Toronto; MA, PhD, Centre for Medieval Studies            |
| GOODMAN,<br>Zilla   | senior instructor of Hebrew   | BA, MA, PhD, University of Cape Town                                       |
| LIEBER,<br>Julie    | lecturer in Jewish intellectual history   | BA, MA, PhD, University of Pennsylvania                                    |
| SACKS,<br>Elias     | assistant professor of religious studies  | BA, Harvard University; MA, Columbia University; PhD, Princeton University |
| SHINEER,<br>David   | director, Program in Jewish Studies; Louis P. Singer endowed chair in Jewish History; professor of history                | BA, MA, PhD, University of California, Berkeley                            |
| STIMILLI,<br>Davide | chair, Germanic and Slavic Languages and Literatures; associate professor of German literature and comparative literature | BA, Laurea, University of Pisa; MA, PhD, Yale University                   |
| ZEMKA,<br>Sue       | professor of English  | BA, St. Louis University; PhD, Stanford 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, Libby RAP; professor of mathematics | BA, MA, PhD, Columbia University   |

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## Faculty: Linguistics

| Name                         | Title                        | Education   |
|------------------------------|------------------------------|---|
| BELL, Alan                   | associate professor emeritus |   |
| COWELL, Andrew               | 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         | 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          | associate professor          | BA, University of Delhi, India; 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 chair for undergraduate studies; associate professor | BS, MA, PhD, Duke University   |
| CLEMENTS, George F.         | 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.             | department chair; professor                                    | AB, Princeton University; PhD, Massachusetts Institute of Technology               |
| GREEN,                      | professor  | MA, Oxford University; MSc, PhD, University of Warwick                             |

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|-----------------------|---|---|
| Richard M.            |   |   |
| GUSTAFSON, Karl E.    | professor   | BS, BS, University of Colorado; PhD, University of Maryland   |
| HERMES, Henry G.      | professor emeritus  |   |
| HODGES, John H.       | professor emeritus  |   |
| HOLLEY, Richard A.    | professor emeritus  |   |
| IH, Su-Ion            | associate 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 |
| LIU, Faan Tone        | instructor  | BS, California Institute of Technology; MA, PhD, University of Colorado Boulder   |
| 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; PhD, University of Nebraska-Lincoln  |
| MYCIELSKI, Jan        | professor emeritus  |   |
| PACKER, Judith A.     | professor   | BA, MA, Wesleyan University; PhD, Harvard University  |
| PFLAUM, Markus        | professor   | PhD, Universität München  |
| PRESTON, Stephen      | associate chair for graduate studies; associate professor | BS, Pennsylvania State University; PhD, State University of New York at Stony Brook   |
| RAMSAY, Arlan         | professor emeritus  |   |
| REARICK, David        | professor emeritus  |   |

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| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
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|                      |  |  |
|----------------------|--|--|
| F.                   |  |  |
| ROTH, Richard L.     | professor emeritus   |  |
| SARRIA, Alejandro    | Burnett Meyer Postdoctoral Fellow                          | PhD, University of New Orleans   |
| 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, Libby RAP; professor of mathematics              | BA, MA, PhD, Columbia University   |
| STANGE, Katherine    | assistant professor  | PhD, Brown University  |
| STRIJK, Ruth Rebekka | professor emerita  |  |
| SZENDREI, Agnes      | professor  | MSc, University of Szeged; PhD, Hungarian Academy of Sciences                                |
| THIEM, Nathaniel     | associate professor  | PhD, University of Wisconsin–Madison   |
| TUBBS, Robert        | director, Miramontes Academic Program; associate professor | BA, University of South Florida; MA, Columbia University; PhD, Pennsylvania State University |
| VERNEREY, Divya      | instructor   | BS, North Central College, Naperville, Illinois; MS, PhD, Northwestern University            |
| WALTER, Martin E.    | professor  | BS, University of Redlands; MA, PhD, University of California, Irvine                        |
| WISE, Jonathan       | assistant professor  | PhD, Brown University  |
| WOLKOWISKY, Jay H.   | professor emeritus   |  |

Engineering &amp; Applied Science

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## Faculty: Miramontes Arts and Sciences Program (MASP)

| Name             | Title  | Education  |
|------------------|--|--|
| RAMIREZ, Karen   | instructor                                   | BA, Swarthmore College; MA, PhD, University of Illinois at Champaign-Urbana                  |
| SANCHEZ, Leticia | associate director; instructor               | BS, San Diego State University; PhD, University of Colorado Boulder                          |
| TUBBS, Robert    | director; associate professor of mathematics | BA, University of South Florida; MA, Columbia University; PhD, Pennsylvania State University |

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Peace and Conflict Studies

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Physics

Political Science

Psychology and Neuroscience

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## Faculty: Molecular, Cellular, and Developmental Biology

| Name                   | Title   | Education  |
|------------------------|---|--|
| ABBOTT, Lois A.        | senior instructor emerita   |  |
| BLUMENTHAL, Tom        | 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 Department of 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                                 |

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|                        |                                  |  |
|------------------------|----------------------------------|--|
| GOLD, Lawrence         | professor                        | BS, Yale University; PhD, University of Connecticut  |
| GUILD, Nancy A.        | professor attendant rank         | BA, Colorado College; PhD, University of 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                |
| KJEMPPEL, 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                                   |
| ORTH, James            | assistant research professor     | BS, University of Wisconsin-Eau Claire; PhD, Mayo Clinic College of Medicine                             |
| PACE, Norman R.        | distinguished professor          | BA, Indiana University; PhD, University of Illinois. BA, Indiana University; PhD, University of Illinois |

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|                       |  |   |
|-----------------------|--|---|
| PARK, Soyeon          | assistant professor                      | BS, Seoul National University; PhD, Mayo Clinic College of Medicine         |
| PERKINS, Thomas T.    | associate professor adjoint, 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 University                           |
| 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           | department chair; 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 |

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## Faculty: Museum and Field Studies

| Name                 | Title  | Education   |
|----------------------|--|---|
| 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 |
| 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.    | director, MFS program, University Museum; curator of fossil vertebrates; 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        | senior educator of the University Museum; senior instructor  | BS, Western Michigan University; MAT, George Washington University  |
| HARRIS, Judith A.    | associate professor emerita  |   |
| 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                          |
| MARKHAM,             | professor emerita  |   |

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|                    |  |  |
|--------------------|--|--|
| Nancy              |  |  |
| 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, Cornell University    |
| SMITH, Dena        | curator of invertebrate paleontology; associate professor of geological sciences               | PhD, University of Arizona   |
| TRIPP, Erin        | curator of botany, Colorado Herbarium; assistant professor of ecology and evolutionary biology | PhD, Duke University   |
| WEBER, William A.  | professor emeritus   |  |
| WU, Shi-Kuei       | professor emeritus   |  |

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## Faculty: Peace and Conflict Studies

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## Faculty: Philosophy

| Name                   | Title   | Education  |
|------------------------|---|--|
| BAILEY, Dominic        | assistant professor                               | BA, MA, PhD, Trinity College, Cambridge, United Kingdom                                |
| BARNETT, David         | associate professor                               | BA, Emory University; BS, MA, University of Colorado Boulder; PhD, New York University |
| 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         |
| 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                     |
| COWELL, Andrew         | department chair                                  | BA, Harvard University; MA, PhD, University of California, Berkeley                    |
| FISHER, John Andrew    | professor emeritus                                |  |
| FORBES, Graeme         | department executive officer; professor           | 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                        |

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|                           |   |  |
|---------------------------|---|--|
| 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                                |
| KOPEC, Matthew            | instructor  | BA, St. Mary's College of Maryland; MA, Virginia Tech; PhD, University of Wisconsin-Madison            |
| LEE, Mi-Kyoung (Mitzi)    | associate professor   | BA, Columbia University; PhD, Harvard University   |
| MILLER, Ed L.             | professor emeritus  |  |
| MILLER, Paul John William | professor emeritus  |  |
| MONTON, Bradley           | associate professor   | BA, Rice University; PhD, Princeton 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            | professor   | BA, University of Washington, Seattle; MA, PhD, University of Illinois, Chicago                        |
| SAUCEDO CEBALLOS, Raul    | assistant professor   | BA, National Autonomous University of Mexico; PhD, Cornell University                                  |
| STURGIS, Daniel           | senior instructor   | BA, Northwestern University; PhD, University of Colorado Boulder                                       |
| 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, 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 | associate 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                           |
| DE ALWIS, Senarath  | professor                   | BSc, University of London; PhD, University of Cambridge                           |
| DEGRAND,            | professor                   | BS, University of Tennessee; PhD, Massachusetts Institute of                      |

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Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                    |   |   |
|--------------------|---|---|
| Thomas A.          |   | Technology  |
| DESSAU, Daniel     | professor   | BS, Rice University; PhD, Stanford University   |
| DeWOLFE, Oliver    | associate professor   | BA, Wesleyan University; PhD, Massachusetts Institute of Technology                                 |
| DIDDAMS, Scott     | professor adjoint   | BA, Bethel College; PhD, University of New Mexico   |
| DREITLEIN, Joseph  | professor emeritus  |   |
| DUBSON, Michael    | associate chair of undergraduate studies; senior instructor | BS, University of Illinois, Urbana; PhD, Cornell University   |
| FALLER, James      | professor adjunct   | AB, Indiana University; MA, PhD, Princeton University   |
| FINKELSTEIN, Noah  | 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. | 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   |
| GURARIE, Victor    | associate 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. | 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.    | 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   |

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| Geography                                      |
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| Jewish Studies                                 |
| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
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| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| <b>Physics</b>                                 |
| Political Science                              |
| Psychology and Neuroscience                    |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

|                      |   |  |
|----------------------|---|--|
| KINNEY, Edward R.    | professor   | SB, PhD, Massachusetts Institute of Technology   |
| KNILL, Emanuel       | lecturer  | BS, MS, University of Massachusetts at Boston; PhD, University of Colorado                   |
| LEE, Minhyea         | assistant professor                                       | BS, MS, Pohang University of Science and Technology, South Korea; PhD, University of Chicago |
| LEHNERT, Konrad      | associate 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 | associate chair, engineering physics; associate professor | BS, Michigan Tech; MS, PhD, University of Colorado   |
| LIND, David A.       | professor emeritus  |  |
| MACLENNAN, Joseph E. | 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            |
| MARINO, Alysia       | assistant professor                                       | BA, Princeton University; MA, PhD, University of California, Berkeley                        |
| McELROY, Kyle        | assistant professor                                       | BA, PhD, University of California, Berkeley  |
| MIZUSHIMA, Masataka  | professor emeritus  |  |

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## Faculty: Political Science

| Name                  | Title  | Education  |
|-----------------------|--|--|
| ADLER, E. Scott       | professor  | BA, University of Michigan; MA, MPhil., PhD, Columbia University                                   |
| ANDERSSON, Krister P. | associate professor  | BA, Point Loma Nazarene University; MA, Schiller International University; PhD, Indiana University |
| AYDIN, Aysegul        | associate 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.      | professor (joint appointment with the International Affairs Program) | BA, Davidson College; PhD, Ohio State University   |
| BEER, Francis A.      | professor emeritus   |  |
| BICKERS, Kenneth      | 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 S.       | department chair; 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 emeritus   |  |
| COSTAIN, W. Douglas   | senior instructor emeritus   |  |

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|                         |                              |   |
|-------------------------|------------------------------|---|
| COSTAIN, Anne N.        | professor emeritus           |   |
| DONAVAN, Janet L.       | senior instructor            | BA, Kent State University; MA, PhD, University of Wisconsin—Madison   |
| ECKART, Dennis R.       | associate professor emeritus |   |
| FERGUSON, Michael L.    | associate professor          | BA, Bryn Mawr College; PhD, Harvard University  |
| FITCH, J. Samuel        | professor emeritus           |   |
| FITZGERALD, Jennifer    | associate professor          | BA, Indiana University; MA, University of Chicago; PhD, Brown University  |
| GREENBERG, Edward S.    | professor emeritus           |   |
| GRIFFIN, John D.        | associate professor          | BA, Boston College; JD, University of Colorado Law School; MA, PhD, Duke University   |
| HARDEN, Jeffrey J.      | assistant professor          | BA, University of Illinois, Urbana-Champaign; MA, PhD, University of North Carolina at Chapel Hill                              |
| 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  |
| 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  |
| McIVER, John P.         | associate professor emeritus |   |
| 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, Sven           | professor                    | BA, University of California, Santa Cruz; MA, MPH, PhD, University of   |

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| Jewish Studies                                 |
| Lobby RAP                                      |
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| Mathematics                                    |
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| Museum and Field Studies                       |
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| Philosophy                                     |
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| <b>Political Science</b>                       |
| Psychology and Neuroscience                    |
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| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
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| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

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|----------------------------|----------------------------|---|
| H.                         |                            | California, Berkeley  |
| STRAYHORN,<br>Joshua       | assistant professor        | BA, Texas A&M University; MA, University of Texas at Arlington                          |
| TECZA,<br>Thaddeus J.      | senior instructor emeritus |   |
| TIR, Jaroslav              | professor                  | BA, Bethel College, Kansas; MA, PhD, University of Illinois Urbana-Champaign            |
| VANDERHEIDEN,<br>Steven J. | associate professor        | BA, Willamette University; MA, University of Utah; PhD, University of Wisconsin-Madison |
| 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  |
| BARRIENTOS, Ruth       | assistant research professor | BS, George Mason University; PhD, George Washington University  |
| 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           |   |
| COLLINS, Allan C.      | professor emeritus           |   |

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|                       |                                  |   |
|-----------------------|----------------------------------|---|
|                       |                                  |   |
| 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   |
| CORRELL, Joshua       | associate professor              | BA, Stanford University; MA, University of Waterloo; PhD, University of Colorado                            |
| CROTHERS, Edward J.   | associate professor emeritus     |   |
| CURRAN, Tim           | professor                        | BA, MA, PhD, University of Oregon   |
| DeFRIES, John C.      | professor emeritus               |   |
| DIMIDJIAN, Sona A.    | associate professor              | BA, University of Chicago; MSW, University of Pittsburg; PhD, University of Washington                      |
| FORWARD, John R.      | associate professor emeritus     |   |
| FRIEDMAN, Naomi       | assistant professor              | BA, University of Texas at Austin; MA, PhD, University of Colorado Boulder                                  |
| GOLLIN, Eugene S.     | professor emeritus               |   |
| GRUBER, June          | assistant professor              | BA, MA, PhD, University of California   |
| HAMMOND, Kenneth R.   | professor emeritus               |   |
| HARVEY, Jr., Lewis O. | professor                        | BA, Williams College; MS, PhD, Pennsylvania State University  |
| HEALY, Alice F.       | college professor of distinction | AB, Vassar College; PhD, Rockefeller University   |
| HERNÁNDEZ, Theresa D. | department chair, professor      | BA, PhD, University of Texas at 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.       | 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.      | college professor of distinction | BA, Yale University; MDiv, Union Theological Seminary; MA, PhD, Columbia University                         |
| KELLER, Matthew C.    | assistant professor              | BA, University of Texas; MA, PhD, University of Michigan  |
| KIM, Albert E.        | associate 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  |
|                       |                                  |   |

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| Geography                                      |
| Geological Sciences                            |
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| INVST Community                                |
| Integrative Physiology                         |
| International Affairs                          |
| Jewish Studies                                 |
| Lobby RAP                                      |
| Linguistics                                    |
| Mathematics                                    |
| Miramontes Arts and Sciences Program (MASP)    |
| Molecular, Cellular, and Developmental Biology |
| Museum and Field Studies                       |
| Peace and Conflict Studies                     |
| Philosophy                                     |
| Physics  |
| Political Science                              |
| <b>Psychology and Neuroscience</b>             |
| Religious Studies                              |
| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
| Sociology                                      |
| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
| Western American Studies                       |
| Women and Gender Studies                       |
| Writing and Rhetoric, Program for              |
| Business                                       |
| Education                                      |

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|--------------------------|--------------------------------|---|
| KINTSCH, Walter          | professor emeritus             |   |
| LANDAUER,<br>Thomas K.   | research professor<br>emeritus |   |
| MAIER, Steven F.         | distinguished<br>professor     | BA, New York University; MA, PhD, University of Pennsylvania                            |
| MARKS, Michael           | research professor             | BS, University of Wisconsin; PhD, University of Michigan                                |
| MARTICHUSKI,<br>Diane K. | senior instructor              | BS, Lamar University; MS, PhD, Colorado State University                                |
| McCLELLAND,<br>Gary H.   | professor emeritus             |   |
| 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                         |

|                                      |
|--------------------------------------|
| Engineering & Applied Science        |
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Graduate School                      |
| Other Academic Programs              |



## Faculty: Religious Studies

| Name                | Title  | Education  |
|---------------------|--|--|
| BIERNACKI, Loriljai | 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                                |
| MAS, Ruth           | assistant professor                            | BA, MA, Concordia University; PhD, University of Toronto   |
| ROSS-BRYANT, Lynn   | associate professor emerita                    |  |
| SACKS, Elias        | assistant professor                            | AB, Harvard University; MA, Columbia University; PhD, Princeton University                                 |
| TAYLOR, Rodney L.   | professor emeritus                             |  |
| WHITEHEAD, Deborah  | assistant professor                            | BA, MA, Florida State University; ThD, Harvard University, The Divinity School                             |

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Ecology and Evolutionary Biology

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Geography  
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International Affairs  
Jewish Studies  
Libby RAP  
Linguistics  
Mathematics  
Miramonte Arts and Sciences  
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Developmental Biology  
Museum and Field Studies  
Peace and Conflict Studies  
Philosophy  
Physics  
Political Science  
Psychology and Neuroscience

**Religious Studies**

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Speech, Language, and Hearing  
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## Faculty: Sewall RAP

| Name                 | Title                                       | Education  |
|----------------------|---|--|
| AIKEN, Ellen         | instructor                                  | BA, MA, PhD, University of Colorado Boulder  |
| BABICZ, Martin       | instructor                                  | BA, University of Connecticut; MA, Brown University; PhD, University of Colorado Boulder |
| BAMFORTH, Douglas B. | program director; professor of anthropology | BA University of Pennsylvania; MA, PhD University of California, Santa Barbara           |
| JOBIN, Nicole        | associate director; 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       | senior instructor                           | BA, Swarthmore College; MA, PhD, University of Illinois at Urbana-Champaign              |

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Museum and Field Studies  
Peace and Conflict Studies  
Philosophy  
Physics  
Political Science  
Psychology and Neuroscience  
Religious Studies

**Sewall RAP**

Sustainability and Social Innovation  
RAP  
Sociology  
Spanish and Portuguese  
Speech, Language, and Hearing  
Sciences  
Theater and Dance  
Western American Studies  
Women and Gender Studies  
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## Faculty: Sustainability and Social Innovation RAP

| Name            | Title  | Education   |
|-----------------|--|---|
| CLARKE, Susan   | program director; professor of political science   | PhD, University of North Carolina, Chapel Hill            |
| COMSTOCK, Cathy | associate director, senior instructor; Farrand RAP | BA, Miami University; PhD, University of Colorado Boulder |

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    - Astrophysical and Planetary Sciences
    - Atmospheric and Oceanic Sciences
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    - Behavioral Genetics
    - Chemistry and Biochemistry
    - Classics
    - Communication
    - Communication and Society RAP
    - Comparative Literature
    - Ecology and Evolutionary Biology
    - Economics
    - English
    - Environmental Studies
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    - French and Italian

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Germanic and Slavic Languages  
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Integrative Physiology  
International Affairs  
Jewish Studies  
Libby RAP  
Linguistics  
Mathematics  
Miramonte Arts and Sciences  
Program (MASP)  
Molecular, Cellular, and  
Developmental Biology  
Museum and Field Studies  
Peace and Conflict Studies  
Philosophy  
Physics  
Political Science  
Psychology and Neuroscience  
Religious Studies  
Sewall RAP

**Sustainability and Social  
Innovation RAP**

Sociology  
Spanish and Portuguese  
Speech, Language, and Hearing  
Sciences  
Theater and Dance  
Western American Studies  
Women and Gender Studies  
Writing and Rhetoric, Program for

Business

Education

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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      | associate professor              | BA, Johns Hopkins University; MA, PhD, Duke University  |
| BARTOS, Otomar J.   | professor emeritus               |   |
| BELKNAP, Joanne     | department chair; 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                |   |
| GOODRUM, Sarah      | instructor                       | BA, Texas A&M University; MA, PhD, University of Texas at Austin                                      |
| GRANT, Don          | professor                        | BA, University of Cincinnati; MA, PhD, Ohio University  |
| GRANT, Don          | professor                        | BA, University of Cincinnati  |
| 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.     | associate professor              | BA, University of Washington; MA, PhD, Brown University   |

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Applied Mathematics

Art and Art History

Asian Languages and Civilizations

Asian Studies

Astrophysical and Planetary Sciences

Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                          |   |  |
|--------------------------|---|--|
|                          |   |  |
| IRVINE, Leslie           | associate professor                                       | BA, MA, Florida Atlantic University; PhD, State University of New York, Stony Brook    |
| JACOBS, Janet            | director of graduate studies;<br>professor                | BA, MS, PhD, University of Colorado  |
| JACOBS, Janet            | director of graduate studies;<br>professor                | BA, MS, PhD, University of Colorado  |
| KJOLSETH, J. Rolf        | associate professor emeritus                              |  |
| MASTERS, Ryan            | assistant professor                                       | BA/BS, Western Washington University; MA, PhD, University of Texas at Austin           |
| MAYER, Thomas            | professor emeritus  |  |
| MENKEN, Jane             | director IBS; distinguished<br>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       | associate professor                                       | BA, Harvard University; MA, PhD, Stanford University                                   |
| NIELSEN, Joyce M.        | professor   | BA, University of Colorado; MA, PhD, University of Washington                          |
| PAMPEL, Fred             | professor emeritus  |  |
| PEDERSEN-GALLEGOS, Liane | instructor  | BA, Metropolitan State College of Denver; MA, PhD, University of Colorado Boulder      |
| PINTO, Leonard J.        | associate professor emeritus                              |  |
| PLATTER, Adele           | senior instructor emerita                                 |  |
| POTTER, Hillary          | director of undergraduate studies;<br>associate 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;<br>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,<br>IBS; professor       | BA, Youngstown State University; MA, PhD, Ohio State University                        |

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Peace and Conflict Studies

Philosophy

Physics

Political Science

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Sewall RAP

Sustainability and Social Innovation  
RAP**Sociology**

Spanish and Portuguese

Speech, Language, and Hearing  
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Theater and Dance

Western American Studies

Women and Gender Studies

Writing and Rhetoric, Program for

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|                    |                              |   |
|--------------------|------------------------------|---|
| 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.    | associate professor          | BA, Mount Holyoke College; MA, PhD, University of Massachusetts Amherst     |

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## Faculty: Spanish and Portuguese

| Name                    | Title   | Education  |
|-------------------------|---|--|
| BAENA, Julio            | professor   | Licenciatura, Universidad Católica Andrés Bello; MS, PhD, Georgetown University  |
| 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 chair for graduate studies; associate professor | MA, PhD, University of Pittsburgh  |
| ELMORE, Peter           | department chair; professor                               | 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 de Nacional de Tucumán, Argentina; MA, PhD, Johns 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 |
| 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       | professor   | BA, MA, Arizona State University; PhD, Indiana University  |

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|---------------------------------|--|--|
| LONG, Mary K.                   | senior instructor  | BA, Colorado State University; MA, PhD, Princeton University   |
| LOZANO,<br>Anthony Girard       | professor emeritus   |  |
| MALCOLM,<br>Karen               | instructor   | BA, University of Arkansas; MA, University of Nebraska   |
| MARTUSCELLI,<br>Tania A.        | assistant professor  | BA, MA, Universidade Estadual de Campinas-Unicamp; PhD, University of Massachusetts, Amherst                               |
| MOLINARO,<br>Nina L.            | associate professor  | BA, Scripps College; MA, PhD, University of Kansas   |
| MORENO, Maria                   | instructor   | BA, MA, Eastern Michigan University  |
| PAMIES,<br>Susanna Pérez        | instructor   | BA, Universitat Pompeu Fabra; MA, University of Barcelona, International University of Catalonia, Universitat Pompeu Fabra |
| PIRAS, Cristiina                | instructor   | BA, Ricardo Palma University; MA, University of Colorado, Boulder  |
| PRIETO, Andrés I.               | associate chair for undergraduate studies; associate professor | MA, PhD, University of Connecticut   |
| RIVAS-RODRÍGUEZ,<br>José Javier | assistant professor  | BA, MA, PhD, Universidade de Santiago de Compostela, Spain   |
| SCHINCARIOL,<br>Marcelo T.      | instructor   | BA, MA, PhD, Universidade Estadual de Campinas   |
| SILLERAS-FERNÁNDEZ,<br>Núria    | assistant professor  | MA, PhD, Universitat Autònoma de Barcelona   |
| TABLER, Alicia                  | instructor   | BA, MA, University of Wyoming  |

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| Geological Sciences                            |
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| Global Studies RAP                             |
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| Honors RAP                                     |
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| INVST Community                                |
| Integrative Physiology                         |
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| Linguistics                                    |
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## Faculty: Speech, Language, and Hearing Sciences

| Name                   | Title                        | Education  |
|------------------------|------------------------------|--|
| AREHART, Kathryn       | professor                    | BS, Stanford University; MS, PhD, University of Washington   |
| 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   |
| FREDRICKSON, Tammy     | clinical assistant professor | BS, University of Wisconsin-Stevens Point; MS, PhD, University of Colorado Boulder                                       |
| 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           |  |
| JANCOSEK, Elizabeth G. | senior instructor emerita    |  |
| KAN, Pui Fong          | assistant professor          | BA, National Taiwan Normal University; MA, University of Leeds and University of Minnesota; PhD, University of Minnesota |
| KATES, James           | research associate           | BS, MS, Massachusetts Institute of Technology  |
| LEWON, Jen             | clinical assistant professor | BS, Colorado State University; MA, Northern Arizona University; MS, Arizona State University                             |
| MOERS, Willard         | instructor                   | BA, MA, Gallaudet University   |

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Asian Studies

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Atmospheric and Oceanic Sciences

Baker RAP

Behavioral Genetics

Chemistry and Biochemistry

Classics

Communication

Communication and Society RAP

Comparative Literature

Ecology and Evolutionary Biology

Economics

English

Environmental Studies

Ethnic Studies

Farrand RAP

Film Studies

French and Italian

|                            |   |  |
|----------------------------|---|--|
| MOORE, Susan M.            | director of clinical education and services; clinical professor | BA, College of New Rochelle; MA, JD, University of Denver  |
| POLLARD, Ryan              | instructor  | BA, University of Northern Colorado; PhD, University of Colorado Boulder                         |
| RAMIG, Lorraine Olson      | professor   | BS, University of Wisconsin–Oshkosh; MS, University of Wisconsin–Madison; PhD, Purdue University |
| RAMIG, Peter R.            | professor emeritus  |  |
| RAMSBERGER, Gail           | department chair; 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 | professor   | BA, University of Southern California; MA., PhD, Northwestern University                         |

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## Faculty: Theater and Dance

| Name                          | Title                                    | Education  |
|-------------------------------|--|--|
| BANKS, Jason                  | senior instructor                        | BFA, University of Florida; MFA, Ohio State University                                       |
| BERGNER, Bruce                | associate chair;<br>associate professor  | BA, University of Minnesota; MFA, University of Illinois                                     |
| COBIN, Martin T.              | professor emeritus                       |  |
| COLEMAN, Bud                  | department chair;<br>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,<br>Michelle        | associate professor                      | BA, New York University; MFA, University of Colorado Boulder                                 |
| GERLAND, Oliver               | associate professor                      | BA, Swarthmore College; PhD, Stanford University   |
| GHARTEY-TAGOE<br>KOOTIN, Amma | assistant professor                      | AB, Harvard University; MA, PhD, New York University   |
| HAIG, Robin                   | senior instructor emerita                |  |
| HANKIN, Toby R.               | professor emerita                        |  |
| 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, Merrill J.           | professor emeritus                       |  |
| MANNO, Jesse                  | senior instructor                        | BA, University of Colorado   |

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|                      |                             |  |
|----------------------|-----------------------------|--|
| MASON, Gesel         | assistant professor         | BFA, University of Utah; MFA, University of Colorado Boulder   |
| MEJIA, Donna         | assistant professor         | BA, University of Colorado; MFA, Smith College   |
| 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 emeritus  |  |
| SOWAH, Nii Armah     | 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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| Peace and Conflict Studies                     |
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## Faculty: Western American Studies

| Name                      | Title   | Education   |
|---------------------------|---|---|
| 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   |
| DAVID, Emmanuel          | assistant professor  | BA, Loyola University of New Orleans; PhD, University of Colorado Boulder                              |
| 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  |  |

### Arts & Sciences

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History

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Honors RAP

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INVST Community

Integrative Physiology

International Affairs

Jewish Studies

Libby RAP

Linguistics

Mathematics

Miramonte Arts and Sciences  
Program (MASP)

Molecular, Cellular, and  
Developmental Biology

Museum and Field Studies

Peace and Conflict Studies

Philosophy

Physics

Political Science

Psychology and Neuroscience

Religious Studies

Sewall RAP

Sustainability and Social Innovation  
RAP

Sociology

Spanish and Portuguese

Speech, Language, and Hearing  
Sciences

Theater and Dance

Western American Studies

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## Faculty: Writing and Rhetoric, Program for

| Name                | Title  | Education  |
|---------------------|--|--|
| ACKERMAN, John      | associate director; 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      | senior 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                              |
| ENNIS, Michael      | instructor   | BA, Colgate University; PhD, Duke University   |
| FELDMAN, Andrea     | senior instructor  | BA, Cornell University; MA, PhD, University of Colorado Boulder  |
| FERRELL,            | senior instructor  | BA, College of William and Mary; MA, PhD, University of Colorado   |

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|                      |  |   |
|----------------------|--|---|
| Tracy                |  | Boulder   |
| GOODLOE, Amy         | instructor   | BA, Agnes Scott College; MEd, University of Virginia; MA, Virginia Polytechnic Institute and State University       |
| 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  |
| HINK, Gary           | instructor   | BA, Richard Stockton College of New Jersey; MA, State University of New York at Buffalo; PhD, University of Florida |
| 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       | senior 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; associate professor of English | BA, MA, PhD, University of Illinois   |
| LASSWELL, Catherine  | instructor   | BA, Michigan State University, MEd, University of Vermont   |
| LYONS, Tim           | instructor   | BA, Occidental College; MA, Johns Hopkins University  |
| MACDONALD, Christine | senior instructor                                  | BA, Pomona College; MA, PhD, University of Colorado Boulder   |
| MILLER, Olivia       | instructor   | BA, University of California, Santa Barbara; MA, University of Colorado Boulder; PhD, Binghamton University         |
| MYERS, Seth          | instructor   | BA, Cornell University; MA, University of Alaska, Fairbanks; PhD, New Mexico State University                       |
| NORGAARD, Rolf       | associate director; senior instructor              | BA, Wesleyan University; MA, PhD, Stanford University   |
| PEARCE, Lonni        | associate director; senior instructor              | BA, William Jewell College; MA, University of Missouri, Kansas City; PhD, University of Arizona                     |
| PIELOW, Kathryn      | associate director; 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                                    |

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| Sewall RAP                                     |
| Sustainability and Social Innovation RAP       |
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| Spanish and Portuguese                         |
| Speech, Language, and Hearing Sciences         |
| Theater and Dance                              |
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| Business                                       |
| Education                                      |

|                      |  |   |
|----------------------|--|---|
| RIVERA, John-Michael | director; associate professor of English | BA, University of California, Berkeley; MA, University of Houston; PhD, University of Texas at Austin |
| ROTHMAN, David       | instructor                               | BA, Harvard University; MA, University of Utah; PhD, New York University                              |
| SCHABERG, Petger     | senior instructor                        | BA, DePaul University; MA, University of Colorado 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, MA, University of Colorado Boulder  |
| ZIGMOND, Rosalyn     | instructor                               | BA, University of Michigan; MA, PhD, University of Colorado Denver                                    |

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## Undergraduate Career Development

The Mentoring and Career Development Office is the hub for undergraduate professional development; providing professional skills and experiences to support a smooth transition from college to career. The office prepares undergraduates for careers in business by providing professional skills, career exploration and preparation, industry experiences, and access to employer and alumni connections throughout the Leeds experience.

### Career Programs

#### Career Advising

- **One-on-One Support:** Practice interviewing skills in a comfortable environment, discuss career path options, and search for jobs or internships.
- **Building Your Brand:** Writing or reviewing cover letters and résumés, conducting mock interviews, providing current salary information, labor market trends/outlook, advise on all aspects of the job search process.

#### Career Exploration, Preparation and Connections

- **Career Fairs:** Held each semester to give employers and business students the chance to connect for full-time positions, internships, and other professional opportunities.
- **Employer Panels and Info Sessions:** Great ways to gain firsthand knowledge from company representatives about recruiting strategies, company culture, and current and future job and internship opportunities.
- **Workshops:** Offer students the chance to learn the valuable professional development skills (i.e. creating and maintaining a LinkedIn profile, utilizing social media for your professional gain, developing key networking skills, and more.)

#### Internships and Industry Experiences

- **Internship Support:** Resources to support students in preparing and finding internships; including student training, company outreach and a dedicated internship advisor.
- **Career Treks:** Join a group of engaged students and spend the day off-site interacting with employers, gaining knowledge of different industries, and networking with alumni.

#### Professional Development Classes and Career Jumpstart

Classes range from topic-specific seminars to a semester-long, 1-credit professional development class. Classes allow students to gain an understanding of a range of topics and skills to support their career search and succeed as business professionals.

### Mentoring Programs

#### CoLab: Essentials of Collaboration and Innovation

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A one-day, required, action-learning program introducing incoming Leeds students to the importance of collaboration, teamwork and engagement with faculty, alumni and corporate mentors. **Focus:** Introduction to key business concepts including communication, collaboration, and strategic thinking. Introduction to the Leeds community.

## Peer2Peer (P2P) Program

Connects new Leeds students with trained student mentors who help guide first-year students on transitional, social, and academic issues. **Focus:** Transitional social and academic issues. Community-building.

## Young Alumni Mentors (YAMs) Program

Partners Leeds sophomores with recent Leeds alumni (0-5 years of professional experience) who provide individual, highly-focused support in major and career exploration, academic preparation, and professional skills development. **Focus:** Pre-professional development initiatives (i.e. deciding on a major, resume, cover letter, basic networking skills, professional etiquette, etc.)

## Professional Mentorship Program (PMP):

Pairs Leeds juniors and seniors with seasoned business professionals (5-25+ years of professional experience). **Focus:** Professional soft skill development (i.e. professional communication, networking, interview preparation, work/life balance, defining personal and professional goals) and job search resources.

## Contact Information

Website: [leeds.colorado.edu/careerdevelopment](http://leeds.colorado.edu/careerdevelopment)

E-mail: [leedsprofdev@colorado.edu](mailto:leedsprofdev@colorado.edu)

Office: KOB L S220

Phone: 303-492-1808

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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 in 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, you must have an overall grade point average of C (2.00) or better for all course work taken, and a 2.00 or better for all business courses taken. Students must earn a passing grade for all required courses. This requirement applies to work taken at all university campuses.

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:**

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If your cumulative grade point average or cumulative business grade point average falls below 2.00, you will immediately be placed on probation for one semester. If you enroll in any term, excluding summers, after being placed on probation you are expected to raise your cumulative and business grade point average to at least a 2.00 or demonstrate significant progress toward improving your GPA(s).

If you do not raise your GPA(s) to 2.00 or make significant progress during your probation semester you will be placed on suspension.

## Significant Progress

Significant progress is defined relative to whichever GPA is below 2.0. If the cumulative GPA is below 2.0, significant progress is defined as a term GPA of 2.5 with at least 12 credits completed toward the cumulative GPA. If the Business GPA is below 2.0, significant progress is defined as a term business GPA of 2.5 with at least 6 credits of business coursework completed.

## Scholastic Suspension

If your cumulative and/or business grade point average is below 2.00 after your semester of probation and you have not demonstrated significant progress (as defined above), you will be suspended. If you are suspended, you will not be able to register for University of Colorado daytime courses on any campus for one academic year OR until you raise your GPA to 2.0 or demonstrate significant progress.

You are allowed to take summer classes at any of the CU Campuses while on suspension.

If you are suspended, you may choose from the following options.

### **Suspension Option 1: Clear your GPA**

- **A)** You may take Continuing Education Independent Learning courses, and/or Boulder Evening credit classes, and apply for readmission when you have cleared your grade deficiency or when you have demonstrated significant progress.
- If you are readmitted based on significant progress, you will be readmitted on probation and will be subject to Leeds' probation rules (see Probation).
- **B)** You may choose to attend another educational institution and apply for readmission when, and only when, you have overcome your grade deficiencies by means of a GPA which is arrived at by 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 you choose to attend another institution, you must have your proposed course work pre-approved by the Office of Undergraduate Student Services in the Leeds School of Business.
- If you choose this option and are readmitted based on a virtual GPA, you will be readmitted on probation and you will be subject to Leeds' probation rules (see Probation).
- **C)** You may choose a combination of A and B.

### **Suspension Option 2: Do not take classes for one year**

If you have been under suspension for one calendar year and did not elect Option 1, you may apply for readmission. You will have two semesters to raise your cumulative or business grade point average to at least a 2.0. If your GPA falls after the first semester, you will again be suspended for another academic year or until your grade deficiency has been made up.

## Readmission

When you make up your grade deficiency (Option 1) or you have not taken classes for one year (Option 2) and desire to be readmitted, you must request readmission in writing by contacting the Office of Undergraduate Student Services at UCB 419, Boulder, CO 80309, or via email at [leedsug@colorado.edu](mailto:leedsug@colorado.edu). After doing so, you may need to reapply by submitting an application

through the Office of Admissions. If you have questions, please call **303-492-6515**.

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.

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## Undergraduate Admissions & Enrollment Policies

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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 Services. 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 Services, KOBL S220, **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 3.00 and a cumulative GPA of 2.00 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. Applications are accepted year round and will be reviewed once a month. However, the deadlines for admission prior to the registration period are October 1 for spring and March 1 for fall. Leeds can't guarantee the usual selection of courses for those who submit applications after the deadline.

In order to apply to the Leeds School of Business, students must complete a mandatory online IUT presentation and quiz.

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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 Services 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 15 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 services. 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 by the deadline set through the Registrar's Office 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 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.



## Undergraduate Degree Requirements

The Bachelor of Science in Business Administration degree requires:

**Total Credits.** A minimum of 120 acceptable semester hours of credit, from the following categories:

- Business core
- Business area of emphasis requirements
- Business electives
- General education nonbusiness requirements (Arts and Sciences core)
- Nonbusiness electives

The school reserves the right to disallow any credit that it determines is not appropriate academic credit.

**Residence.** Students must complete 30 hours of business courses in residence on the Boulder campus after admission to the college, including the 18 hours in the area of emphasis and the 9 hours in the area of application (included in the business electives). Students must be in residence at CU-Boulder and must be registered as business degree students during the term of graduation.

### Minimum Grade Point Average

- A cumulative grade point average of 2.000 in the area of emphasis *and all grades* in the 18 credit hours must have a grade of C- or higher (no *pass/fail* credits can be applied to the area).
- A minimum scholastic cumulative GPA of 2.000 is required for all courses attempted at the university.
- A cumulative 2.000 is required for all business courses attempted at the university.
- A cumulative grade point average of 2.000 is required in the area of application courses.

## General Requirements

### Business Core Requirements

The business core consists of integrated coursework through which students will develop key skills such as communication, teamwork, and leadership, while learning fundamentals of business and working on live cases.

Contact undergraduate student services, or visit [Leeds.colorado.edu](http://Leeds.colorado.edu) for the specific classes and credit hours required in the business core.

### Business Area of Emphasis

Students must choose an area of emphasis in accounting, finance, management, or marketing. Areas of emphasis consist of 18 semester hours of required coursework, and require a minimum of three semesters to complete.

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## Business Electives

Business courses required by specific areas in excess of the 18 hours listed under areas of emphasis may count as business electives. Contact Undergraduate Student Services, or visit [Leeds.colorado.edu](http://Leeds.colorado.edu) for more information about the number of business elective credit hours required.

## Nonbusiness Requirements

### Arts and Sciences Core (General Education)

Students in the Leeds School of Business are required to complete coursework from the College of Arts and Sciences core requirements, including classes from the following categories:

- Mathematical skills\*
- Contemporary societies\*
- Written communication\*
- Historical context
- Cultural and gender diversity
- United States context
- Literature and the arts
- Natural sciences
- Ideals and values

A list of courses that fulfill specific requirements for each area can be found at [artsandsciences.colorado.edu/artssciences/current-students/core-curriculum](http://artsandsciences.colorado.edu/artssciences/current-students/core-curriculum).

\* Leeds students are required to take microeconomics and macroeconomics, specific math, and writing courses to fulfill these categories. Contact undergraduate student services for more information, or visit [Leeds.colorado.edu](http://Leeds.colorado.edu).

## Nonbusiness Electives

Not all classes are accepted as elective credits. Generally, to be acceptable, electives must have a form of assessment such as a term paper and/or examinations, and must be regular classroom-type courses. Course coverage must be college level, must not be repetitious of other work applied toward the degree, must be academic as opposed to vocational or technical, and must be part of the regular university offerings.

Contact Undergraduate Student Services, or visit [Leeds.colorado.edu](http://Leeds.colorado.edu) for more information about the number of business elective credit hours required.

The Leeds School of Business reserves the right to disallow any credit that it determines is not appropriate academic credit. For more information, contact the Office of Undergraduate Student Services.

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## Faculty: Business

| Name                 | Title   | Education  |
|----------------------|---|--|
| ROGERS, Jonathan     | associate professor of accounting                     |  |
| ROGERS, Jonathan     | associate professor of accounting                     | BA, BBA, University of Texas at Austin; PhD, University of Pennsylvania                |
| ROSSE, Joseph G.     | professor of management and entrepreneurship          | BS, Loyola University of Los Angeles; PhD, University of Illinois                      |
| RUSH, David F.       | professor of finance emeritus                         |  |
| SCHATTKER, Rudolph   | professor of accounting emeritus                      |  |
| SELTO, Frank         | professor of accounting                               | BSME, Gonzaga University; MSME, University of Utah; MBA, PhD, University of Washington |
| SEWARD, Lori         | senior instructor of management and entrepreneurship  | BA, MSci, PhD, Virginia Tech   |
| 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      |
| SORENSEN, Ralph Z.   | professor of management emeritus                      |  |
| SPINETTO, Richard D. | associate professor of operations management emeritus |  |
| STANTON, William J.  | professor of marketing emeritus                       |  |
| STUTZER, Michael     | professor of finance                                  | BA, PhD, University of Minnesota   |

Arts & Sciences

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Engineering & Applied Science

Environmental Design

Media, Communication and Information

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|                       |  |  |
|-----------------------|--|--|
| SUN, Yacheng          | assistant professor of marketing   | BS, Huazhong University; MA, PhD, Indiana University   |
| TAYLOR, Robert H.     | professor of marketing emeritus  |  |
| THIBODEAU, Thomas     | academic director of real estate, professor of finance   | BS, University of Hartford; MA, MS, PhD, State University of New York at Stony Brook                           |
| TONG, Tony            | associate professor of management and entrepreneurship   | BA, Shanghai Institute of Foreign Trade; MSC, National University of Singapore; MA, PhD, Ohio State University |
| TRACY, John A.        | professor of accounting emeritus   |  |
| VOSSSEN, Thomas       | associate professor of operations management   | MS, Eindhoven University; PhD, University of Maryland  |
| WADDELL, Jay          | senior instructor of marketing   | BS, MS, University of Wisconsin-Madison  |
| WILLIAMS, Lawrence    | assistant professor of marketing   | AB, Harvard University; MPh, PhD, Yale University  |
| WILLIS, Michael Jared | senior instructor of accounting  | BS, MBA, Brigham Young University; PhD, University of Pennsylvania   |
| WINN, Daryl           | associate professor of business economics emeritus   |  |
| WOBBEKIND, Richard    | associate dean for external relations; director of the business research division; associate professor of business economics | BA, Bucknell University; MA, PhD, University of Colorado   |
| YAO, Xin (Eva)        | assistant professor of management and entrepreneurship   | BA, Renmin University of China; PhD, University of Washington  |
| YORK, Jeffrey         | assistant professor of management and entrepreneurship   | BA, University of Georgia; MBA University of Tennessee; PhD, University of Virginia                            |
| ZENDER, Jaime         | finance division chair; William H. Baugh Professor of Finance  | BA, University of Colorado; MA, MPhil, PhD, Yale University  |
| ZHANG, Dan            | assistant professor of operations management   | BE, Chongqing University; PhD, University of Minnesota   |





# Programs of Special Interest

## STEM Initiatives

CU is a leader in Science Technology Engineering and Math (STEM) education. The School of Education in collaboration with the College of Arts & Sciences developed and is a national leader in the Learning Assistant model. Additional, CU was one of the original 13 institutions selected to replicate the U Teach Model. Both the LA and CU Teach programs help us prepare outstanding secondary math and science teachers.

**The Learning Assistant (LA) Model** at the University of Colorado-Boulder uses the transformation of large-enrollment science courses as a mechanism for achieving four goals:

- to recruit and prepare talented science majors for careers in teaching;
- to engage science faculty in the recruitment and preparation of future teachers;
- to improve the quality of science education for all undergraduates; and
- to transform departmental cultures to value research-based teaching for ourselves and for our students

The transformation of large-enrollment courses involves creating environments in which students can interact with one another, engage in collaborative problem solving, and articulate and defend their ideas. To accomplish this, undergraduate LAs are hired to facilitate small-group interaction in our large-enrollment courses.

**CU Teach** is a four-year degree/licensure program that allows students to complete a rigorous education in a mathematics, science, or engineering major and fulfill 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, the College of Engineering and Applied Science, and the School of Education. CU Teach students get immediate hands-on K-12 teaching experience by enrolling in the first course in the program, STEP 1 (EDUC 2020). Students can enroll in Step 1 as early as their freshman year at CU. In addition to taking courses from research faculty in the School of Education, College of Arts and Sciences, and College of Engineering and Applied Science, CU Teach students get support from Mentor Teachers (current K-12 teachers) and Master Teachers (CU faculty who are veteran classroom teachers). The student organization hosts activities and events that are social as well as service-oriented, and that help students develop career networks.

## 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.

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## Graduate Student Organizations

The School of Education sponsors two graduate student groups:

- **Racial Initiatives for Students and Educators (RISE)** is a student organization established to extend diversity and social justice goals expressed in the School of Education's mission statement. The group's purpose is to create a safe space for the critical discussion of race. This may include but is not limited to reflecting on discussions of race in the School of Education, continuing discussions of race, and enhancing academic scholarship regarding issues of race. This group is open to students who are interested in advancing issues related to race and social justice either professionally or personally.
- **The Student Association of Graduate Educators (SAGE)** is a student-led and organized group focused on leadership and student support. The mission of SAGE is to build community among graduate students in the School of Education. New and continuing graduate students volunteer to organize academic and social activities, including welcoming new students and introducing them to the academic community. SAGE maintains open communication between faculty and students, as well as with the University Graduate Student Council.

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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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# Teacher Licensure Program

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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

|  |
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## Program Goals

Teacher education programs focus on the preparation of novice teachers in three interdependent 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. Choose from: ARAB 3230, ASIA 1000, CLAS/HIST 1051, CLAS/HIST 1061, CLAS 1140, ECON 4514, HIST 1010, HIST 1020, HIST 1038, HIST 1108, HIST 1113, HIST 1123, HIST 1208, HIST 1308, HIST 1408, HIST 1608, HIST 1708, HIST 2220, HIST 2629, RUSS 2211, RUSS 2221, RUSS 2471, RUSS 3601, RUSS 4301, or SCAN 2202.
- Human Diversity: 3 semester hours. **EDUC 3013 School and Society**
- United States Context: 3 semester hours. Choose from: CAMW 2001, ECON 4524, ETHN 2004, ETHN 2013, ETHN 2014, ETHN 2432/HIST 2437, ETHN 2536, ETHN 3015, ETHN 3905/MMST 3900, HIST 1015, HIST 1025, HIST 2015, HIST 2126, HIST 2166, HIST 2316, HIST 2326, HIST 2516, or HIST 2636/MMST 2400.
- 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)
- Contemporary Societies: 3 semester hours. **PSCI 1101 American Political Systems**
- Ideals and Values: 3 semester hours.
- Additional liberal arts requirement: 3 semester hours. **Human/Cultural Geography**

### Secondary Licensure

- Foreign Language: Third semester proficiency in a single modern or classical foreign language.
- Quantitative Reasoning and Mathematical Skills: 3–6 semester hours.
- 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.**
6. **Personal Statement.**
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.

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 Office of Admissions.

## Advising

Students are responsible for obtaining a student handbook and program checklist, which are available online. The student handbook is available at [www.colorado.edu/education/current-students/forms-policies](http://www.colorado.edu/education/current-students/forms-policies) and the program checklists are available at [www.colorado.edu/education/prospective-students/undergraduate-licensure/current-CU-undergrads](http://www.colorado.edu/education/prospective-students/undergraduate-licensure/current-CU-undergrads).

Off-campus students may obtain advising materials online at [www.colorado.edu/education/prospective-students](http://www.colorado.edu/education/prospective-students) 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 contacting Travis Anderson at [travis.anderson@colorado.edu](mailto:travis.anderson@colorado.edu). When requesting e-mail advising, students should make questions as specific as possible.

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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 courses in education and 12 credits of elective courses. 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 an 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 are 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.

Students in the education minor may also be affiliated with programs offered through the proposed new center to house civic engagement and service learning activities across the campus.

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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 information is available at [www.colorado.edu/education/graduate-programs](http://www.colorado.edu/education/graduate-programs). *The School of Education Graduate Student Handbook* is available on the School of Education website at [www.colorado.edu/education/current-students/graduate-students](http://www.colorado.edu/education/current-students/graduate-students). 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 curriculum and instruction 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 and learning sciences)

- Master of arts
- Doctor of philosophy

### 3. Research and Evaluation Methodology (methods of educational research and evaluation, including statistics,

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measurement, and qualitative methods)

- Doctor of philosophy

**4. Multicultural, Social, and Bilingual Foundations** (bilingual and multicultural education; bilingual/special education; education and cultural diversity; English as a second language; cultural, historical, social, and philosophical foundations; education 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 view electronic application materials at [www.colorado.edu/education/prospective-students](http://www.colorado.edu/education/prospective-students). 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 submitted electronically 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 December 15. 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.

## 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 dissertation or 1 MA thesis hour. 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.

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 associate dean for graduate studies.

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 associate dean for 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 five 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 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 associate dean for graduate studies.

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 at least two weeks prior to the exam.

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, for 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 associate dean for 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 Institutional Review Board. 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 PhDs is six years; 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.



## 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 13 undergraduate and 11 graduate degree programs reflecting this diversity. The following descriptions summarize these areas.

**Aerospace engineering sciences** prepares 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). Architectural engineering students may select from several concentration areas, including: structural systems; mechanical systems (heating, ventilating, and air conditioning); electrical/lighting systems; and construction engineering and management.

**Alliance for Technology, Learning, and Society (ATLAS) Institute** is campuswide initiative in education, research, creative work, and outreach in which information and communication technology is the enabling force. ATLAS programs bring together students, educators, artists, writers, scholars, and leaders from the academy, industry, non-profits, and government to create a multidisciplinary environment that contributes to the understanding of the interaction of ICT and human society and to the realization of the full potential of that interaction.

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Environmental Design

Media, Communication and Information

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**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, 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 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.

**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, electromagnetics and microwave devices, and optics and photonic systems. 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, telecommunications, instrumentation, biomedical, aerospace, energy, materials, and semiconductors industries, as well as academia. Some go on to careers in other professions such as law 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. As with 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 public health 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.

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. The degree includes advanced coursework in advanced mathematics, chemistry, and biology.

**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.

**Materials Science and Engineering** provides a rigorous education in materials science and engineering and the fundamental physics, engineering, chemistry, and biology that underlie this discipline.

**Mechanical engineering** prepares students for careers in a variety of industrial sectors including transportation, energy, manufacturing, aerospace, 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. Mechanical engineers 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 the eighth week of their second semester.

The college's first-year experience coordinator provides advising for all engineering open option students. This advising is supplemented by 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 [www.colorado.edu/engineering/students/first-year/open-option](http://www.colorado.edu/engineering/students/first-year/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 in engineering department summaries. The Office of Information Technology (OIT) provides its computer recommendations at [www.colorado.edu/oit/recommendations](http://www.colorado.edu/oit/recommendations).

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## Programs of Special Interest

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### 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. Active learning encompasses domestic and international opportunities such as assisting developing communities through Engineers Without Borders, a national nonprofit organization started at CU-Boulder. For more information about active learning programs and opportunities, visit [engineering.colorado.edu/activelearning](http://engineering.colorado.edu/activelearning).

In addition, the college offers First Year Engineering Projects courses as a general engineering elective, which provide students with collaborative, hands-on experience in designing and building engineering devices early in the engineering curriculum, and most undergraduate majors in the college require completion of a senior capstone design course.

### Integrated Teaching and Learning Program

The award-winning Integrated Teaching and Learning (ITL) program provides opportunities for students to acquire hands-on, inquiry-based learning experiences throughout the engineering curriculum. The ITL Program encompasses college-wide curricular initiatives in

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a unique, supportive learning environment that mirrors the real world of engineering—the Integrated Teaching and Learning (ITL) Laboratory.

The internationally emulated ITL Laboratory is a 34,000 sq. ft. hands-on learning facility that features open and interactive laboratory plazas and supports hands-on experimentation, pervasive data acquisition and analysis capability, design studios, team work areas, active learning spaces, and state-of-the-art manufacturing and electronics fabrication capabilities. All CU engineering students are welcome to use its resources, including free, not-for-credit skill-building workshops on tools, machining, soldering, circuits, microcontrollers, strain gauges, laser cutters, LabVIEW, SolidWorks, etc. It is heavily used by engineering students of all disciplines and is supported by a dedicated team with an unwavering focus on outstanding customer service.

The ITL program features an innovative interdisciplinary undergraduate curriculum that includes the retention-building *First-Year Engineering Projects* course that engages student teams to experience the design process in a hands-on way, culminating in an end-of-semester public design expo. The facility attracts students of all ages with a dozen hands-on science and engineering exhibits. The program is also home to a corps of engineering students who teach science and math through engineering in local public school classrooms. 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) for more information.

## BOLD Center

The college-wide BOLD (Broadening Opportunity through Leadership and Diversity) Center focuses 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 women, racial minorities, 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 building strong academics and an expectation for achieving excellence.

**Why be BOLD?** Through the inclusive BOLD community, students meet and work with peers, 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

As a Residential College (RC), 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, including the basic Calculus through Differential Equations sequence in Andrews Hall

living in Andrews Hall, at least during your first year

- having the opportunity to do advanced research
- having exposure to students involved in international development work
- having greater access to internships
- completing an Honors ePortfolio

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. For more information regarding program requirements and access to the application, visit [www.cuhonorsengineering.com](http://www.cuhonorsengineering.com).

## Engineering Leadership Program

The Engineering Leadership Program (ELP) provides students with course work and active learning experiences to prepare them to be leaders in their chosen careers, whether it is in an engineering field or another field such as government service, law, medicine, etc. Students in the program have the opportunity to take specialized leadership courses through ELP and other CU programs, attend leadership seminars sponsored by the college, and learn from a mentor who has leadership experience relevant to their interests. ELP Students also design and undertake a leadership experience and must produce a portfolio for review prior to graduation. Students apply to the program in their first or second year. See [www.colorado.edu/engineering/leadership](http://www.colorado.edu/engineering/leadership) for more information.

## Engineering Management & Entrepreneurship

Engineering Management & Entrepreneurship offers two undergraduate certificates designed to equip young leaders in engineering and sciences with essential business skills. Advantages in a competitive job market include:

- understanding the business context of engineering and technology;
- increasing job opportunities and accelerating career development;
- acquiring and developing leadership skills; and
- refining interpersonal skills and gaining expertise and confidence in working with others.

For more information, visit [eme.colorado.edu](http://eme.colorado.edu).

## Pre-Engineering Program

The Pre-Engineering Program is designed to facilitate the successful transition of first-year students in the College of Arts and Sciences into the College of Engineering and Applied Science. The program provides a structured pathway of CU-Boulder course work combined with academic advising support from both the College of Engineering and Applied Science and the College of Arts and Sciences.

The program serves first-time freshmen applicants who initially applied to the College of Engineering and Applied Science, but were alternatively offered admission to the College of Arts and Sciences. Additionally, arts and sciences freshmen can join the Pre-Engineering Program at new student orientation or during their first semester of study. Pre-Engineering students prepare for a transition to the engineering college by successfully completing specific math, science, and engineering courses. Through special registration access to select engineering courses, most students can complete engineering admission requirements in three semesters, while some may do so in as few as two semesters. The maximum length of time in the Pre-Engineering Program for any student is four semesters, at which point the student will either be admitted to engineering or will transition into an arts and sciences major. Pre-Engineering students receive dual support from advisors in both the College of Engineering and Applied Science and the College of Arts and Sciences. They are also encouraged to live on campus in engineering-affiliated living communities and actively engage in engineering student societies and organizations. Specific program requirements and further details may be found at [www.colorado.edu/engineering/students/first-year/pre-engineering](http://www.colorado.edu/engineering/students/first-year/pre-engineering).

## Colorado Space Grant Consortium

NASA's Colorado Space Grant Consortium (also known as Space Grant) is part of a national program. CU Space Grant provides students with access to space through innovative courses and real-world, hands-on space hardware programs that include short and long-duration, high altitude balloon payloads, sounding rocket payloads, and low-Earth orbiting satellite missions.

Space Grant students interact with engineers and scientists from NASA and industry to develop, test, and fly new space technologies. All missions are entirely student run—including students in the roles of team members, team leads, systems engineers, project managers, and mission operators. Students participate in programs that aid them in their future academic courses and careers. For more information, visit [spacegrant.colorado.edu](http://spacegrant.colorado.edu).

## Herbst Program of Humanities

The Herbst Program of Humanities enriches and broadens the technical education of engineering students by bringing literature, philosophy, history, social issues, and the arts to College of Engineering and Applied Science undergraduates.

Its seminar courses, HUEN 1010 and HUEN 3100, are limited to no more than 15 students; class time is devoted almost exclusively to roundtable discussion of original texts, primarily in literature and philosophy. Both courses include the arts: painting, architecture, music, or film. Students hone their critical thinking skills by reading, discussing, and exploring ideas in writing. Because of a heavy emphasis on writing, HUEN 3100 satisfies the college's writing requirement. HUEN 1010 satisfies the writing requirement *only when taken in a student's freshman year*.

The Herbst Program offers other courses on a rotating basis. HUEN 1850 The History of Engineering studies technological change and its consequences through time. HUEN 2020 The Meaning of Information Technology considers the impacts and ethics of emerging communication technologies. HUEN 2100, 2120, and 2130 together survey science and technology from the Stone Age to the 20th century. HUEN 2210 Engineering, Science, and Society explores the ethics and social implications of engineering practice. A variety of Special Topics courses are occasionally offered, either as HUEN 2843 or as HUEN 3843; these address subjects as varied as Leadership in Literature, Leonardo da Vinci, The History of Medicine, and The Ethics of Bioengineering. The Herbst Program offers summer term, study abroad, and Maymester courses. See [www.colorado.edu/engineering/herbst](http://www.colorado.edu/engineering/herbst) for more information.

Initially funded by an endowment established by Clarence Herbst in 1989, the program is sustained by the generous support of a variety of donors, including Linda Vitti Herbst, the Price Foundation, and the College of Engineering and Applied Science.

## Study Abroad

In today's global environment, engineers frequently travel internationally and work in multilingual and multicultural teams. Therefore, it is essential that engineering students familiarize themselves with foreign cultures by selecting appropriate courses or by studying abroad. CU-Boulder has nearly 400 study abroad programs in 70 countries that allow engineering students to complete degree requirements abroad. These programs include a faculty-led Maymester Global Seminar in China, a semester exchange in Germany, and industry internships in Chile, among many other options. Careful planning is required to ensure that the courses taken abroad meet degree requirements and that participants stay on track for graduation. All participants in CU-approved study abroad programs remain enrolled at the university and receive *in-residence credit*; 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 many cases, and special study abroad scholarships may be available for program participants. For more information, contact the Office of International Education, University of Colorado Boulder, 123 UCB, Boulder, CO 80309-0123, 303-492-7741, e-mail [studyabroad@colorado.edu](mailto:studyabroad@colorado.edu), or visit [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

## Mortenson Center in Engineering for Developing Communities

Engineering for Developing Communities (EDC) is an innovative educational program dedicated to transforming the understanding, application, and evaluation of engineering in the global environment and implementing that change across the entire engineering

curriculum. Managed by the Mortenson Center in Engineering for Developing Communities (MCEDC), the program combines classroom work, research and development, and real world, on-the-ground experience to train engineers to work in partnership with organizations in developing communities worldwide. Our goal is to educate engineers who will meet the needs of a rapidly growing human population while preserving Earth's biodiversity, its delicate ecosystems, and its rich cultural heritages.

More information about the Mortenson Center is available online at [mcedc.colorado.edu](http://mcedc.colorado.edu) or by calling **303-735-6708**.

**Undergraduate Program.** The Mortenson Center led the development of the Undergraduate Certificate in Global Engineering for degree-seeking engineering students. The Undergraduate Certificate in Global Engineering expands students' understanding of how to operate in an international context from an engineering perspective. This translates to the capacity to work in either an international team from within an office located domestically or internationally. These work environments necessitate that students understand multinational contexts as well as local office and nongovernmental agency contexts. For more details about the undergraduate certificate in global engineering, please see [mcedc.colorado.edu/education/undergraduate-certificate-global-engineering](http://mcedc.colorado.edu/education/undergraduate-certificate-global-engineering).

**Graduate Programs.** The Mortenson Center offers a 12-credit Graduate Certificate in Engineering for Developing Communities that is open to engineering graduate students in any major within the College of Engineering and Applied Science. Students who meet admission requirements for the MS or PhD degree in Civil Engineering have two additional options. A courses-only, 30-credit Professional Master's Degree Program in Engineering for Developing Communities (PMP-EDC) is now available for individuals who are primarily interested in becoming competitive candidates for employment in the field of engineering for development. Alternatively, those who are interested in conducting EDC-related research during their graduate program can apply to enroll in an EDC track within the Building Systems, Construction Engineering and Management, Civil Systems, or Environmental engineering areas. The EDC degree and certificate programs are recognized Western Regional Graduate Programs (WRGP) that offer residents of eligible WICHE-participating states a tuition benefit. For more information about the WICHE WRGP, please see [www.wiche.edu/wrgp](http://www.wiche.edu/wrgp).

## Student Organizations

Information about student organizations in the college may be found at [www.colorado.edu/engineering/academics/student-organizations](http://www.colorado.edu/engineering/academics/student-organizations).

## Residential Communities

The Engineering Honors Program, the Global Engineering Residential Academic Program, Sustainable by Design Residential Academic Program, and the Quadrangle Engineering and Science Living and Learning Community, are popular community-building options for engineering students. See [housing.colorado.edu/residences/residential-academic-communities](http://housing.colorado.edu/residences/residential-academic-communities) for information.

## 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) six-hour examination during senior year in this college.

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## Alliance for Technology, Learning, and Society (ATLAS)

The Alliance for Technology, Learning, and Society (ATLAS) Institute is campuswide initiative in education, research, creative work, and outreach in which information and communication technology is the enabling force. ATLAS programs bring together students, educators, artists, writers, scholars, and leaders from the academy, industry, non-profits, and government to create a multidisciplinary environment that contributes to the understanding of the interaction of ICT and human society and to the realization of the full potential of that interaction. The ATLAS Institute is affiliated with the University of Colorado Graduate School and the College of Engineering & Applied Science.

ATLAS is distinguished by its efforts to:

- Establish collaborative multidisciplinary partnerships and programs.
- Prepare, attract, and recruit a highly qualified and diverse student population.
- Help prepare students for lives and leadership careers in the networked information age.

### Current ATLAS Programs

- Technology, Arts, and Media (undergraduate minor)
- Technology, Media, and Society (PhD)
- ICT for Development (MS)
- Assessment Research Center
- (BDW) advanced digital communications and design programs
- Center for Media, Arts, and Performance
- National Center for Women and Information Technology headquarters
- Outreach partnerships with K-12 schools, including the Digital CUrents summer workshop program

The ever-expanding landscape of the digital 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

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#### Alliance for Technology, Learning, and Society (ATLAS)

Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

Faculty: Engineering & Applied Science

- Environmental Design
- Media, Communication and Information
- Law
- Music
- Graduate School
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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 digital 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.
- 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.

## Graduate Degree Program(s)

### MS in Information and Communication Technology for Development (MS-ICTD)

The MS-ICTD degree prepares students for careers in the use of Information and Communication Technology (ICT) to advance people and communities in developing nations and underserved or impoverished regions. Students are trained to address issues of access, social equity, sustainability, appropriate design and distribution. The two-year program includes three semesters in residence and a one-semester practicum: an internship or service project with a company engaged in ICTD efforts. Organizations participating in the practicum may be public or private sector, international development agencies, foundations and/or non-governmental organizations.

## PhD

Developed in response to the profound impact of the convergence of information and communication technology that has created what is called the "networked information age," this convergence is:

- the major driver behind the wave of globalization, outsourcing, and off-shoring leading to a large and lasting transformation of the global economy.
- changing the nature of governmental and political control of societies by making it increasingly possible for people in all parts of the world to have access to a wide spectrum of communications and information.
- creating profound impacts on national and global security and on the privacy of individuals.
- redefining the media and entertainment industries in terms of content and delivery, and having a significant impact on literature and the arts.
- changing the nature and patterns of human interaction at the family level and beyond.
- impacting attention spans and learning modes, fundamentally affecting the design and delivery of education.

Students admitted to the program are self-directed, highly motivated students who enter the program having demonstrated high achievement and a strong understanding of the interdisciplinary education and research that they wish to pursue. Each PhD degree plan is structured to include a unique mix of foundational courses in technology, social sciences and digital media. In addition, each student is required to take at least one qualitative and one quantitative methods course. Each student is required to take the ATLAS PhD Seminar.

## 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 2.00 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.



## 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:

### Graduate 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

### Master's Degrees

- Aerospace Engineering, MS
- Computer Science, ME
- Electrical, Computer, and Energy Engineering, ME and MS
- Engineering Management, ME
- Telecommunications, ME and MS

CAETE also provides access to over 100 prerecorded courses via their virtual library. These courses are available for academic course work, or purchase by companies for in-house training.

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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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## Academic Standards

### Academic Policies

Students in the College of Engineering and Applied Science must abide by all college policies and procedures as outlined at [www.colorado.edu/engineering/academics/advising-and-registration](http://www.colorado.edu/engineering/academics/advising-and-registration) and [www.colorado.edu/engineering/academics/policies](http://www.colorado.edu/engineering/academics/policies). Students should refer to these websites 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 [www.colorado.edu/engineering/academics/policies/honesty](http://www.colorado.edu/engineering/academics/policies/honesty) and the the Honor Code website at [honorcode.colorado.edu](http://honorcode.colorado.edu). See also Academic Integrity and Student Conduct under Campus Policies in the General Information section of this catalog.

### 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 degree-seeking students matriculating at CU-Boulder fall 2011 semester or later, CU cumulative, semester, and major GPAs must all be at or greater than 2.250 (2.000 for students 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 his or her cumulative or prior semester GPA, or if the 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

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academic performance. Academic probation is an official warning that the 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 in 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 of 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. For the first semester of academic probation, the student must attain a semester GPA, and cumulative GPA, of at least 2.000. For the second semester of academic probation, the student must attain a semester GPA, and cumulative GPA, of at least 2.000. 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.

\*NOTE: The normal period of academic probation in the College of Engineering and Applied Science is two semesters. However, if a student completes at least 12 graded credit hours of CU-Boulder engineering curriculum course work in the student's first semester of academic probation (i.e., fulfilling all requirements specified in the previous paragraph above, along with no Incomplete grades), and the student's semester GPA is at least 3.250, and the cumulative GPA is at least 2.250, the student's strong performance allows him or her to come off of probation a semester early and be restored to good academic standing.

## 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 satisfactory academic progress toward a bachelor of science degree.

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:

- While a student is on academic suspension, and is still rostered in this college, the student may not enroll in any CU-Boulder Main Campus courses for any fall or spring semester.
- 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. **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 options are available:
  - a. The student may enroll in **Boulder Evening** and **Independent Learning** (online/correspondence) courses offered by the CU-Boulder Division of Continuing Education, and/or
  - b. The student may enroll in **Summer Session** courses at any of the CU campuses (except for Maymester courses at the CU-Boulder campus).
  - c. Students on academic suspension may not be enrolled in more than 16 credit hours at a time (in any combination of the aforementioned courses), and all CU-Boulder Continuing Education enrollment policies apply.
  - d. CU-Boulder Continuing Education advisors are available to assist with questions about courses. Students are encouraged to confer with a Continuing Education financial aid counselor before registering for any Continuing Education courses. Please visit the Continuing Education website at [conted.colorado.edu](http://conted.colorado.edu) or call **303-492-5148** or e-mail [ceregistration@colorado.edu](mailto:ceregistration@colorado.edu) with questions or to register for any of these courses.
  - e. In addition, while a student is on academic suspension, and is still rostered in this College, the student may not enroll in any courses offered at any time through the CU-Denver Division of Continuing & Professional Education or through the CU-Colorado Springs Division of Extended Studies.
    - 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 at CU-Boulder 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

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 the eighth week of the second semester, all students should finalize their choice of major in the college. For details regarding this process, see [www.colorado.edu/engineering/academics/policies/confirming-your-major](http://www.colorado.edu/engineering/academics/policies/confirming-your-major).

Specific admission requirements are detailed in Undergraduate Admission in the General Information section of this catalog. 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/admissions/undergraduate/apply/freshman](http://www.colorado.edu/admissions/undergraduate/apply/freshman).

### Transfer Students

Students desiring to transfer from other accredited collegiate institutions are considered for admission on an individual basis. 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. Admission criteria for students at other CU campuses are the same as for other transfer students.

For more information, see [www.colorado.edu/admissions/undergraduate/apply/transfer](http://www.colorado.edu/admissions/undergraduate/apply/transfer).

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Media, Communication and Information

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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 [www.colorado.edu/engineering/admissions/transfer/intra-university](http://www.colorado.edu/engineering/admissions/transfer/intra-university).

## 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 student's 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 (2 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; **OR** 1 of physics AND 1 of chemistry or biology AND 1 of another science)
- **Social Science:** 3 units
- **Foreign Language:** 3 of the same foreign language or 2 years in each of two different foreign languages

For additional information, see the Undergraduate Admission and MAPS sections of this catalog.

## Attendance and Full-Time Enrollment

Successful work in the College of Engineering and Applied Science is dependent upon regular attendance in all classes. Students who are unavoidably absent should make arrangements with instructors to make up the work missed. Non-attendance does not constitute withdrawal from a course. *If students stop attending a course in which they are formally enrolled, they are likely to receive a failing grade (F).*

## Changing Majors

The form necessary for transferring from one undergraduate engineering major to another, or to add an additional engineering major, is available online at [www.colorado.edu/engineering/academics/advising-and-registration](http://www.colorado.edu/engineering/academics/advising-and-registration) (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.

## 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 [www.colorado.edu/admissions/undergraduate/apply/freshman/credit](http://www.colorado.edu/admissions/undergraduate/apply/freshman/credit).

### 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 [www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/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 [www.colorado.edu/engineering/sites/default/files/Grade-Appeal-Policy.pdf](http://www.colorado.edu/engineering/sites/default/files/Grade-Appeal-Policy.pdf).

### Incompletes

The grade of / (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 / must be taken on the same campus on which the grade of / was awarded. Credit for a course similar to the course in which the grade of / was awarded may not be used to substitute for the incomplete course or be used to remove the grade of /.

*If the / 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 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 using the College Petition form. 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 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 [www.colorado.edu/engineering/academics/advising-and-registration](http://www.colorado.edu/engineering/academics/advising-and-registration).

## 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.

## Add Policy

After the add deadline published by the Registrar's Office, late course adds are processed by the instructor's department (with instructor approval). Engineering students may not enroll in more than 19 credit hours in a semester (17 credit hours for first-semester students) without an approved college petition.

## Drop Policy

Students may drop a class online through the initial drop deadline published by the Registrar's Office (during the third week of classes in a semester), without a *W* grade appearing on the student's transcript. After that date, students may still drop a class online through the final drop deadline published by the Registrar's Office (during the tenth week of classes in a semester), but a *W* grade will appear on the student's transcript. After the final drop deadline, students must file a detailed college petition to request a late drop, which may be approved under the following conditions:

- After the tenth week of class, a student may be approved to late drop a course if they had not previously attended or participated in the course, handed in homework, or taken any examinations. Course instructor approval is required.
- After the tenth week of class, a student may be approved to late drop a course only with documentation to verify circumstances beyond their control or a university error. Course instructor approval is required.

Students are responsible for being aware of the consequences of a late drop(s), including impacts on financial aid/scholarships, health insurance, on-campus housing eligibility, academic progress towards degree requirements, etc.

## Repeating Courses

**A student may not enroll more than three times in a course that applies towards degree requirements; furthermore, after the third attempt, a student may not substitute an equivalent course.** This means that a student has a maximum of three opportunities to show sufficient mastery of a particular subject area, whether the course is from CU-Boulder or through another collegiate institution. Furthermore, the most recent occurrence of the subject is the grade which is applied

(e.g., to meet a grade required for a prerequisite course). If a student has earned AP or IB college credit and then subsequently enrolls in that course content, the later grade is applied. All grades will be employed to calculate grade point averages, including any courses which are repeated.

## Withdrawal from the University

If you are leaving the university during an academic semester/term or after having paid your registration deposit, you must withdraw from all courses through the Registrar's Office. See [www.colorado.edu/registrar/withdrawing-university](http://www.colorado.edu/registrar/withdrawing-university) for procedural information. Students are responsible for being aware of the consequences of a withdrawal, including impacts on financial aid/scholarships, health insurance, on-campus housing eligibility, academic progress towards degree requirements, etc.

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.

| <b>CU-Boulder Course</b>                               | <b>CU-Colorado Springs Equivalent Course</b> | <b>CU Denver Equivalent Course</b> |
|--|--|------------------------------------|
| AREN 1027-3 Engineering Drawing                        | none   | CVEN 1025                          |
| 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)    |
| CHEM 1113-1 General Chemistry 1                        | CHEM 1030                                    | CHEM 2031                          |
| CHEM 1114-1 General Chemistry 1 Laboratory             | CHEM 1030                                    | CHEM 2038                          |
| CHEM 1133-4 General Chemistry 2                        | CHEM 1060                                    | CHEM 2061                          |
| CHEM 1134-1 General Chemistry 2 Laboratory             | CHEM 1060                                    | CHEM 2068                          |
| 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                          |
| CHEN 1211-4 General Chemistry for Engineers            | none   | CHEM 1130                          |
| COEN 1300-3 Introduction to Engineering Computing      | none   | MECH 2030 or CVEN 2200             |

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Programs of Study

Faculty: Engineering & Applied Science

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Law

Music

Graduate School

|   |                     |                        |
|---|---------------------|------------------------|
| COEN 1500-1 Introduction to Engineering               | ENGR 1502           | ENGR 1000              |
| 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 2820-3 Linear Algebra with CS Applications       | CS 1300             | none                   |
| 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   | CS 4820             | CSCI 4202              |
| CSCI 3287-3 Database and Information Systems          | CS 4420             | CSCI 3287              |
| CSCI 3308-3 Software Engineering Methods and Tools    | CS 3300             | 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              |
| 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              |
| 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 or CVEN 3718 |
| CVEN 3718-3 Geotechnical Engineering 2                | none                | CVEN 4728              |
| ECEN 1100-1 Freshman Seminar                          | none                | ELEC 1201              |
| ECEN 1310-4 C Programming for EE/ECE                  | ECE 1021            | None                   |
|   |                     |                        |

|   |   |                                   |
|---|---|-----------------------------------|
| ECEN 1400-3 Introduction to Digital and Analog Electronics    | ECE 1001                                  | None                              |
| ECEN 2250-3 Introduction to Circuits and Electronics          | ECE 2205 or ECE 2210                      | 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 or ECE 2610                      | ELEC 3316                         |
| ECEN 3320-3 Semiconductor Devices                             | ECE 3020 or 2050                          | ELEC 4025                         |
| ECEN 3350-3 Programming of Digital Systems                    | ECE 3430                                  | ELEC 1520                         |
| ECEN 3360-3 Digital Design Laboratory                         | ECE 3420 + ECE 3440                       | ELEC 2520 + 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 1400-3 First-Year Engineering Projects                   | ENGR 1001                                 | None                              |
| MCEN 1025-4 Computer-Aided Design and Fabrication             | MAE 1005 + MAE 1503                       | MECH 1025                         |
| MCEN 2023-3 Statics and Structures                            | MAE 2103                                  | MECH 2023                         |
| MCEN 2024-3 Materials Science                                 | MAE 2200 or CHEM 3010                     | 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                             | MAE 3020                                  | MECH 4110 or MECH 3010            |
| MCEN 3032-3 Thermodynamics 2                                  | MAE 3302                                  | MECH 3022                         |
| 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        |

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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.

## Advising

All students are advised by professional staff advisors and faculty mentors from their respective major department or program. Students are encouraged to meet with an advisor at least once a semester. Academic advising information and a list of contacts may be found at [www.colorado.edu/engineering/academics/advising-and-registration](http://www.colorado.edu/engineering/academics/advising-and-registration).

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

For academically prepared 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 to allow each student to 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 eight consecutive semesters of full-time enrollment. 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 [www.colorado.edu/engineering/academics/policies/four-year-graduation-guarantee-and-flexible-first-year](http://www.colorado.edu/engineering/academics/policies/four-year-graduation-guarantee-and-flexible-first-year).

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  - Faculty: Engineering & Applied Science

- Environmental Design
- Media, Communication and Information
- Law
- Music
- Graduate School

## Degree and Graduation Requirements

To be eligible for the baccalaureate degree from the College of Engineering and Applied Science on the Boulder campus, a student must meet all of the following minimum requirements:

- 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 coursework earned after admission to the university and this college.
- A University of Colorado cumulative grade point average of 2.250 (2.000 for new students prior to fall 2011) for all courses attempted.
- A cumulative grade point average, separately computed, of 2.250 (2.000 for new students prior to fall 2011) in courses taken from the student's major department is also required. For students in the applied mathematics program, the major department shall be the Applied Mathematics Department; for students in the engineering physics program, the major department shall be 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.
- 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 satisfactory completion of all Minimum Academic Preparation Standards (MAPS) deficiencies.
- Some majors require the successful completion of an outcome measurement prior to graduation (e.g., the Fundamentals of Engineering (FE) examination).

Students should meet with their academic advisor to discuss progress towards degree requirements, and then if appropriate, apply for graduation via the online Student Center according to the timelines posted on the Registrar's web site at [registrar.colorado.edu/students/graduation.html](http://registrar.colorado.edu/students/graduation.html).

See [www.colorado.edu/engineering/academics/policies/graduation-requirements](http://www.colorado.edu/engineering/academics/policies/graduation-requirements) for more information.

## Double Majors / 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.

## Minors

The college offers a number of minors. For more information, visit [www.colorado.edu/engineering/academics/degrees-minors-certificates/minors](http://www.colorado.edu/engineering/academics/degrees-minors-certificates/minors).

## Premedical Option

Students interested in meeting requirements for entry into medical or other health professions schools while earning a degree in engineering should consult with a prehealth academic advisor ([advising.colorado.edu/prehealth](http://advising.colorado.edu/prehealth)). Students should also discuss their plans with their major department's academic advisor, since some of the required course work may fulfill electives in their engineering curriculum.

## 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. 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 of Engineering and Applied Science 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. In some departments, up to 6 hours of graduate course work may be applied to the undergraduate degree. 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 joint BS/MS program. The BS and MS degrees must be awarded concurrently at the completion of the degree program. The tuition rate for students in this program will be at the undergraduate rate until the student is converted to graduate status, which will automatically happen when the student has 145 credit hours in the undergraduate career.

For additional details on this program, contact the appropriate engineering academic department or the Graduate School.

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## Graduate Study in Engineering

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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 areas:

- aerospace engineering sciences
- architectural engineering
- chemical engineering
- civil engineering
- computer science
- electrical 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** is organized around focus areas in astrodynamics and satellite systems; bioastronautics; remote sensing; Earth and space sciences; and aerospace engineering systems, including aerodynamics, controls, structures, and mechanics of materials.

**Architectural engineering** focuses on the design, construction, and operation of buildings and their systems. Areas of emphasis include sustainable building design and operation, illumination engineering, energy efficient and renewable energy technologies, and construction engineering and management.

Key activities in **chemical engineering** include biomaterials and tissue engineering, biosensing, biotechnology and pharmaceuticals, catalysis and surface science, computational science and engineering, energy, fluids and flows, interfaces and self-assembly, membranes and separations, nanomaterials and nanotechnology, polymers and soft materials, protein engineering, and synthetic biology.

Fields emphasized in **civil engineering** include geotechnical engineering and geomechanics, structural mechanics and engineering,

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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, 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 engineering** include photovoltaic, wind, and renewable energy systems, power machines and systems, electromagnetic theory, microwave systems, 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 synthesis and verification, and software defined networks.

**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 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 such as healthcare, e-commerce, social networking, and utilities that rely on integrating two-way telecommunications technology into existing and newly created information infrastructures.

## 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 Education and Professional Development Programs

At Engineering Online, a service provided by the Center for Advanced Engineering and Technology Education (CAETE) at CU-Boulder, we've been providing distance education for more than 30 years. Whether online or on campus, students can expect the most current online learning environment, integrated with streaming and other tools that make it easy to interact with faculty and peers.

- Experience the best-in-class online learning environment. Students stream or download digitally recorded classroom lectures when it's convenient for them.
- Pursue a master's degree, a graduate certificate, or take individual courses in engineering, including aerospace engineering sciences, computer science, electrical engineering, engineering management, or interdisciplinary telecom.

Receive a CU-Boulder degree, the same as main campus students, not an "online degree."

- Deepen expertise in a specific discipline, such as aerospace or computer science; master the skills necessary to transition into leadership in a technical field; or gain interdisciplinary knowledge to target success in the telecom realm.
- Cultivate relationships with CU-Boulder's highly regarded faculty.

For more information visit the CAETE website at [CUEngineeringOnline.colorado.edu](http://CUEngineeringOnline.colorado.edu), call **303-492-6331**, or send an e-mail to [caete@colorado.edu](mailto:caete@colorado.edu).

## 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 courses 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 and Research Assistant English Proficiency and Intelligibility

The College of Engineering and Applied Science requires that all graduate teaching assistants and research assistants be proficient and intelligible in spoken English. In order to ensure that this is the case, all prospective teaching assistants and research 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 or research assistantship is awarded. In the event that a prospective teaching or research assistant does not demonstrate a satisfactory level of proficiency, as determined by campus assessment, that student will be required to participate in training designed to improve intelligibility.

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## Aerospace Engineering Sciences

The mission of the Department 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.

The department is uniquely characterized by:

- blending aeronautics, astronautics, and science applications;
- providing an undergraduate experience characterized by rigorous preparation in mathematics and engineering sciences, a hands-on experiential approach to learning, and an extensive emphasis on design in a systems context;
- emphasizing in our graduate education and research programs forefront aerospace technology development and the integration of engineering and science activities to solve critical problems in the Earth and space sciences; and
- creating graduates who are broadly educated, interdisciplinary, agile, team-oriented engineers and scientists, with end-to-end mission and systems perspectives.

### 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:

- strong 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;

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### Aerospace Engineering Sciences

Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

Mechanical Engineering

Telecommunications

Certificate Programs

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

**Course code for this program is ASEN.**

## Bachelor's Degree Program(s)

# Bachelor's Degree in Aerospace Engineering Sciences

## Degree Requirements

The undergraduate curriculum 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.

## 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 academic advisor, as well as their prehealth 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
- GEEN 1400 Engineering Projects/ASEN 1400 Gateway to Space—3
- GEEN 1500 Introduction to Engineering—1
- Humanities or social science elective—6

#### **Spring Semester—17**

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Media, Communication and Information

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- APPM 1360 Calculus 2 for Engineers—4
- ASEN 1022 Material Science for Aerospace Engineers—3
- PHYS 1110 General Physics 1—4
- Computing requirement: GEEN 1300/CSCI 1300/ECEN 1310—(3-4)
- Humanities or social science elective—3

## **Sophomore Year**

### **Fall Semester—16**

- 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
- Free electives—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 (upper division)—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—16**

- ASEN 3128 Aircraft Dynamics—4
- ASEN 3200 Orbital Mechanics/Attitude Determination and Control—4
- ASEN 3300 Electronics and Communications—4
- Professional area electives—3
- Free elective—1

## **Senior Year**

### **Fall Semester—16**

- ASEN 4013 Foundations of Propulsion—3
- ASEN 4018 Senior Projects 1: Design Synthesis—4
- College-approved writing course—3
- Professional area electives—6

### **Spring Semester—16**

- ASEN 4028 Senior Projects 2: Design Practicum—4
- Professional area electives—6
- Humanities or social science elective (upper-division)—3
- Free elective—3

Courses selected must meet humanities and social science requirements as detailed at

[www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/hss).

Students who are unsure of their major selection are advised to take CHEN 1211/CHEM 1221 Chemistry for Engineers in the fall of the freshman year in case the student decides to change their major. The 5 credit hours earned for this course may then apply as free electives for ASEN majors who take the class.

### 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.

Aerospace students are expected to take APPM courses for the required mathematics courses (APPM 1350, 1360, 2350, 2360) once they have matriculated into the aerospace program.

## Concurrent Bachelor's/Master's Program

### BS/MS Program

The concurrent BS/MS program in Aerospace Engineering Sciences (ASEN) enables the program's top BS students to be admitted to the MS program during the junior or senior year, and to work thereafter toward both the BS and MS degrees in ASEN. This program allows for early planning of the MS portion of the student's education, taking graduate courses as part of the BS degree requirements, 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. Up to 6 credit hours may be counted toward both the BS and MS degree programs. Therefore, in theory, the minimum number of credit hours required for the concurrent BS/MS degrees will be 152. Current CU-Boulder Aerospace students are eligible to apply after they have completed eight core ASEN courses and have a minimum CU-Boulder cumulative and ASEN major GPA of 3.250. For more information, visit [www.colorado.edu/aerospace/current-students/undergraduates/bsms-degree](http://www.colorado.edu/aerospace/current-students/undergraduates/bsms-degree).

## 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 \$20 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 of 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.
- Seminar credits, even those earned in other disciplines, do not count toward the MS degree.
- 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 and a cumulative GPA of at least 3.0.

## 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 18 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.

## Certificate Program

### Graduate Certificate in Astrodynamics and Satellite Navigation Systems

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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## 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 a 5-year BS/MS, as well as 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 field or one of the quantitative areas of business and economics);

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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.

**Course code for this program is APPM.**

## 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.

## 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 or ECEN 1030).
- 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

### Recommended Courses and Semester Credit Hours

- ASEN 2001 Aero 1: Introduction to Statics, Structures, and Materials—4
- ASEN 2002 Aero 2: Introduction to Thermodynamics and Aerodynamics—4
- 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

Faculty: Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

Recommended courses (total of 25 credit hours):

- CHEN 2120 Material and Energy Balance—3
- CHEN 3210 Heat Transfer—3
- CHEN 3220 Mass Transfer—3
- CHEN 3311 Organic Chemistry 1—4
- CHEN 3320 Thermodynamics—3
- CHEN 4330 Reaction Kinetics—3
- CHEM 3200 Fluids—3
- CHEM 4511 Physical Chemistry—3

## Computer Science Option

Required course:

- 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

*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.

## 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 2043 Dynamics—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 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

Students also take a minimum of two courses from any one of the following groups, plus additional CVEN or AREN courses to bring total to 24 credit hours:

- 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:

- ECON 4818 Introduction to Econometrics—3

- FNCE 4030 Investment and Portfolio Management—3
- FNCE 4040 Derivative Securities—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 3070 Intermediate Microeconomics Theory (Note 2)—3
- ECON 3080 Intermediate Macroeconomics Theory (Note 2)—3
- 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 (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. 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

The Department of Applied Mathematics offers [MS and PhD programs](#). See the Department of Applied Mathematics in the College of Arts and Sciences.

## 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:

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

### 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

#### **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—1
- CHEN 1211 General Chemistry for Engineers—4

##### **Spring Semester**

- APPM 1360 Calculus 2 for Engineers—4
- CVEN 2012 Introduction to Geomatics—3
- GEEN 1400 Engineering Projects or basic engineering elective—3
- PHYS 1110 General Physics 1—4
- Humanities or social science elective—3

#### **Sophomore Year**

##### **Fall Semester**

- AREN 2050 Building Materials and Systems—3
- AREN 2110 Thermodynamics—3

Faculty: Engineering & Applied  
Science

Environmental Design

Media, Communication and  
Information

Law

Music

Graduate School

Other Academic Programs

- 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
- CVEN 3161 Mechanics of Material 1—3
- CVEN 3246 Introduction to Construction—3
- GEEN 1300 Engineering Computing—3

### **Junior Year**

#### **Fall Semester**

- AREN 3010 Mechanical Systems for Buildings—3
- AREN 3540 Illumination 1—3
- CVEN 3525 Structural Analysis—3
- ECEN 3030 Electrical Circuits—3
- Free elective—3

#### **Spring Semester**

- AREN Proficiency I—3
- AREN Proficiency II—3
- AREN Concentration I—3
- College-approved writing course—3
- Technical elective—3

### **Senior Year**

#### **Fall Semester**

- ARCH 3114 History and Theories of Architecture 1—3
- ARCH 4010 Architectural Appreciation and Design—5
- AREN Concentration II—3
- Humanities or social science elective—3
- Technical elective—3

#### **Spring Semester**

- ARCH 3214 History and Theories of Architecture 2—3
- AREN 4317 Architectural Engineering Design—5
- Humanities or social science elective—3
- Technical electives—6

### **Minimum hours for degree—128**

## **Courses Available for Specialization**

Students select two proficiency-level courses from different subdisciplines and two concentration-level courses from one subdiscipline. 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 4010 HVAC System Modeling and Control
- AREN 4110 HVAC Design
- AREN 4315 Design of Masonry Structures
- AREN 4540 Exterior Lighting Systems
- AREN 4550 Illumination 2
- AREN 4560 Luminous Radiative Transfer
- AREN 4570 Electrical Systems
- AREN 4580 Daylighting
- CVEN 3256 Construction Equipment and Methods
- 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 5020 Building Energy Audits
- CVEN 5050 Advanced Solar Design
- MCEN 3022 Heat Transfer

## Graduate Degree Program(s)

### Graduate Study in Architectural Engineering

Graduate studies in architectural engineering are offered through the Department of Civil, Environmental, and Architectural Engineering. Information on the requirements for graduate study in architectural engineering is available from the departmental website at [ceae.colorado.edu](http://ceae.colorado.edu). The Graduate Record Examination (GRE), consisting of the aptitude tests and advanced test in engineering, is used to evaluate master of science and doctor of philosophy candidates. Candidates who submit GRE scores may be more likely to be considered for financial assistance.

The department offers the master of science and doctor of philosophy degrees with study emphasis in building energy systems (sustainable building design and operation, illumination engineering, energy efficient and renewable energy technologies) and construction engineering and management.

### Master of Science Degree

Requirements for this master's degree can be fulfilled in three ways. Under Plan I, the candidate completes 30 credit hours of course work including thesis (maximum of 6 credit hours). Under Plan IIa, 30 credit hours of course work are required, including 3 credit hours of Master's Report credit. Under Plan IIb, 30 credit hours of course work are required with a final exam; however, not all disciplines offer the course work master's option.

### Doctor of Philosophy Degree

This degree requires a minimum of 30 credit hours of graduate-level work (5000 level or above). Up to 21 credit hours of previous graduate-level work may be transferred with advisor and Graduate School approval. The doctoral dissertation requires 30 credit hours. The applicant for this degree must demonstrate the capability for both rigorous academic accomplishments and independent research.

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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.

**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 section below.

**Course code for this program is CHEN.**

### Bachelor's Degree Program(s)

## BS in Chemical Engineering

Chemical engineers are responsible for producing products based on chemical processing and chemical transformations. They carry

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### Chemical and Biological Engineering

[Civil Engineering](#)  
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out basic research; they design, build, operate, and manage chemical processes and plants; and they supply petroleum products, renewable resources, plastics, 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 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.

Faculty: Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

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.

**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.

**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

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

#### **Freshman Year**

##### **Fall Semester**

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 General Chemistry Laboratory for Engineers—1
- CHEN 1211 General Chemistry for Engineers—4
- 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
- CHEN 3200 Chemical Engineering Fluid Mechanics (Note 1)—3
- CHEN 4521 Physical Chemistry for Engineers (Notes 1 and 4)—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
- College-approved writing course—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
- 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 [www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/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

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

#### **Freshman Year**

##### **Fall Semester**

- APPM 1350 Calculus 1 for Engineers—4
- CHEN 1211 General Chemistry for Engineers—4
- CHEM 1221 General Chemistry Laboratory for Engineers—1
- 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
- CHEN 3200 Chemical Engineering Fluid Mechanics (Note 1)—3
- CHEN 4521 Physical Chemistry for Engineers (Notes 1 and 4)—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
- College-approved writing course—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 [www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/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 Department of Chemical and Biological Engineering are biomaterials and tissue engineering, biosensing, biotechnology and pharmaceuticals, catalysis and surface science, computational science and engineering, energy, fluids and flows, interfaces and self-assembly, membranes and separations, nanomaterials and nanotechnology, polymers and soft materials, protein engineering and synthetic biology.

### 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 section. 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.

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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;
- 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
- an understanding of the impact of engineering on society
- an understanding of the necessity to engage in lifelong learning

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- 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 building mechanical and energy laboratory is capable of testing full-scale, commercial building systems and their controls using a one-of-a-kind data acquisition and experimental control system.

The Environmental Engineering program maintains approximately 12,000 sq. ft. of laboratories in the areas of process research, environmental microbiology, environmental chemistry, water quality, air quality, molecular biology, toxicology, and field ecology. The Environmental Sustainability cluster and the Center for Environmental Mass Spectrometry offer formal collaborations between the CU-Boulder Environmental Engineering Group, Mechanical Engineering air research group, the US Geological Survey, and industry partners, providing state-of-the-art facilities for research and teaching.

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. Social-humanistic hours may be devoted to the social sciences, the humanities, or to approved communication courses.

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

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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

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

#### **Freshman Year**

##### **Fall Semester**

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 General Chemistry Laboratory for Engineers—1
- CHEN 1211 General Chemistry for Engineers—4
- CVEN 1317 Introduction to Civil and Environmental Engineering—2
- GEEN 1400 Engineering Projects or basic engineering elective—3

##### **Spring Semester**

- APPM 1360 Calculus 2 for Engineers—4
- GEEN 1300 Engineering Computing—3
- PHYS 1110 General Physics 1—4
- AREN/CVEN drawing or geomatics course—3
- Humanities or social science elective—3

#### **Sophomore Year**

##### **Fall Semester**

- APPM 2350 Calculus 3 for Engineers—4
- CVEN 2121 Analytical Mechanics 1—3
- CVEN 3698 Engineering Geology or basic science elective—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1

##### **Spring Semester**

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- AREN 2110 Thermodynamics—3
- CVEN 3161 Mechanics of Materials 1—3
- CVEN 3313 Theoretical Fluid Mechanics—3
- Humanities or social science elective—3

#### **Junior Year**

##### **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
- Humanities or social science elective—3

##### **Spring Semester**

- CVEN 3111 Analytical Mechanics 2—3

- CVEN 3227 Probability, Statistics, and Decision for Engineers—3
- CVEN Proficiency I—3
- College-approved writing course—3
- Free elective—3

## Senior Year

### **Fall Semester**

- CVEN Proficiency II—3
- CVEN 4897 Professional Issues—2
- Free elective—3
- Humanities and social science elective—3
- CEAE technical elective—6

### **Spring Semester**

- CVEN 4899 Civil Engineering Senior Design—4
- CVEN Proficiency III—3
- Humanities or social science elective—3
- Technical electives—6

## 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 requirements are met); this allows a student to obtain both degrees in a five-year curriculum.

## Graduate Degree Program(s)

### **Graduate Study in Civil Engineering**

Graduate studies in civil engineering are offered through the Department of Civil, Environmental, and Architectural Engineering. Information on the requirements for graduate study in civil engineering is available from the departmental website at [ceae.colorado.edu](http://ceae.colorado.edu). The Graduate Record Examination (GRE), consisting of the aptitude tests and advanced test in engineering, is used to evaluate master of science and doctor of philosophy candidates. Candidates who submit GRE scores may be more likely to be considered for financial assistance.

The department offers the master of science and doctor of philosophy degrees with study emphasis in several major areas: construction engineering and management, environmental engineering, civil systems, geotechnical engineering and geomechanics, geoenvironmental engineering, structural engineering and structural mechanics, hydrology, water resources and environmental fluid mechanics, and general engineering science.

### **Master of Science Degree**

Requirements for this master's degree can be fulfilled in three ways. Under Plan I, the candidate completes 30 credit hours of course work including thesis (maximum of 6 credit hours). Under Plan IIa, 30 credit hours of course work are required, including 3 credit hours of Master's Report credit. Under Plan IIb, 30 credit hours of course work are required with a final exam; however, not all disciplines offer the course work master's option.

### **Doctor of Philosophy Degree**

This degree requires a minimum of 30 credit hours of graduate-level work (5000 level or above). Up to 21 credit hours of previous

graduate-level work may be transferred with advisor and Graduate School approval. The doctoral dissertation requires 30 credit hours. The applicant for this degree 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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## 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.
- an ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.

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Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

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Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

**Computer Science**

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

Mechanical Engineering

Telecommunications

Certificate Programs

- 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.

## 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.**

## 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; requirements may be found at [www.colorado.edu/cs/bsms-degree/minor](http://www.colorado.edu/cs/bsms-degree/minor).

## 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. A student may not earn both the BS in computer science and the BA in computer science degrees from CU-Boulder. A student may not earn both the BS in computer science and the minor in computer science from CU-Boulder.

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 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

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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

### **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**

## Graduate Degree Program(s)

# Graduate Study in Computer Science

### 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 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.

Admission to the graduate programs (both MS and PhD) is offered only for fall semester. Applications from both domestic and U.S. students and international students should be received by December 15.

## 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 or doctoral degree programs are available at [www.colorado.edu/cs/current-students/graduates](http://www.colorado.edu/cs/current-students/graduates).

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□ General Information Programs of Study **Colleges & Schools** Admission Courses

## Electrical, Computer, 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 (GET).** 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 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

Arts &amp; Sciences

Business

Education

Engineering &amp; Applied Science

Engineering Degrees Overview

Facilities

Computing

Policies &amp; Requirements

Programs of Special Interest

Alliance for Technology, Learning, and Society (ATLAS)

Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

Aerospace Engineering Sciences

Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

**Electrical, Computer, and Energy Engineering**

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

Mechanical Engineering

Telecommunications

Certificate Programs

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; a 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 PCs, Macs, a department server, and a student server. These machines are connected to the campuswide ethernet network.

**Course code for this program is ECEN.**

## Minors

The following minors provide training in electrical, computer, or energy engineering beyond the training usually received by science, mathematics, and applied mathematics majors. These minors also can broaden the training of students majoring in other engineering and applied science fields. For more information, contact the department's office or visit [www.colorado.edu/engineering/academics/degrees-minors-certificates/minors](http://www.colorado.edu/engineering/academics/degrees-minors-certificates/minors).

- Computer Engineering Minor
- Electrical Engineering Minor
- Electrical Renewable Energy Systems Minor
- Signals and Systems Minor

## Bachelor's Degree Program(s)

### Bachelor's of Science in Electrical, Computer, and Energy

Faculty: Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

# Engineering

## Bachelor's Degree Requirements

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.

## Bachelor of Science in Electrical Engineering

### Program Objectives

- **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 in 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 in Electrical Engineering

The following information may be changed by the time this catalog is posted. 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 1310 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**

### ***Fall Semester***

- Capstone, Part 1—3
- Technical electives—8
- 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**

# Bachelor of Science in Electrical and Computer Engineering

## Program Objectives

- **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 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 in Engineering and Computer Engineering

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 1310 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—3
- Technical electives—7
- 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, Computer, 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 (including computer-aided synthesis and verification, and software defined networks); dynamics and controls; electromagnetics; RF and microwaves; optics and photonics; power electronics and renewable energy systems; remote sensing; and nanostructures and devices.

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. Students who are interested in the PhD degree should apply directly to the PhD program and to the MS 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. Further information is available in the ECEE graduate office.

## Certificate Program

### Professional Certificate Programs

Professional certificate programs are offered in embedded systems, and power electronics. For more information, see

[www.colorado.edu/engineering/academics/degrees-minors-certificates/certificates](http://www.colorado.edu/engineering/academics/degrees-minors-certificates/certificates).

## Professional Certificate in 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.

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).

## Professional Certificate in 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.

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).

## Professional Certificate in Software Engineering

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. 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).



## Engineering Management

The Engineering Management Program 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, [CAETE](#).

**Course code for this program is EMEN.**

### Graduate Degree Program(s)

#### ME in Engineering Management

The master of engineering degree in engineering management 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. Graduate certificates are also available in 10 core competency areas (see below). 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

Graduate certificates are also available in 10 core competency areas. Credits accrued toward a certificate can be applied toward a master's degree.

#### Graduate Certificate in Engineering Entrepreneurship

**(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.

- 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

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Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

**Engineering Management**

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

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Certificate Programs

## Graduate Certificate in Engineering Management

**(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

## Graduate Certificate in Leadership and Management

**(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. :

- EMEN 5030 Project Management
- EMEN 5050 Leadership
- EMEN 5080 Ethical Decision-making

## Management Consulting Certificate

**(12 credit hours)**

Providing a comprehensive understanding of management consulting concepts and practices, this four-course graduate level certificate prepares engineers, scientists, or other technical professionals to serve in an internal or external consultant role in various industries (e.g., aerospace, biosciences, information technology, energy, and other sectors).

Offered through a partnership with the Institute of Management Consulting USA (IMC USA), the curriculum is based on the IMC Body of Knowledge for best practices in management consulting. This certificate prepares students for the IMC, USA Certified Management Consulting (CMC®) certification process.

- EMEN 5030 Project Management Systems
- EMEN 5040 Quality, Strategy, and Value Creation
- EMEN 5050 Leadership
- EMEN 5200 Management Consulting

## Graduate Certificate in Managing Applied Research in Technology

**(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.

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EMEN 5042 Methods for Quality Improvement

- EMEN 5610 Advanced Statistical Methods for Engineering Research
- EMEN 5620 Data Mining and Screening Experiments for Engineering Research
- EMEN 5900 Research Methods

## Graduate Certificate in Performance Excellence in Technology Management

**(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

## Graduate Certificate in Project Management

**(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 5050 Leadership

## Graduate Certificate in Quality Systems for Product and Process Engineering

**(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

## Graduate Certificate in Six Sigma Practitioner

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

## Graduate Certificate in Technology Ventures and Product Management

(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.

**Course code for this program is PHYS.**

### 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).

### Bachelor's Degree Program(s)

#### Bachelor's Degree in Engineering Physics

The bachelor of science majoring in engineering physics is granted by the College of Engineering and Applied Science through the Department of Physics in the College of Arts and Sciences.

### Requirements

During the freshman and sophomore years, students receive a broad introduction to physics, chemistry, applied mathematics, and mathematical methods in physics. Starting in the sophomore year, students take electrodynamics, quantum mechanics, classical mechanics, and mathematical methods, thermodynamics and statistical mechanics, and advanced mathematics. In addition, there is a core of four laboratory courses that students take. Laboratory courses emphasize student-developed and student-designed independent projects in which students use the knowledge acquired to build apparatus of their own choosing. The capstone lab course, PHYS 3340 Advanced Laboratory, 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.

For more information about the bachelor's degree in engineering physics, contact the Department of Physics, Duane Physics E-1B32; **303-492-6953**, or by visit [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 major.

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    - Engineering Physics**
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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 faculty mentor.) 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 suggested 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**

#### **Freshman Year**

##### **Fall Semester (15 credit hours)**

- APPM 1350 Calculus 1 for Engineers—4
- CSCI 1300 Computer Science 1 (Note 1)—4
- PHYS 1110 General Physics 1—4
- Humanities or social science elective (Note 2)—3

##### **Spring Semester (15 credit hours)**

- APPM 1360 Calculus 2 for Engineers—4
- AREN 1027 or MCEN 1025 (Note 1)—3
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Humanities or social science elective (Note 2)—3

#### **Sophomore Year**

##### **Fall Semester (17 credit hours)**

- APPM 2350 Calculus 3 for Engineers—4
- CHEM 1113 General Chemistry 1—4
- CHEM 1114 General Chemistry 1 Lab—1
- PHYS 2150 Experimental Physics—1
- PHYS 2170 Foundations of Modern Physics—3
- Engineering elective (Note 3)—4

##### **Spring Semester (16 credit hours)**

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- PHYS 2210 Classical Mechanics and Math Methods 1—3
- Engineering Elective (Note 3)—3
- General elective—3
- Humanities or social science elective (Note 2)—3

#### **Junior Year**

##### **Fall Semester (16 credit hours)**

- CHEM 1133 General Chemistry II—4
- CHEM 1134 General Chemistry II Lab—1
- PHYS 3210 Classical Mechanics and Math Methods 2—3
- PHYS 3310 Principles of Electricity and Magnetism 1—3
- PHYS 3330 Electronics for the Physical Sciences—2
- General elective—3

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### **Spring Semester (18 credit hours)**

- PHYS 3220 Quantum Mechanics—3
- PHYS 3320 Principles of Electricity and Magnetism 2—3
- PHYS 4230 Thermodynamics and Statistical Mechanics—3
- Upper Division Math or Applied Math—3
- Physics elective (Note 4)—3
- Humanities or social science elective (Note 2)—3

### **Senior Year**

#### **Fall Semester (15 credit hours)**

- PHYS 4410 Atomic and Nuclear Physics—3
- Engineering elective (Note 3)—3
- Physics elective (Note 4)—3
- General elective—3
- College-approved writing course—3

#### **Spring Semester (16 credit hours)**

- Engineering electives (Note 3)—8
- Physics electives (Note 4)—3
- General elective—3
- Humanities or social science elective (Note 2)—2

### **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 or ECEN 1310-4; plus AREN 1027-3 or MCEN 1025-4 or second computer science course (of at least 3 credit hours) other than CSCI 1300 or GEEN 1300 or ECEN 1310.
2. A total of 18 credit hours of humanities or social science courses is required. See [www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/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).



## Environmental Engineering

Environmental engineers play a vital role in maintaining the quality of both public health 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:

- have sufficient knowledge of engineering, mathematics, and science fundamentals to succeed in environmental engineering

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Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

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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 seven sets of options:

- Air Quality
- Applied Ecology
- Chemical Processing
- Energy Conversion Fundamentals
- Engineering for Developing Communities
- Environmental Site Characterization and Remediation
- Water Resources and Treatment

In addition to these prescribed options, students may also formulate their own sequence of option courses (referred to as a "special option") representing an area of specialization not included in the seven 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

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Environmental Design

Media, Communication and Information

Law

Music

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

### **Freshman Year**

#### **Fall Semester**

- APPM 1350 Calculus 1 for Engineers—4
- CHEM 1221 Engineering General Chemistry Laboratory—1
- CHEN 1211 General Chemistry for Engineers—4
- 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
- CHEN 2120 Material and Energy Balances—3
- CHEN 4521 Physical Chemistry for Engineers (Note 4)—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
- College-approved 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

- EVEN/CVEN 4464 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 [www.colorado.edu/engineering/academics/policies/hss](http://www.colorado.edu/engineering/academics/policies/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 BS in Environmental Engineering/MS in Civil Engineering

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 may be 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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## General Engineering Plus

The General Engineering Plus program offers a bachelor of science degree designed to prepare graduates for exciting, diverse and innovative professional careers, and for graduate study in a wide variety of disciplines. The degree program provides a pathway through engineering for students interested in interdisciplinary, hands-on engineering design coupled with an engineering emphasis, plus the flexibility to explore another concentration of the students' choice within, or external to, engineering.

The educational objectives of the General Engineering Plus degree program at CU-Boulder are to:

- offer undergraduate students a high-quality, technical education through a design-rich curriculum in engineering, and prepare them for careers in various industries, technical disciplines, professional degrees or graduate study;
- educate students in the foundational concepts common to most engineering disciplines—including statics; thermodynamics; materials science; basic electronics; hands-on, team-based design; and processes for taking and analyzing measurement data;
- allow students to engage in one of five disciplinary engineering emphases (aerospace, architectural, civil, environmental, or mechanical engineering) for additional depth in the selected discipline;
- provide students the opportunity to select a customizable concentration—an approved sequence of at least four courses providing a deep understanding of the chosen subject; and
- nourish and maintain a professional environment in which excellence in teaching, learning, innovation, and creativity are of central importance.

### Desired Outcomes

The undergraduate degree in General Engineering Plus prepares students to meet the following outcomes upon graduation:

- an ability to identify, formulate, and solve engineering problems
- the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- 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
- the knowledge of a specified and approved concentration area to allow meaningful contribution to the discipline
- an ability to apply knowledge of engineering, science, and mathematics
- an ability to function on multidisciplinary teams
- an understanding of professional and ethical responsibility
- an ability to communicate effectively
- an ability to design and conduct experiments, as well as to analyze and interpret data
- a recognition of the need for, and an ability to engage in lifelong learning
- a knowledge of contemporary issues

**Course code for this program is GEEN.**

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## CU Teach Engineering Concentration

Through a joint program with the School of Education, General Engineering Plus majors may also choose the CU Teach Engineering concentration, leading to teaching licensure in secondary math or science. The General Engineering Plus CU Teach Engineering program integrates design-focused engineering curriculum, extensive science or math content, education pedagogy courses, and student teaching to create qualified STEM educators that develop and hone the scientific, mathematical, engineering and technological literacy of grades 7 through 12 students. Due to teaching licensure requirements, this concentration requires substantial additional course work beyond other approved General Engineering Plus concentrations, generally taking nine semesters for completion. (See Concentrations below for specifics on this concentration.)

### Bachelor's Degree Program(s)

## Bachelor's Degree in General Engineering Plus

The BS degree in General Engineering Plus requires the satisfactory completion of a minimum of 128 credit hours from the four areas below:

- **Foundational Course Work:** 47-48 credits
- **General Engineering Core:** 31-33 credits
- **Disciplinary Emphasis:** 21-28 credits
- **Concentration:** 12-15 credits (except CU Teach Concentration: 26 credits, plus subject matter courses as required)

### Foundational Course Work

Foundational course work is common to all General Engineering Plus majors. All foundational courses require a minimum grade of C- in each course:

- **Math requirement (16 credits):** completion of three semesters of calculus (APPM 1350, 1360, and 2350), and differential equations with linear algebra (APPM 2360).
- **Science requirement (13-14 credits):** completion of PHYS 1110, 1120, and 1140. Completion of at least 4 additional credits of physics, chemistry, or biology, chosen from one of the following: PHYS 2130; PHYS 2170; MCEN 1024; CHEM 1113 and 1114; CHEM 1211 and CHEM 1221; CHEM 1251; CHEM 1351; EBIO 1210, 1220, 1230 and 1240; or MCDB 1150, 1151, 2150 and 2151.
- 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).

### General Engineering Core Course Work

Core course work is common to all General Engineering Plus majors. All core courses require a minimum grade of C in each course. Course titles within disciplines may vary; see disciplinary emphases for discipline-specific core courses:

- **Introduction to Engineering:** GEEN 1500 or a departmental introductory course
- **Computing experience:** CSCI 1300, GEEN 1300, ECEN 1310, or APPM 2750
- **Statics:** GEEN 2851, ASEN 2001, CVEN 2121, or MCEN 2023.
- **Thermodynamics:** GEEN 3852, ASEN 2002, AREN 2110, or MCEN 3012
- **Materials Science:** ASEN 1022, CVEN 3161, or MCEN 2024
- **Basic Electronics:** ASEN 3300 or ECEN 3010
- **Processes for Taking and Analyzing Measurement Data:** ASEN 2012 (with ASEN 2001 and 2002); CVEN 3227; or MCEN 3037 and MCEN 4037
- **Hands-on Design Courses –** GEEN 1400, GEEN 2400, and GEEN 3400.

### Aerospace Engineering Sciences Emphasis

#### Aerospace-specific Core Course Work (17 hours)

Faculty: Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

- ASEN 1022 Material Science for Aerospace Engineers—3
- 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
- ASEN 3300 Electronics and Communications—4

### **Courses Required for Aerospace Emphasis (26 hours)**

All emphasis courses require a minimum grade of C- in each course.

#### **Required Courses (10 Hours):**

- ASEN 2003 Introduction to Dynamics and Systems—5
- ASEN 2004 Aerospace Vehicle Design and Performance—5

#### **Plus, students choose two courses from the five below (8 hours):**

- ASEN 3111 Aerodynamics—4
- ASEN 3112 Structures—4
- ASEN 3113 Thermodynamics and Heat Transfer—4
- ASEN 3128 Aircraft Dynamics—4
- ASEN 3200 Orbital Mechanics/Attitude Determination and Control—4

#### **and Capstone Design is required (8 hours):**

- ASEN 4018 Senior Projects 1: Design Synthesis—4
- ASEN 4028 Senior Projects 2: Design Practicum—4

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

## **Architectural Engineering Emphasis**

### **Architectural Engineering-specific Core Course Work (15 hours)**

- CVEN 2121 Analytical Mechanics I—3
- CVEN 3161 Mechanics of Materials I—3
- ECEN 3010 Circuits and Basic Electronics—3
- AREN 2110 Thermodynamics—3
- CVEN 3227: Probability, Statistics and Decision—3

### **Courses Required for Architectural Emphasis (28 hours)**

All emphasis courses require a minimum grade of C- in each course.

#### **Required Courses (9 hours):**

- AREN 1027 Engineering Drawing—3
- CVEN 2012 Introduction to Geomatics—3
- AREN 2050 Engineering Systems for Buildings—3

#### **Plus, students choose a focus of three courses from the options below (9 hours):**

- **Electrical/Lighting:** AREN 3540-3 Illumination 1; AREN 4550-3 Illumination 2; AREN 4570-3 Building Electrical Systems Design 1
- **Mechanical Systems:** AREN 2120-3 Fluid Mechanics and Heat Transfer; AREN 3010-3 Mechanical Systems for Buildings;

AREN 4110-3 HVAC Design

- **Construction:** CVEN 3246-3 Introduction to Construction; AREN 4506-3 Project Management 1; AREN 4606-3 Project Management 2
- **Structures:** CVEN 3525-3 Structural Analysis; CVEN 4545-3 Steel Design; CVEN 4555-3 Reinforced Concrete Design

**and, Capstone Design is required (10 hours):**

- ARCH 4010 Architectural Appreciation and Design—5
- AREN 4317 Architectural Engineering Design—5

## Civil Engineering Emphasis

**Civil-specific Core Course work (15 hours)**

- CVEN 2121 Analytical Mechanics I—3
- CVEN 3161 Mechanics of Materials I—3
- ECEN 3010 Circuits and Basic Electronics—3
- AREN 2110 Thermodynamics—3
- CVEN 3227 Probability, Statistics, and Decision—3

**Courses Required for Civil Emphasis (22)**

All emphasis courses require a minimum grade of C- in each course.

**Required Courses (6 hours):**

- CVEN 3313 Theoretical Fluid Mechanics—3
- CVEN 3323 Hydraulics or CVEN 3708 Geotechnical Engineering I—3

**and, students choose two of the five courses below (note: cannot double count Hydraulics or Geotechnical Engineering I, whichever was taken above) (6 hours):**

- 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 I—3

**plus, students choose a focus of two courses from the options below (6 hours):**

- **Environmental:** CVEN 3424-3 Water and Wastewater Treatment; CVEN 4474-3 Hazardous and Industrial Waste Management
- **Water Resources:** CVEN 4333-3 Engineering Hydrology; CVEN 4353-3 Groundwater Engineering
- **Geotechnical:** CVEN 3718-3 Geotechnical Engineering 2; CVEN 4728-3 Foundation Engineering
- **Construction:** CVEN 3256-3 Construction Equipment and Methods; AREN 4506-3 Project Management 1
- **Structures:** CVEN 4545-3 Steel Design; CVEN 4555-3 Reinforced Concrete Design

**and Capstone Design is required:**

- CVEN 4899 Civil Engineering Senior Project Design—4

## Environmental Engineering Emphasis

**Environmental-specific Core Course Work (15 hours)**

- CVEN 2121 Analytical Mechanics I—3
- CVEN 3161 Mechanics of Materials I—3
- ECEN 3010 Circuits and Basic Electronics—3
- AREN 2110 Thermodynamics—3
- CVEN 3227 Probability, Statistics, and Decision—3

### **Courses Required for Environmental Emphasis (22 hours)**

All emphasis courses require a minimum grade of C- in each course.

#### **Required Courses (9 hours)**

- CVEN 3313 Theoretical Fluid Mechanics ; or CHEN 3200 Chemical Engineering Fluid Mechanics ; or MCEN 3021 Fluid Mechanics—3
- CVEN 3323 Hydraulic Engineering—3
- CVEN 3414 Fundamentals of Environmental Engineering—3

#### **and, students choose three of the seven courses below (9):**

- MCEN 4131 Air Pollution Control—3
- CVEN 4404 Water Chemistry—3
- CVEN 4484 Environmental Microbiology—3
- CVEN 4333 Engineering Hydrology—3
- CVEN 3424 Water and Wastewater Treatment—3
- CVEN 3434 Applied Ecology—3
- CVEN 4474 Hazardous and Industrial Waste Management—3

#### **and Capstone Design is required (4 hours):**

- CVEN 4434 Environmental Engineering Design—4

## **Mechanical Engineering Emphasis**

### **Mechanical-specific Core Course Work (16 hours)**

- ECEN 3010 Circuits and Basic Electronics—3
- MCEN 2023 Statics and Structures—3
- MCEN 2024 Materials Science—3
- MCEN 3012 Thermodynamics—3
- MCEN 3037 Data Analysis—2
- MCEN 4037 Measurements Lab—2

### **Courses Required for Mechanical Emphasis (21 hours)**

All emphasis courses require a minimum grade of C- in each course.

#### **Required Courses (15 hours):**

- MCEN 2043 Dynamics—3
- MCEN 2063 Mechanics of Solids—3
- MCEN 3021 Fluid Mechanics—3
- MCEN 3025 Component Design—3
- MCEN 4043 System Dynamics—3

#### **and Capstone Design (6 hours):**

- MCEN 4045 Mechanical Engineering Design Project 1—3
- MCEN 4085 Mechanical Engineering Design Project 2—3

## Concentration

The General Engineering Plus Concentration allows students to select additional course work in a chosen field of study, either within or outside of engineering. The concentration course sequence must be a series of courses with increasing specificity or depth within a field, typically culminating in senior level courses. Most concentrations will be at least four three-credit courses. Several approved concentrations are available as examples on the General Engineering Plus website ([geneng.colorado.edu](http://geneng.colorado.edu)). Every concentration *must* be preapproved by a General Engineering Plus advisor, *prior* to the commencement of the course work. All concentration courses require a minimum grade of C+ in each course.

## CU Teach Engineering Concentrations

**General Engineering Plus CU Teach Science** offers engineering students the flexibility of earning a design-rich engineering degree, combined with the opportunity to teach secondary school science. This degree option arms grades 7 through 12 STEM educators with the scientific, technological, engineering, and mathematical literacy necessary to improve the teaching and learning of science and engineering subjects in middle and high schools.

The General Engineering Plus CU Teach Science degree requires:

- 53-59 engineering credit hours
- 28-40 science credit hours
- 16 math credit hours (Calculus I, Calculus 2, Calculus 3, Differential Equations)
- 18 humanities credit hours
- 23 CU Teach education credit hours, as required by the Colorado Department of Education (CDE)

Though the CDE does not distinguish among science licensures, and grants a "science-secondary education" license, GE+ CU Teach Science students must choose a science area of focus (physics, chemistry or biology) to ensure deeper content knowledge.

All concentration courses require a minimum grade of C+ in each course, including education and subject matter (science) courses.

**General Engineering Plus CU Teach Math** is designed to attract students interested in a design-rich engineering degree applicable to an engineering career, with the ability to also become a secondary mathematics teacher. This degree option arms grades 7 through 12 math educators with the scientific, technological, engineering, and mathematical literacy necessary to improve the teaching and learning of mathematics and engineering subjects in middle and high schools.

The General Engineering Plus CU Teach Math degree requires:

- 53-59 engineering credit hours (depending on the disciplinary emphasis area chosen)
- 31 math credit hours
- 14 science credit hours (Chemistry 1, Physics 1, Physics 2, Experimental Physics)
- 18 humanities credit hours
- 23 CU Teach education credit hours, as required by the Colorado Department of Education (CDE)

All concentration courses require a minimum grade of C+ in each course, including education and subject matter (math) courses.





## Material Science and Engineering

The Materials Science and Engineering (MSE) program is an graduate interdisciplinary MS and PhD program aimed at providing rigorous education in materials science and engineering and the fundamental physics, engineering, chemistry and biology that underlie this discipline. Educational goals are achieved through both course work and training in cross-disciplinary research supervised by one or more science and engineering faculty members.

The program offers six unique tracks of study:

- electronic, magnetic and photonics materials
- soft materials
- structural materials
- materials for energy
- biomaterials
- computational materials science

The MSE program is directed by Professor Chris Bowman of the Department of Chemical and Biological Engineering. For more information, visit the MSE website at [mse.colorado.edu](http://mse.colorado.edu).

Arts & Sciences

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Education

Engineering & Applied Science

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Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

Aerospace Engineering Sciences

Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

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Music

Graduate School

Other Academic Programs

**University Catalog 2014-2015**

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University of Colorado **Boulder**

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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 they 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;
- analyze and interpret data;
- design systems, components, or processes to meet desired needs;
- understand the processes used to manufacture products;
- understand contemporary issues in mechanical engineering;
- demonstrate professional conduct in academic and workplace environment;
- demonstrate effective oral and written communication skills;
- 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, as well as 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 interdisciplinary areas.

### Curriculum for BS in Mechanical Engineering

#### Required Courses and Semester Credit Hours

|  |
|--|
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| Center for Advanced Engineering and Technology Education (CAETE) |
| Programs of Study  |
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| Applied Mathematics  |
| Architectural Engineering  |
| Chemical and Biological Engineering                              |
| Civil Engineering  |
| Computer Science   |
| Electrical, Computer, and Energy Engineering                     |
| Engineering Management   |
| Engineering Physics  |
| Environmental Engineering  |
| General Engineering Plus   |
| Material Science and Engineering                                 |
| <b>Mechanical Engineering</b>                                    |
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Faculty: Engineering & Applied Science

Environmental Design

Media, Communication and Information

Law

Music

Graduate School

Other Academic Programs

## Freshman Year

### Fall Semester

- APPM 1350 Calculus 1 for Engineers—4
- GEEN 1300 Introduction to Engineering Computing—3
- GEEN 1500 Introduction to Engineering—1
- MCEN 1024 Chemistry for Energy and Materials Science—4
- MCEN 1025 Computer-Aided Design and Fabrication—4

### Spring Semester

- APPM 1360 Calculus 2 for Engineers—4
- 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 2000 Professional Seminar—1
- PHYS 1120 General Physics 2—4
- PHYS 1140 Experimental Physics—1
- Humanities or social science elective—3
- Free elective—3

### Spring Semester

- APPM 2360 Introduction to Differential Equations with Linear Algebra—4
- MCEN 2023 Statics and Structures—3
- MCEN 2024 Materials Science—3
- PHYS 2130 General Physics 3—3
- Humanities or social science elective—3

## Junior Year

### Fall Semester

- ECEN 3010 Circuits and Electronics—3
- MCEN 2043 Dynamics—3
- MCEN 2063 Mechanics of Solids—3
- MCEN 3012 Thermodynamics—3
- MCEN 3021 Fluid Mechanics—3

### Spring Semester

- MCEN 3022 Heat Transfer—3
- MCEN 3025 Component Design—3
- MCEN 3030 Computational Methods—3
- MCEN 3032 Thermodynamics 2—3
- MCEN 3037 Data Analysis—2
- College-approved writing course—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
- Upper-division humanities or social science elective—3

**Spring Semester**

- MCEN 4047 Measurements 2—2
- MCEN 4085 Mechanical Engineering Design Project 2—3
- MCEN technical elective—3
- General technical electives—6
- Upper-division humanities or social science elective—3

**Minimum total hours for degree—128**

## Colorado Mesa University/University of Colorado Boulder Mechanical Engineering Partnership Program

Colorado Mesa University and the University of Colorado Boulder have created a partnership to deliver a baccalaureate mechanical engineering program in its entirety in Grand Junction, Colorado. The first two years of the program are taught by CMU faculty and the second two years of the program are taught by CU-Boulder faculty who live permanently in Grand Junction. Students completing the program will be awarded a BS in Mechanical Engineering from CU-Boulder. For more information, see [www.coloradomesa.edu/engineering](http://www.coloradomesa.edu/engineering).

## Concurrent Bachelor's/Master's Program

### BS/MS Concurrent Degree

The concurrent bachelor's/master's degree program offers the opportunity of pursuing the bachelor's and master's degrees leading towards the awarding of the degrees at the completion of the joint program. The program is normally a 5–6 year program designed for currently enrolled CU-Boulder students. Initial admission to the program typically occurs during the junior year. Minimum standards for admission (set by the Graduate School) require a cumulative GPA of 3.000 and completion of all MAPS deficiencies. Additional admissions criteria are determined by the individual departments in conjunction with the appropriate school or college deans.

In order to gain admission to the BS/MS program in mechanical engineering a student must meet the following criteria:

- Have a cumulative GPA of 3.250 or higher.
- Have a minimum of 75 hours completed course work.
- Transfer students must have completed a minimum of 24 hours at CU-Boulder.
- If admitted to the program, the student may not pursue a double degree or double major.
- Students must have completed four of the following six courses: Component Design, Computational Methods, Fluids, Heat Transfer, Thermodynamics 1, Thermodynamics 2.

The degrees will be awarded simultaneously when requirements for both degrees are met. If the student wishes to withdraw from the program and only receive the BS degree they may do so by contacting the graduate advisor, who will have the graduate school change their status from BS/MS concurrent back to BS.

To comply with Title IV Higher Education regulations, CU-Boulder students pursuing a concurrent BS/MS degree **will automatically be changed to graduate status after the completion of 145 credit hours**. Students at graduate status are assessed graduate tuition rates and are no longer eligible for COF. In addition, graduate students receiving financial aid are considered independent and are no longer eligible for aid requiring undergraduate status.

If you are interested in the BS/MS concurrent degree please stop by and see the graduate advisor for an application.

## 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 of Science (MS) Degree

The MS in mechanical engineering consists of 30 credit hours: usually ten 3-credit hour courses or eight 3 semester hour courses and six semester hours of thesis.

**Tracks.** Our curriculum consists of a set of nine study tracks designed to provide a balance between modern technological focus and disciplinary depth:

- [Air Quality](#)
- [Bioengineering](#)
- [Design](#)
- [Energy and Environment](#)
- [Foundation](#)
- [Materials](#)
- [Mechanics of Materials](#)
- [Microsystems](#)
- [Simulation Based Mechanical Engineering Sciences](#)

Each track consists of six courses, comprised of a set of three to five core courses and one to three enrichment courses. The remaining courses are electives, and may include thesis hours. Core courses are taught every year, and enrichment courses are taught at various intervals. Enrichment courses are more specialized and are chosen from a list of approved courses for each track. Additional courses may be approved on a petition basis. Lists of core and enrichment courses for each track are available at the links above.

In addition to the course work for each track, MS students are required to take two semesters of MCEN 5027 Graduate Seminar. This class is *pass/fail* and is attendance-based. It does NOT count towards the 30 credit hours required for the degree. Attendance is required at 2/3 of the seminars for a passing grade. NOTE: For BS/MS students the requirement is only one semester of Graduate Seminar.

#### Master of Engineering (ME) Degree

The Master of Engineering is a degree plan designed primarily for working professionals or those who seek exceptional breadth in their educational plan. The ME requires 30 semester hours of course work as described below. You have six years to complete these requirements. A GPA of 3.0 must be maintained. Up to 9 semester hours of approved graduate level course work from other institutions may be transferred. As much as nine hours of Center for Engineering and Technology Education (CAETE) courses taken before application may also be allowed. However, taking CAETE courses does not guarantee admission into a Master of Engineering degree program.

#### Requirements

- 18 credit hours of courses at the 5000 level or above must be taken in mechanical engineering subjects.
- 12 credit hours of courses may be taken in other engineering fields, science, business, etc. Six of these hours may be at the 4000 level.
- In addition to the course work, ME students are required to take two semesters of MCEN 5027 Graduate Seminar. This class is *pass/fail* and is attendance-based. It does NOT count towards the 30 credit hours required for the degree. Attendance is required at 2/3 of the seminars for a passing grade.

## Doctor of Philosophy (PhD) 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 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: 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), Environmental Protection Agency (EPA), 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 Collaboratory for Air Quality Research (CAQR), and Membrane Applied Science and Technology (MAST) Center.

## Dual Degree Programs

### ME Engineering Management/ME Mechanical Engineering

**A student pursuing the ME Engineering Management degree (primary) who wishes to also obtain the ME Mechanical Engineering degree, must complete the following requirements:**

1. 30 hours of course work at the 5000 level or above consisting of 18 credit hours of courses in mechanical engineering and 12 credit hours of courses in other engineering fields, science, business, etc.
2. Two semesters of MCEN 5027 Graduate Seminar. This class is *pass/fail* and is attendance-based; it does not count toward fulfilling the graduate degree requirement.
3. **Be admitted to the Engineering Management Program.**
4. Complete an additional 15 credit hours of graduate engineering management course work.
5. As part of either program the following seven courses must be completed:  
EMEN 5010 Introduction to Engineering Management  
EMEN 5020 Finance and Accounting for Engineering Managers  
EMEN 5030 Introduction to Project Management OR EMEN 5031 Software Project Management  
EMEN 5040 Quality, Strategy, and Value Creation  
EMEN 5050 Leadership  
EMEN 5900 Research Methods OR EMEN 5825 Entrepreneurial Business  
One EMEN elective course other than EMEN 5000 or 5005
6. Successfully complete the Master's Exam. (8-10 page paper).

NOTE: EMEN 5000 Engineering Analysis and EMEN 5005 Introduction to Applied Statistics cannot be applied toward the engineering management degree.

**A student who is pursuing the ME engineering management degree (primary) and wishes to also obtain the ME mechanical engineering degree, must complete the following requirements.**

1. Complete the following seven engineering management courses:  
EMEN 5010 Introduction to Engineering Management  
EMEN 5020 Finance and Accounting for Engineering Managers  
EMEN 5030 Introduction to Project Management or EMEN 5031 Software Project Management  
EMEN 5040 Quality, Strategy, and Value Creation  
EMEN 5050 Leadership  
EMEN 5900 Research Methods or EMEN 5825 Entrepreneurial Business  
One EMEN elective course other than EMEN 5000 or EMEN 5005
2. Complete 9 credit hours of graduate engineering management electives, three of which may be in a relevant, 5000 level or above course from another department.
3. Successfully complete the Master's Exam. (8-10 page paper).
4. **Be admitted to the Mechanical Engineering Program.**
5. As part of either program, complete 18 hours of mechanical engineering course work at the 5000 level or above and 12 credit hours of courses in other engineering fields, science, etc.
6. Complete two semesters of graduate seminar, MCEN 5027 (This class is *pass/fail* and is attendance based; does not count toward fulfilling the graduate degree requirement).



# Telecommunications

Telecommunications is a graduate-level discipline.

**Course code for this program is TLEN.**

## Graduate Degree Program(s)

### Graduate Study in Telecommunications

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

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Alliance for Technology, Learning, and Society (ATLAS)

Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

Aerospace Engineering Sciences

Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

Mechanical Engineering

**Telecommunications**

Certificate Programs

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), spectrum management, content management, and government and emergency services (E911, wire tapping, universal service).

Visit [telecom.colorado.edu](http://telecom.colorado.edu) for additional information, admission requirements, and application instructions. Admission. Application deadline for fall of the following year is December 1; for spring, it is October 1.

## 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

### Graduate 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:

## 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

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- 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.

## Graduate 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
- 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.

## Graduate 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.

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.

## Graduate 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

## Professional 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.

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 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.

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## Certificate Programs

Earning an undergraduate, graduate, or professional certificate in a specialized area of engineering (such as international engineering, engineering entrepreneurship, power electronics, among others) allows students to broaden their knowledge base beyond their primary area of study. Visit [www.colorado.edu/engineering/academics/degrees-minors-certificates/certificates](http://www.colorado.edu/engineering/academics/degrees-minors-certificates/certificates) for a full listing of the certificates offered through the College of Engineering and Applied Science.

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Center for Advanced Engineering and Technology Education (CAETE)

Programs of Study

Aerospace Engineering Sciences

Applied Mathematics

Architectural Engineering

Chemical and Biological Engineering

Civil Engineering

Computer Science

Electrical, Computer, and Energy Engineering

Engineering Management

Engineering Physics

Environmental Engineering

General Engineering Plus

Material Science and Engineering

Mechanical Engineering

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## Faculty: Aerospace Engineering Sciences

| Name               | Title                             | Education   |
|--------------------|-----------------------------------|---|
| AHMED, Nisar       | assistant professor               | BS, Cooper Union for the Advancement of Science and Art; MS, PhD, Cornell University                          |
| AKOS, Dennis M.    | associate professor               | BS, MS, PhD, Ohio University  |
| ARGROW, Brian M.   | professor                         | BS, MS, PhD, University of Oklahoma   |
| AXELRAD, Penina    | department chair; 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.    | professor; director emeritus CCAR | 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   |
| EVANS, John A.     | assistant professor               | BS, MS, Rensselaer Polytechnic Institute; MS, PhD, University of Texas at Austin                              |
| 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                           |

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  - Faculty: Engineering & Applied Science
- Aerospace Engineering Sciences**
- Chemical and Biological Engineering
- Civil, Environmental, and Architectural Engineering
- Computer Science
- Electrical, Computing, and Energy Engineering
- Engineering Management
- Herbst Humanities
- Mechanical Engineering
- Technology, Arts, and Media
- Telecommunications
- Environmental Design
- Media, Communication and Information

|                               |  |   |
|-------------------------------|--|---|
| FREW, Eric                    | associate professor;<br>director RECUV | BS, Cornell University; MS, PhD, Stanford University  |
| GERREN,<br>Donna Sue          | senior instructor                      | BS, MS, University of Colorado; MSE, University of Michigan; PhD, University of Kansas  |
| HUSSEIN,<br>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 |
| JACKSON,<br>Jelliffe          | instructor                             | BS, University of West Indies, Trinidad; MS, PhD, University of Florida.  |
| JANSEN,<br>Kenneth E.         | professor                              | BS, University of Missouri–Columbia; MS, PhD, Stanford University   |
| KANTHA,<br>Lakshmi            | professor                              | BS, Bangalore University, India; MS, Indian Institute of Science; PhD, Massachusetts Institute of Technology  |
| KLAUS, David                  | associate professor                    | BS, West Virginia University; MS, PhD, University of Colorado   |
| KOSTER,<br>Jean N.            | professor                              | Dip-Ing, Dok-Ing, University of Karlsruhe, Germany  |
| LARSON,<br>Kristine           | professor                              | AB, Harvard University; PhD, University of California, San Diego  |
| LAWRENCE,<br>Dale A.          | professor                              | BS, Colorado State University; MS, PhD, Cornell University  |
| LEBEN,<br>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,<br>James            | research professor<br>emeritus         |   |
| MAUTE, Kurt                   | professor; director,<br>CAS            | Dipl.-Ing, PhD, University of Stuttgart   |
| McGRATH,<br>Michael<br>Thomas | professor adjunct                      | BS, University of Colorado  |
| NABITY,<br>James              | associate professor                    | BS, University of Nebraska; MS, Naval Postgraduate School; PhD, University of Colorado  |
| NEREM, R.<br>Steven           | professor; director,<br>CCAR           | BS, Colorado State University; MS, PhD, University of Texas at Austin   |
| PALO, Scott                   | professor                              | BS, Clarkson University; MS, PhD, University of Colorado  |
| PARK,<br>Kwang-Chun           | professor                              | BS, Inha Institute of Technology, Korea; MS, Stanford University; PhD, Clarkson College   |
| PARKER,                       | assistant professor                    | BA, Whitman College; MS, PhD, University of Colorado.   |

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|                        |   |  |
|------------------------|---|--|
| Jeffrey S.             |   |  |
| SCHAUB,<br>Hanspeter   | associate professor                         | BS, MS, PhD, Texas A&M University                                    |
| SCHEERES,<br>Daniel J. | professor                                   | BS, Calvin College; BSE, MSE, PhD, University of Michigan            |
| SCHWARTZ,<br>Trudy     | senior instructor                           | BS, MS, University of Colorado                                       |
| SNYDER,<br>Howard      | professor emeritus                          |  |
| STARKEY,<br>Ryan       | assistant professor                         | BS, University of Alberta, Edmonton; MS, PhD, University of Maryland |
| STODIECK,<br>Louis     | director of BioServe;<br>research professor | BS, MS, PhD, University of Colorado                                  |
| TANNER,<br>Joseph      | senior instructor                           | BS, University of Illinois   |
| THAYER,<br>Jeffrey P.  | professor; director<br>CCAR                 | BS, State University of New York; MS, PhD, University of Michigan    |
| VOSS, James            | scholar in residence                        | BS, Auburn University; MS, Honorary PhD, University of Colorado      |



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## Faculty: Chemical and Biological Engineering

| Name                   | Title                          | Education  |
|------------------------|--------------------------------|--|
| ANSETH, Kristi S.      | distinguished professor        | BS, Purdue University; PhD, University of Colorado                                   |
| BELVAL, Tom            | senior instructor              | BS, University of Missouri-Columbia; PhD, Rice University                            |
| BOWMAN, Christopher N. | distinguished professor        | BS, PhD, Purdue University   |
| BRYANT, Stephanie J.   | associate professor            | BS, University of Texas at Austin; PhD, University of Colorado                       |
| CHA, Jennifer N.       | associate professor            | BA, University of California, Berkeley; PhD, University of California, Santa Barbara |
| CHATTERJEE, Anushree   | assistant professor            | BS, MS, Indian Institute of Technology, Delhi; PhD, University of Minnesota          |
| 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          | adjunct professor              | BS, University of Illinois; MS, PhD, University of Colorado                          |
| FUNKE, Hans            | associate professor<br>adjunct | PhD, University of Heidelberg  |
| GILL, Ryan             | associate professor            | BS, Johns Hopkins University; MS, PhD, University of Maryland                        |
| GIN, Douglas           | professor                      | BS, University of British Columbia; PhD, California Institute of Technology          |
| GOODWIN, Andrew P.     | assistant professor            | BA, Columbia University; PhD, University of California, Berkeley                     |
| 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  |

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Civil, Environmental, and Architectural Engineering

Computer Science

Electrical, Computing, and Energy Engineering

Engineering Management

Herbst Humanities

Mechanical Engineering

Technology, Arts, and Media

Telecommunications

Environmental Design

Media, Communication and Information

|                       |                              |   |
|-----------------------|------------------------------|---|
| KAAR, Joel L.         | assistant professor          | BS, PhD, University of Pittsburgh   |
| KASTANTIN, Mark J.    | assistant research professor | BS, Massachusetts Institute of Technology; PhD, University of California, Santa Barbara |
| MEDLIN, J. Will       | associate professor          | BS, Clemson University; PhD, University of Delaware                                     |
| MUSGRAVE, Charles B.  | professor                    | BS, University of California, Berkeley; MS, PhD, California Institute of Technology     |
| NAGPAL, Prashant      | assistant professor          | BS, Indian Institute of Technology, Delhi; PhD, University of Minnesota                 |
| NOBLE, Richard D.     | professor                    | BE, ME, Stevens Institute of Technology; PhD, University of California, Davis           |
| NUTTELMAN, Charles    | instructor                   | BS, MS, PhD, University of Colorado   |
| RANDOLPH, Theodore W. | professor                    | BS, University of Colorado, PhD, University of California                               |
| SCHWARTZ, Daniel K.   | department chair; 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                           |
| YOUNG, Wendy          | instructor                   | BS, University of Notre Dame; 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     | professor           | BS, Regional Engineering College, India; MS, Indian Statistical Institute; PhD, Utah State University  |
| BALL, L. Duane          | professor emeritus  |  |
| BEAMER, IV, C. Walter   | instructor          | BS, MS, PhD, University of Colorado  |
| BIELEFELDT, Angela R.   | professor           | BS, Iowa State University; MSCE, PhD, University of Washington   |
| BRANDEMUEHL, Michael J. | professor           | BS, MS, PhD, University of Wisconsin–Madison   |
| 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 emeritus  |  |
| DILAURA, David          | professor           |  |

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    - Herbst Humanities
    - Mechanical Engineering
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    - Telecommunications
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|                       |                              |  |
|-----------------------|------------------------------|--|
| L.                    | emeritus                     |  |
| DOW, John O.          | associate professor emeritus |  |
| FRANGOPOL, Dan M.     | professor emeritus           |  |
| GERSTLE, Kurt H.      | professor emeritus           |  |
| GOBLE, George G.      | professor emeritus           |  |
| GOODRUM, Paul         | professor                    | BS, University of Washington; MS, PhD, University of Texas                                   |
| GUPTA, Vijay          | professor emeritus           |  |
| HALEK, Milan F.       | senior instructor emeritus   | 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         | professor                    | BS, Technical University of Berlin; MS, Oregon State University; PhD, University of Colorado |
| HERNANDEZ, Mark       | professor                    | BS, MS, PhD, University of California, Berkeley  |
| JAVERICK-WILL, Amy L. | assistant professor          | BS, MS, University of Colorado; PhD, Stanford University                                     |
| KASPRZYK, Joseph      | assistant professor          | BS, MS, PhD, Pennsylvania State University   |
| KO, Hon-Yim           | professor emeritus           |  |
| KRARTI, Moncef        | professor                    | Dipl Ing, Ecole Nationale des Ponts és Chausses; 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       | associate professor          | BS, MS, University of Colorado; PhD, The University of Texas at Austin                       |
|                       |                              |  |

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|                             |                                |   |
|-----------------------------|--------------------------------|---|
| MCKNIGHT,<br>Diane M.       | professor                      | BS, MS, PhD, Massachusetts Institute of Technology  |
| MOLENAAR,<br>Keith          | department<br>chair; professor | BS, MS, PhD, University of Colorado Boulder   |
| MONTOYA,<br>Lupita          | assistant<br>professor         | BS, California State University; MS, PhD, Stanford University   |
| MORRIS,<br>Matthew C.       | instructor                     | BS, MS, University of Colorado  |
| NEUPAUER,<br>Roseanna       | associate<br>professor         | BS, Carnegie Mellon University; SM, Massachusetts Institute of Technology; MS, PhD, New Mexico Institute of Mining and Technology |
| PAK, Ronald Y.<br>S.        | professor                      | BE, McMaster University, Canada; MS, PhD, California Institute of Technology  |
| PFEFFER,<br>William T.      | professor                      | BA, University of Vermont; MA, University of Maine, PhD, University of Washington   |
| PORTER,<br>Keith A.         | research<br>professor          | BS, University of California, Davis; MEng, University of California, Berkeley; PhD, Stanford University                           |
| RAJARAM,<br>Harihar         | professor                      | BTech, Indian Institute of Technology, Madras; MS, University of Iowa; ScD, Massachusetts Institute of Technology                 |
| REGUEIRO,<br>Richard        | associate<br>professor         | BSE, University of Pennsylvania, SM, Massachusetts Institute of Technology; PhD, Stanford University                              |
| REN, Zhiyoung<br>"Jason"    | associate<br>professor         | PhD, Pennsylvania State University  |
| ROSARIO-<br>ORTIZ, Fernando | assistant<br>professor         | BS, University of Puerto Rico; MS, California Institute of Technology; DEnv, University of California, Los Angeles                |
| RYAN, Joseph<br>N.          | professor                      | BS, Princeton University; MS, PhD, Massachusetts Institute of Technology  |
| SAOUMA, Victor<br>A.        | professor                      | BE, American University of Beirut; PhD, Cornell University  |
| SIDERIS, Petros             | assistant<br>professor         | Diploma, National Technical University of Athens; MSc, PhD, SUNY-Buffalo  |
| SILVERSTEIN,<br>Joann       | professor                      | BA, Stanford University; BS, MS, PhD, University of California, Davis   |
| SRUBAR, Wil                 | assistant<br>professor         | BS, Texas A&M University; MS, University of Texas at Austin; PhD, Stanford University   |

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## Faculty: Computer Science

| Name                  | Title                   | Education  |
|-----------------------|-------------------------|--|
| ANDERSON, Kenneth M.  | 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 emeritus      | BA, MA, PhD, Rice University   |
| CAI, Xiao-Chuan       | professor               | BS, Peking University; MS, PhD, New York University  |
| CERNY, Pavol          | assistant professor     | PhD, University of Pennsylvania  |
| 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   |
| 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      |  |
| FISCHER, Gerhard      | professor emeritus      | MS, University of Heidelberg; PhD, University of Hamburg   |
| FOSDICK, Lloyd D.     | professor emeritus      |  |

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Technology, Arts, and Media

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|--------------------------|--------------------------------|--|
| FREW, Eric               | associate professor            | BS, Cornell University; MS, PhD, Stanford University   |
| GOLDBERG, Debra S.       | assistant professor            | BS, Yale University; MS, University of Denver; MS, PhD, Cornell University                                 |
| GRUNWALD, Dirk C.        | associate chair;<br>professor  | BS, MS, PhD, University of Illinois, Urbana-Champaign  |
| HAN, Richard Y.          | associate professor            | BS, Stanford University; MS, PhD, University of California, Berkeley                                       |
| HOENIGMAN, Rhonda        | instructor                     | BS, Ohio University; MS, San Diego University; PhD, University of Colorado Boulder                         |
| HUNTER, Lawrence         | professor                      | BS, MS, PhD, Yale University   |
| JESSUP, Elizabeth R.     | professor                      | BA, Williams College; MS, MPhil, PhD, Yale University  |
| KELLER, Eric             | assistant professor            | PhD, Princeton 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 emeritus             | BS, MS, PhD, Washington State University   |
| MARTIN, James H.         | department chair;<br>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   |
| 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 professor             | BS, Engineering College, Brugg-Windisch, Switzerland; MS, PhD, University of Colorado Boulder              |
| SANDERS, Bruce W.        | senior instructor<br>emeritus  |  |
| SANKARANARAYANAN, Sriram | assistant professor            | BTech, Indian Institute of Technology Kharagpur; MS, PhD, Stanford University                              |
| SCHNABEL, Robert B.      | professor emeritus             |  |
| SICKER, Douglas C.       | professor                      | BS, MS, PhD, University of Pittsburgh  |
|                          |                                |  |

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|--------------------|------------------------------------|---|
| STAFFORD, Judith   | associate chair; senior instructor | BA, MS, PhD, University of Colorado Boulder   |
| SUMNER, Tamara R.  | associate professor                | BA, BS, University of California, Santa Cruz; MS, PhD, University of Colorado Boulder |
| TUFO, Henry M.     | 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                          |
| WHITE, Elizabeth   | instructor                         | BA, 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             |
| BRADLEY, Elizabeth  | professor               | BS, MS, PhD, Massachusetts Institute of Technology                                  |
| BROWN, Timothy X    | professor               | BS, Pennsylvania State University; MS, PhD, California Institute of Technology      |
| CATHEY, W. Thomas   | professor emeritus      |   |
| CERNY, Pavol        | assistant professor     | PhD, University of Pennsylvania   |
| COGSWELL, Carol     | research professor      | MA, PhD Equivalent, University of Oregon  |
| DAMERON, Ruth H.    | senior instructor       | BS, Wheaton College; MS, Syracuse 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, Albin J. | professor               | BS, MS, Case Western Reserve University; PhD, Massachusetts Institute of Technology |
| GOPINATH, Juliet T. | assistant professor     | BS, University of Minnesota; SM, PhD, Massachusetts Institute of Technology         |
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|                      |   |  |
|----------------------|---|--|
| 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<br>research         | MS, Dr.Rer.NAT., Johannes Gutenberg Universität, Mainz, Germany  |
| HEURING, Vincent P.  | associate professor<br>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                                      |
| KELLER, Eric         | assistant professor                     | PhD, Princeton University  |
| KUESTER, Edward F.   | professor                               | BS, Michigan State University; MS, PhD, University of Colorado   |
| LIGHTNER, Michael R. | department chair,<br>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;<br>associate professor | Dipl El Ing, PhD, Swiss Federal Institute of Technology, Zurich  |
| McLEOD, Robert       | associate professor                     | BS, MS, Montana State University; MS, University of California, Davis; PhD, University of Colorado                   |
| MEYER, David G.      | associate chair;<br>associate professor | BS, University of Wyoming; MS, PhD, Stanford University  |
| MEYER, Francois G.   | professor                               | MS, ENSIMAG, Grenoble; PhD, INRIA, Rennes  |
| MICKELSON, Alan R.   | associate professor                     | BS, University of Texas at El Paso; MS, PhD, California Institute of Technology                                      |

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|                        |                         |   |
|------------------------|-------------------------|---|
| MIHRAN,<br>Richard T.  | professor adjunct       | BS, Case Western Reserve University; MS, PhD, University of Colorado  |
| MODDEL,<br>Garrett     | professor               | BS, Stanford University; MS, PhD, Harvard University  |
| MULLIS, CT             | professor emeritus      |   |
| MURNANE,<br>Margaret   | professor               | BSc, MSc, University College Cork, Ireland; PhD, University of California, Berkeley                                     |
| NEWHALL,<br>William G. | professor adjunct       | BS, MS, PhD, Virginia Polytechnic Institute and State University  |
| PAO, Lucy Y.           | professor               | BS, MS, PhD, Stanford University  |
| PARK,<br>Wounjhang     | associate professor     | BS, Seoul University; MS, Dongguk University; PhD, Georgia Institute of Technology                                      |
| PIESTUN,<br>Rafael     | professor               | EE, Universidad de Republica, Uruguay; MSc, PhD, Technion—Israel Institute of Technology; Post Doc, Stanford University |
| PIKET-MAY,<br>Melinda  | associate professor     | BS, University of Illinois; MS, PhD, Northwestern University  |
| PLESZKUN,<br>Andrew R. | associate professor     | BS, Illinois Institute of Technology; MS, PhD, University of Illinois   |
| POPOVIC,<br>Zoya       | distinguished professor | BS, University of Belgrade, Yugoslavia; MS, PhD, California Institute of Technology                                     |
| POPOVIC,<br>Milos      | assistant professor     | BS, Queen's University, Kingston, Ontario, Canada; MS, PhD, Massachusetts Institute of Technology                       |
| ROGALLA,<br>Horst      | research professor      | Diploma, PhD, University of Muenster, Germany   |
| SHAHEEN,<br>Sean       | associate professor     | BS, Carnegie Mellon University; PhD, University of Arizona  |
| SHANG, Li              | associate professor     | BE, ME, Tsinghua University; PhD, Princeton University  |
| SOMENZI,<br>Fabio      | professor               | DrEng, Politecnico di Torino, Italy   |



## Faculty: Engineering Management

| Name                | Title   | Education  |
|---------------------|---|--|
| JOHNSON, Eben       | instructor  | BS, Carnegie Mellon University; MBA, University of California, Davis   |
| KIRSHLING, Wayne R. | professor of engineering practice   | 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 director; professor of engineering practice                         | BA, American University; MA, Pennsylvania State University; PhD, University of Wyoming   |
| LITTLEJOHN, Ray     | associate professor of engineering practice; Deming Professor of Management | BS, Webster State College; MS, Trinity University; PhD, University of Oklahoma   |
| LUFTIG, Jeffrey T.  | professor of engineering practice   | BS, State University of New York College at Buffalo; MEd, Bowling Green University; PhD, University of Minnesota                                   |
| MOORER, Daniel F.   | associate professor   | BS, U.S. Military Academy; MS, Florida Institute of Technology; PhD, University of Colorado Boulder  |

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## Faculty: Herbst Humanities Program

| Name                  | Title   | Education   |
|-----------------------|---|---|
| AMBLER, Wayne         | co-director; associate professor                          | BA, Cornell University; MA, University of Toronto; MA, PhD, Boston College  |
| DOUGLASS, Scot        | director, engineering honors program; associate professor | BS, University of Arizona; ThM, Dallas Seminary; PhD, University of Colorado  |
| FREDRICKSMEYER, Hardy | senior instructor   | BA, University of Colorado Boulder; MA, Columbia University and University of Texas, Austin; PhD, University of Texas, Austin |
| GIOVANNELLI, Leland   | co-director; senior instructor                            | BA, St. John's College, Annapolis; MA, PhD, University of Chicago   |
| LANGE, Anja           | senior instructor   | 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  |
|----------------------|---------------------|--|
| BERGQUIST, Marcelo   | senior instructor   |  |
| BORDEN, Mark         | assistant professor | BS, University of Arizona; PhD, University of California, Davis                          |
| BRANCH, Melvyn C.    | professor emeritus  |  |
| BRIGHT, Victor       | 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 |
| 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  |  |
| GEORGE, Steven M.    | professor           |  |
| GREENBERG, Alan R.   | professor           | BS, MS, PhD, Drexel University   |

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|                       |                                      |  |
|-----------------------|--------------------------------------|--|
| HAMLINGTON, Peter     | assistant professor                  | BA, University of Chicago; MS, PhD, University of Michigan   |
| 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, Jean R.    | associate professor                  | BSE, University of Michigan; MS, PhD, University of California, Berkeley                           |
| KASSOY, David R.      | professor emeritus                   |  |
| KNUTSON, Jeffrey      | instructor                           | BS, University of Minnesota; PhD, University of Colorado   |
| KOTYS-SCHWARTZ, Daria | instructor                           | BS, MS, Ohio State University; PhD, University of Colorado Boulder                                 |
| KREITH, Frank         | professor emeritus                   |  |
| LEDBETTER, Hassel     | adjunct professor                    |  |
| 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.      | department chair; 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 chair; associate professor | BS, MSE, PhD, Johns Hopkins University   |
| PELLEGRINO, 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   |
| REIKER, Gregor        | assistant professor                  | BS, Missouri University of Science and Technology; MS, PhD, Stanford University                    |
| RENTSCHLER, Mark E.   | assistant professor                  | BS, University of Nebraska; MS, Massachusetts Institute of Technology; PhD, University of Nebraska |
| RUBEN, Shalom         | instructor                           | BS, MS, University of Washington; PhD, University of California, Los Angeles                       |

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|                        |   |   |
|------------------------|---|---|
| STEINBRENNER,<br>Julie | instructor  |   |
| STOLDT,<br>Conrad      | associate professor                                       | BA, University of Colorado Boulder; PhD, Iowa State University  |
| TAN, Wei               | assistant professor                                       | BS, East China University of Science and Technology; MS, PhD, University of Illinois, Chicago   |
| VASILYEV,<br>Oleg V.   | professor   | MS, Moscow Institute of Physics and Technology; MS, PhD, University of Notre Dame   |
| WEIDMAN,<br>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 |
| YIN, Xiaobo            | assistant professor                                       |   |
| ZABLE, Jack            | industry professor of<br>mechanical engineering<br>design | BS, City College of New York; MS, PhD, Purdue University  |

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## Faculty: Technology, Arts, and Media

| Name            | Title  | Education   |
|-----------------|--|---|
| BENNETT, John   | ATLAS director; professor, Department of Computer Science, Department of Electrical and Computer Engineering, Interdisciplinary Telecommunications Program | BS, MS, Rice University; PhD, University of Washington                |
| HALES, Ian      | instructor   | BA, University of Colorado Boulder                                    |
| PIERCE, Aileen  | instructor   | BS, Carnegie-Mellon University  |
| SCHAAL, David   | instructor   | BA, BFA, MFA, University of Colorado Boulder                          |
| SWANSON, Joel   | TAM director; senior instructor  | BFA, University of Colorado; MFA, University of California, San Diego |
| VAN MATRE, Jill | ATLAS associate director   | BS, Indiana University; JD, University of Colorado Boulder            |

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## Faculty: Telecommunications

| Name              | Title                        | Education   |
|-------------------|------------------------------|---|
| 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  | professor                    | BS, Pennsylvania State University; MS, PhD, California Institute of Technology  |
| DICKEY, Conwell   | scholar-in-residence         | MS, Montana State University  |
| 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   |
| REED, David       | scholar-in-residence         | BS, Colorado State University; MS, PhD, Carnegie Mellon University  |
| SANTOS, Jose      | senior 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   | director; professor          | BS, MS, PhD, University of Pittsburgh   |

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## Facilities

Facilities for the program are provided in the Environmental Design Building and at the Center for Innovation and Creativity (CINC) facility.

### 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, an academic support center, which provides photo and portfolio labs and image collections that supplement the design classes, is located on the third floor.

Studio space located on the second and third floors of the ENVD building 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.

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 learn and use digital visualization and production.

### Center for Innovation and Creativity (CINC)

The program also offers its students access to specialized workshop, computer, and studio facilities that focus advanced technologies for design visualization, production, and simulation. These are at the CINC facility on the University of Colorado Boulder East Campus.

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The program prepares preprofessional undergraduate students for professional graduate study in the design professions. As with other four-year preprofessional degrees, such as the bachelor of science or bachelor of arts in architecture, the BEnvd prepares students for study in a master of architecture (MArch), master of landscape architecture (MLA), master of urban design (MUD), or master of urban and regional planning (MURP) degree program.

It is common for bachelor's in environmental design graduates to receive advanced standing for the work they have done in our program, which allows them to complete a graduate degree at other design schools in a shorter time.

### Architecture

The four-year BEnvd degree is not accredited by the National Architectural Accrediting Board (NAAB) as a professional degree. NAAB does not accredit BA Arch, BS Arch, or BEnvd degrees; the NAAB only accredits master of architecture (MArch) and five-year bachelor of architecture (BArch) programs. The BEnvd degree prepares students for a NAAB-accredited masters program. 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 one of 95 NAAB-accredited graduate programs nationally.

In addition to the MArch, prospective architects must complete three years of internship and must pass a state professional licensing exam. This process is overseen by the National Council of Architectural Registration Boards (NCARB), some of which may be completed concurrently with studies.

### Planning

The practice of planning is currently not licensed in most states. Professional membership and 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 (MURP, PhD, or other graduate planning focus) is highly desirable. Students primarily interested in professional practice should obtain a graduate 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.

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## Landscape Architecture

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 of educational programs is voluntary. The Landscape Architectural Accreditation Board (LAAB) accreditation process evaluates each program and provides an assessment. Advanced standing for graduate study is evaluated on a case-by-case basis, according to the standards of each graduate program, determined in accordance with a student's 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, industrial processes, manufacturing, marketing, and other related pursuits. Excellent design constitutes a fundamental aspect of sustainability in any field.

As the design studies curriculum is tailored to each student, students in this emphasis must outline and receive approval of their individual course plan by a faculty sponsor and the director before undertaking design studies. 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, planning, or urban design. They must complete 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 approved and completed within design studies.

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## Study Abroad

The Program in Environmental Design has, along with the Office of International Education, developed an exciting array of study-abroad options. Study abroad gives students an array of unique experiences, and it can make students more competitive for graduate study and for employment. Summer programs and faculty-led programs are available to students after their first year of study. Full-semester programs are available to students starting in their third year. The study abroad program provides an academically challenging experience with extensive local support.

Environmental design (architecture, urban design or urban planning) programs are offered in Sydney, London, Florence, Rome, Denmark, and Barcelona. In addition, the Office of International Education offers more than 25 programs which offer courses appropriate to design studies. 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 [studyabroad.colorado.edu](http://studyabroad.colorado.edu).

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## Lecture Series

The program's lecture series enables students and faculty to meet people whose work significantly contributes to the different fields that make up the design professions and related fields. Other professional organizations and design-related institutions in the region also sponsor lectures and events that are open to the program's students.

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## Academic Standards

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## Student Rights and Responsibilities

The Program in Environmental Design 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 program or by other university offices. Students in the program 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 Program in Environmental Design 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/policies/student-honor-code-policy](http://www.colorado.edu/policies/student-honor-code-policy).

## GPA Requirements, Probation, and Scholastic Suspension

A student must achieve a grade of *C-* or better in all courses applied toward graduation requirements. A limit of 6 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 2.00.

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. If a course is repeated, the last grade earned is the grade used for degree requirements, no matter if the last grade earned is lower than the initial grade.

As a general rule, students who fail to meet the minimum cumulative grade point requirement (2.00) are permitted to continue their

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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.

When a student is suspended, the student is notified in writing with a copy of the letter placed in the student's file, which directs the student to contact their advisor so that an academic plan may be put into place. 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 main campus summer sessions. A suspended student must raise his or her CU cumulative grade point to a 2.00 or higher to be eligible for re-admittance into the program. Suspended students are readmitted on a case-by-case basis by review of the program.

Students in the Program in Environmental Design who withdraw from their registered courses two semesters in a row will have a stop placed on their registration. Summer Session is not counted as a regular semester. They will not be readmitted to return to the University of Colorado 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 program looks with favor on such petitions only if the student has shown marked improvement in academic work or if there are remarkable circumstances that have contributed to the student's academic difficulties.

## Attendance

Students are expected to attend all classes 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 program office no later than the end of the day on which the examination is given. Missing a final examination is grounds for failing the class.

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## Admission & Enrollment Policies

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The Program in Environmental Design currently offers emphases in architecture, landscape architecture, design studies, and planning and urban design. Policy questions may be directed to **303-492-7711** or [ENVDoffice@colorado.edu](mailto:ENVDoffice@colorado.edu).

## Requirements for Admission

Candidates for admission to the Program in Environmental Design 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 program are admitted through the University of Colorado Boulder's admission process directly into the Program in Environmental Design. Since the program has a limited enrollment, all qualified students are not guaranteed admission. A college-level GPA of 2.75 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-related course work required by the environmental design curriculum. Students may declare their emphasis in architecture, landscape architecture, planning and urban design, or design studies at the beginning of their sequence. However, all students share the same core, and enrollment to some upper-division opportunities can be competitive. 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 with only limited opportunities to begin study out of sequence. All transfer students are required to take a minimum of 30 semester hours in the Program in Environmental Design.

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. Transfer agreements between the University of Colorado and all Colorado community colleges outline approximately one year of prescribed general education courses that may be completed as preparation for

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transfer into the Program in Environmental Design. 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 program's emphases who enter CU-Boulder may be admitted to the degree program with advanced standing. A portfolio review will be required for these students. Please contact the 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 program. IUT meetings are held for interested students several times each semester. Students should contact the program 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 program can be considered. Students who apply for IUT into the program will be notified following the posting of grades for the semester in which they applied. 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.

## Credit Policies

### Advanced Placement

Advanced Placement (AP) and college-level credit may be granted on the basis of the College Board's Advanced Placement tests. For students who have taken AP course work in high school and receive scores meeting university standards in the AP examination, AP 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 program'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 program 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.

Typically, only students who have at least a 3.00 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.

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 by program 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.

### 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 Program in Environmental Design.

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 Program in Environmental Design 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 program for information on residence and curriculum requirements for graduation. No more than 8 credit hours of ROTC courses may be applied to the BEnvd degree.

## **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, and must meet the quality level expected at CU. The dean upon written petition may make exceptions to this regulation.

The program 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 program's elective requirements. Only in exceptional circumstances may a student petition the director of the program 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 Program in Environmental Design. 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 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 program 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 Program in Environmental Design should contact the office at **303-492-7711** for required group meeting times focusing on the IUT transfer process.

Students enrolled in the program receive academic advising from faculty or professional staff. Information on appointments and open office hours for advising is available at the office, ENVD 168, by calling **303-492-7711**, or on the Program in Environmental Design

website.

## Orientation

In order to receive an overview of educational opportunities and the philosophy of the program, and to meet other new students and the faculty of the program, incoming freshman and transfer students are required to attend an orientation session during the summer prior to the start of the fall semester.

## Retention of Student Work

As a condition of admission, the Program in Environmental Design may retain, for a period of time, student work submitted in fulfillment of class requirements. This retained work may be used to provide outside 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. The program does not claim any copyright and intellectual ownership of the material, but does retain rights to display student work for marketing and promotion, or for academic purposes.

Students have a responsibility to record their work for later use in their portfolios. The program has a responsibility, when it retains material, to allow students the opportunity to record their work for their portfolio.

## Computing

The Program in Environmental Design 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 [www.colorado.edu/oit/recommendations](http://www.colorado.edu/oit/recommendations). Neither the Boulder campus nor the Program in Environmental Design endorse or require 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 Program in Environmental Design appear on the syllabi for those classes, and that software is generally available through the bookstore at discounted student rates.

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# 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-* (2.70) are received are not accepted for doctoral programs.
3. Courses in which grades below *C* (2.00) 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 3.00 is placed on academic probation. The student has two semesters in which to raise the cumulative GPA to 3.00 or above. If the student's cumulative GPA is at or below 2.50, 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 3.00 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 3.00 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 non-refundable application fee. The fee is currently \$50 for domestic applicants and \$70 for international applicants. The fee may be paid by credit card, electronic check, check, or money order.
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.

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3. They have had adequate preparation to enter graduate study in the chosen field.
4. They have at least a 2.75 (on a 4.00 scale) undergraduate GPA (for engineering, 3.00). (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 3.25 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 3.00 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 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 a Graduate Readmit 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 3.00 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.

## Graduate School Advising

Graduate School advisors provide information and guidance to students and staff on issues including:

- general Graduate School information, policies, and rules
- requirements for degrees that apply to all students
- exceptions to requirements
- registration requirements
- theses and dissertation format guidelines and submissions info
- graduation requirements and deadlines

For general inquiries, contact Graduate Student Services at [gradinfo@colorado.edu](mailto:gradinfo@colorado.edu) or call **303-492-8220**.

## 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, or MMusEd—9

MFA—18

DMA, PhD, or AuD—21

AuD students with MA and audiology certification—30

- 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 3.00 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.

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## Graduate Teacher Program

The Graduate Teacher Program (GTP) provides for all graduate students:

- College teacher training for TAs, GPTIs, and future faculty
- Professional development opportunities
- Videotape consultation
- Career consulting

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, approaches to research, academic service, and conflict management to preparing for an academic job interview.

The Graduate Teacher Program offers:

- a **Certificate in College Teaching** that prepares graduate students for classroom
- a **Professional Development Certificate** for Preparing Future Faculty that helps doctoral students prepare for careers as academics
- in collaboration with Career Services, a **Professional Development Certificate** for Business, Government, Industry, or the Arts (*see below*)

Requirements for each are posted on the GTP website at [gtp.colorado.edu](http://gtp.colorado.edu).

The **Lead Network** offers academic leadership training to approximately 50 graduate students each year. Leads spend one week in extensive training, assist departmental faculty with discipline-specific TA training, and receive the Best Should Teach Silver Award.

International graduate students may benefit from workshops designed specifically for them at the Fall 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 with faculty from other campuses in Colorado and at the University of Wyoming. PFF fellows may attend site visits on partner campuses, identify a faculty mentor on a partner campus, and work on projects for their Professional Development Certificate.

The Graduate Teacher Program collaborates with the University Libraries to provide the **Provost's Fellowship for the University Libraries** to graduate students who wish to explore academic librarianship as a career.

### Certificate Program

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## Graduate Certificate in College Teaching

To recognize and reward graduate teachers who devote time to improving their teaching, the Graduate School offers a Certificate in College Teaching (CCT) through the Graduate Teacher Program. The employment and training of graduate teachers is a professional apprenticeship that shapes the professoriate of the future. Although such certificates are not officially recognized at the state or national level, graduate students report that certificates are an asset on the job market. In North America, more than 80 research institutions currently offer similar certificates at the graduate level.

## Professional Development Certificate for Preparing Future Faculty

The Preparing Future Faculty certification has been designed to target the needs of graduate students who wish to pursue careers within academia. It provides graduate students with the opportunity to expand their understanding and appreciation for faculty careers in postsecondary institutions. Teaching is not a requirement for the PDC:PFF, rather participants complete a project under the guidance of a faculty mentor. Workshops attended may cover teaching issues or professional development.

## Professional Development Certificate for Business, Government, Industry, or the Arts

Professional development is invaluable to graduate students and postdoctoral fellows wanting to pursue a career outside academia. Leaders in business, government, industry, and the nonprofit sector want to hire employees that have demonstrated an investment in their own professional development as well as in their discipline.

The Graduate Teacher Program collaborates with Career Services to administer the Professional Development Certificate for Business, Government, Industry or the Arts and to mentor the graduate students involved in the project.

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## 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 the **College of Arts and Sciences** are offered in:

- art and art history
- Chinese/Asian languages and civilizations
- classics
- ecology and evolutionary biology
- engineering
- physics/physics
- film studies/art history
- French
- German studies
- integrative physiology
- Japanese/Asian languages and civilizations
- linguistics
- mathematics
- mathematics/applied mathematics
- physics
- psychology (cognitive)
- religious studies

Currently approved concurrent degree programs in the **Leeds School of Business** are offered in:

- accounting
- finance/accounting
- information mangemant/telecommunications

Currently approved concurrent degree programs in the **College of Engineering and Applied Science** are offered in:

- aerospace engineering
- applied mathematics
- architectural engineering/civil engineering
- chemical engineering
- chemical and biological engineering/chemical engineering
- civil engineering
- computer science
- electrical and computer engineering/electrical engineering

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- electrical engineering/telecommunications
- engineering physics/physics
- environmental engineering/civil engineering
- information management/telecommunications
- mechanical 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.

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## 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

- anthropology/MBA
- art and art history/MBA
- computer science/MBA
- environmental studies/MBA
- German studies/MBA
- telecommunications/MBA
- theatre/MBA

### Combinations within the Graduate School

- applied math/MCD Biology
- audiology/speech, language, and hearing sciences (both through the Department of SLHS)
- engineering management/aerospace engineering
- engineering management/computer science
- engineering management/electrical, computer, and energy engineering
- engineering management/mechanical engineering
- engineering management/telecommunications
- music (two areas)
- religious studies/Asian languages/history (any two)

### Combination with Law

- business administration/law
- environmental studies/law
- juris doctor/bachelor of laws with the University of Alberta faculty of law, Canada
- medicine/law
- public administration/law
- telecommunications/law
- urban and regional planning/law

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## Distance Degree Programs

The Center for Advanced Engineering and Technology Education ([CAETE](#)) offers the following master's in engineering programs, which may be completed from a distance:

- chemical engineering
- computer science
- electrical engineering
- engineering management
- telecommunications

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| <a href="#">Environment, Policy, and Society</a>               |
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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 and Intellectual Property Law:** Colorado Law has developed one of the nation's most comprehensive legal programs oriented around information technology. Technology lawyers address interesting policy challenges and novel legal issues, and rank among the most satisfied within the legal profession. Colorado Law is the right place at the right time for those interested in exploring the frontiers of entrepreneurial law, technology policy, and intellectual property.

**Entrepreneurial and Business Law:** Colorado Law provides a robust curriculum in business law, tailored for aspiring deal lawyers in Boulder, Denver, and beyond. Boulder has a vibrant entrepreneurial community with many start-up and emerging companies. We place students in small law firms that serve small business and emerging companies, as well as in larger law firms who serve traditional larger corporate clients. In recent years, we have placed students in interesting and fulfilling in-house positions.

**American Indian Law:** At Colorado Law, we believe that American Indians deserve the very best lawyers and that we have an obligation to train them. Our American Indian Law Program faculty, including the nation's top scholars and practitioners in the field, offers a full slate of introductory and advanced classes in the field to prepare students for all aspects of Indian law practice, and we now have dozens of successful alumni practicing Indian law in tribal government, federal agencies, and at law firms. Colorado Law graduates are equally prepared to work on impact litigation, economic development, policy advocacy, individual legal services, and tribal governance in Indian law. Our American Indian Law Program also appeals to many students with broader practice interests in natural resources, public lands, property, museum and art law, technology, entrepreneurship, family law, and beyond. Indeed, because American Indian law raises questions regarding the rule of law and legal pluralism, the contours of sovereignty and governance, cross-cultural representation and minority rights, and interdisciplinary study and practice, it offers important intellectual development opportunities for all Colorado Law students.

**Juvenile and Family Law:** Juvenile and family law covers a broad range of practice areas, such as marriage, divorce, custody, visitation, family support, child abuse and neglect, delinquency, adoption, estate planning, education law, and elder law. The Juvenile and Family Law Program (JFLP) provides students with opportunities to acquire specialized knowledge in this field, develop a network of, and foster collaboration between, students, academics, and practitioners, and engage in interdisciplinary work in the study and practice of the field. The Program includes specialized courses, research projects, externships, and clinical opportunities.

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## 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 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.

## Legal Research and Writing

Colorado Law's Legal Research and Writing Program ensures that its graduates are proficient in legal 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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## 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 25 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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# 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 2.25 and a cumulative journalism and mass communication GPA of 2.50.

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 online at [honorcode.colorado.edu/academics](http://honorcode.colorado.edu/academics).

## 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 associate director 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 associate director 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 associate director 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. The committee shall consist of two

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impartial faculty members competent in the subject matter of the course in question. The associate director 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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## 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 prejournalism or College of Arts and Sciences open option

## Prejournalism and Mass Communication

Students in prejournalism and mass communication 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 2.25, based on a minimum of 12 credit hours. These students should consult with advisors in JMC.

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 2.50. 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 submit 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

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3.00, 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 this catalog for [transfer student admission standards](#).

## Attendance Regulations

Students are expected to attend classes regularly and to comply with the attendance policies 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 associate director 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 their JMC advisor 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 the arts and sciences 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.

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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## Student Life

### On This Page:

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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 at many law schools, CU Law 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.

## 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 Natural Resources, Energy, and Environmental Law Review*
- *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

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knowledge in specific areas, gain leadership experience, and work 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.



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# 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 2.00 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 2.00 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 2.00 or above, automatic suspension results. Any undergraduate student who has a cumulative or semester grade point average below 1.00 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 2.00 or higher and raise their cumulative GPA to 2.00 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 2.00 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 2.00 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.

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

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maintain a minimum cumulative GPA of 3.00. Students who have a cumulative GPA below 3.00 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 3.00 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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## Undergraduate Admission & Enrollment 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: [www.colorado.edu/music/prospective-undergrads/audition-requirements](http://www.colorado.edu/music/prospective-undergrads/audition-requirements).

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).

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## 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 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.

## 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.

## Dean's Convocation

Dean's Convocation is an extension of the CU-Boulder campus and College of Music orientation programming. Convocation sessions are designed to provide new undergraduate music majors with the knowledge and skills necessary to be successful in making progress toward a music degree. Freshman music majors are required to attend all 10 convocation sessions. Transfer student attendance is not required, but individuals are strongly encouraged to attend and participate in any convocation sessions that may be particularly interesting or relevant to their future success.

## 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 associate dean for undergraduate studies 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.

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# Graduate Degree Admission & Enrollment Policies

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## 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 MM in music theory, and they are recommended for the DMA 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).

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 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

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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.

Therefore, the TOEFL exam is required of ALL international graduate applicants whose native language is not English. *This includes applicants who have already completed a degree or studied in an English-speaking country for any length of time.* An acceptable score must be reported directly to the CU-Boulder Office of Admissions by the December 1 deadline in order for the applicant to be considered.

The College of Music has an additional requirement that all admitted students whose language is not English are required to take an English placement exam with the English as a Second Language (ESL) department upon arrival on campus and to abide by the recommendations made.

## 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 ([www.colorado.edu/music/prospective-graduate-students/auditions](http://www.colorado.edu/music/prospective-graduate-students/auditions)) 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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# 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 2.00 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
  - 3 credit hours of contemporary societies
  - 3 credit hours of ideas and values

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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**

- 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**

- 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—1
- MUS 2XXX applied instruction (lessons and literature class)—4
- Ensemble—2
- Non-music electives—18

#### **Junior Year**

- 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—20

## **Bachelor of Arts in Music with an Emphasis in Musicology and World Musics**

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

#### **Freshman Year**

- 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

- 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—1
- MUSC 2XXX applied instruction (lessons and literature class)—2
- Ensemble—2
- Non-music electives—15

### Junior Year

- 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, harp, 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 [www.colorado.edu/music/undergraduate-degrees/advising](http://www.colorado.edu/music/undergraduate-degrees/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

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- MUSC 4918 Building Your Music Career—2
- PMUS 2XXX Applied brass/percussion instruction (lessons and literature class)—5
- Chamber Music —2
- Ensemble—2
- Non-music electives—13

#### Junior Year

- MUSC 3802, 3812 History of Music 1 and 2—6
- MUSC 2071 Instrumentation—2
- MUSC 3176 Conducting 1—2
- MUSC 3997 Junior Recital—1
- 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**

- 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**

- 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**

- 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

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- PMUS 2566 Applied guitar instruction (lessons and literature classes)—7
- Ensemble—2
- Music electives—3
- Non-music electives—15

## Junior Year

- 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

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- PMUS 2105, 2205 Keyboard Musicianship 1 and 2—2
- PMUS 2576 Applied harp instruction (lessons and literature class)—7
- Ensemble—2
- Non-music electives—12

## Junior Year

- 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

## Harpichord Performance Concentration Area

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

#### Freshman Year

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- MUSC 4405 Basso-Continuo Accompaniment (fall)—2
- PMUS 2586 Applied Harpsichord Instruction (lessons and literature classes)—5
- University Ensemble—2

- Non-Western music history—3
- Performance minor—4
- Non-music electives—9

### Junior Year

- 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
- 

## Organ Performance Concentration Area

### *Required Courses and Semester Credit Hours*

#### Freshman Year

- 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

- 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—1
- MUSC 3176 Conducting 1—2
- PMUS 2616 Applied organ instruction (lessons and literature class)—7
- Ensemble—2
- Performance minor—2
- Non-music electives—8

#### Junior Year

- 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

## Piano Performance Concentration Area

### *Required Courses and Semester Credit Hours*

#### Freshman Year

- 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

#### Sophomore Year

- 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—1
- PMUS 2636 Applied piano instruction (lessons and literature classes)—5
- PMUS 4105 Supervised Accompanying—2
- Non-music electives—15

#### Junior Year

- 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

- 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
- PMUS 1806 Applied Jazz Piano Instruction (lessons and literature classes)—6
- Written communication—3
- Non-music electives—6

### Sophomore Year

- 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—1
- 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

- 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**

- 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**

- MUSC 2101, 2111 Theory 3 and 4 —4
- MUSC 2121, 2131 Aural Skills 3 and 4 —2
- MUSC 2997 Sophomore Proficiency—1
- 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**

- 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**

- 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**

- 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—1
- PMUS 1515 Jazz Piano Class—2
- PMUS 2XXX Applied Instruction—.8
- Ensemble—4
- Non-music electives—3

#### **Junior Year**

- 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, Viola, Violin, and Violoncello

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

#### **Freshman Year**

- 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**

- 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—1
- MUSC 3273 String Pedagogy—2
- PMUS 2XXX Applied string instruction (lessons and literature classes)—7
- PMUS 2105, 2205 Keyboard Musicianship 3 and 4—2
- Non-music electives—10

#### **Junior Year**

- 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

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- 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

- 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

## 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**

- 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

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- 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

- 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

- 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**

- MUSC 2101, 2111 Theory 3 and 4—4
- MUSC 2121, 2131 Aural Skills 3 and 4—2
- MUSC 2997 Sophomore Proficiency—1
- PMUS 1XXX Applied wind instruction (lessons and literature classes)—7
- Chamber music—2
- Ensemble—2
- Music electives—4
- Non-music electives —12

### **Junior Year**

- 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**

- 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

- 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—1
- Applied instruction (lessons and literature classes)—4
- Ensemble—2
- Non-music electives—18

## Junior Year

- 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

## Double Major in Music Performance

Eligible students in the College of Music, with approval of faculty in the relevant areas or departments, may complete a double major in music performance. Normally, such programs take at least five years to complete. Students pursuing a double major in music performance must complete at least 15 additional credit hours beyond the 120 credit hours required for a single performance major. Requirements pertaining to applied study, chamber music, sophomore proficiency, junior recital and senior recital must be fulfilled separately for each degree; up to four credits of university ensemble can be applied to both majors when appropriate and with faculty/advisor approval. Students completing all requirements are awarded a single bachelor of music degree with two majors. The decision to earn more than one degree or major in the College of Music should be carefully weighed, as it may be more advantageous for a student to complete a single degree/major and then begin work on a graduate degree in music.

## 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.

**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.

## 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.

## 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 preliminary examinations and

begin working toward basic requirements.

## 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 and an Outside Major

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.

## 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 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 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 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.

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# Music Education

## Bachelor's Degree Program(s)

### Bachelor of Music Education (BMusEd)

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 2.75 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

- Arts & Sciences
- Business
- Education
- Engineering & Applied Science
- Environmental Design
- Media, Communication and Information
- Law
- Music
  - Overview of the College
  - Policies & Requirements
  - Programs of Study
  - Music
  - Music Education**
  - Musical Arts
  - Faculty: Music
  - Graduate School
  - Other Academic Programs

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 3.00 in music and music education, and a minimum cumulative GPA of 2.75.
- 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 3.00 in music and music education, and a minimum cumulative GPA of 2.75.
- 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**

- 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

- 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—1
- MUSC 3133 Teaching General Music 1—2
- MUSC 3193 Vocal Pedagogy for Young Voices—2
- PMUS 2XXX applied instruction (lessons and literature classes)—5
- PMUS 2205/PMUS 1184 Piano/Voice Class—2
- Ensemble—2
- Non-music core requirements—6
- Non-music electives—3

## Junior Year

- 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)—7
- Conducted choral ensemble—2
- Upper-division theory elective (3000 or 4000 level theory class, 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 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

- 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

- 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—1
- 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)—5
- PMUS 2205/PMUS 1184 Piano/Voice Class—2
- Ensemble—2
- Non-music core requirements—6
- Non-music electives—3

## Junior Year

- 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)—7
- 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**

- 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**

- 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—1
- 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**

- 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 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

**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**

- 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)—8
- Ensemble—2
- Written communication—3
- Non-music core requirements—6
- Non-music electives—6

**Sophomore Year**

- 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—1
- 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)—7
- Ensemble—2
- Non-music core requirements—3
- Non-music electives—3

**Junior Year**

- 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)—7
- 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

- 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

- 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—1
- 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

- 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 (MMusEd)

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 MMusEd 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 (DMusEd)

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 degree 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.



## Musical Arts

### Graduate Degree Program(s)

#### 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 [www.colorado.edu/music/academics/graduate-degrees](http://www.colorado.edu/music/academics/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 in musicology, music theory, or music education.
- **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.
- **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

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| Arts & Sciences                      |
| Business                             |
| Education                            |
| Engineering & Applied Science        |
| Environmental Design                 |
| Media, Communication and Information |
| Law                                  |
| Music                                |
| Overview of the College              |
| Policies & Requirements              |
| Programs of Study                    |
| Music                                |
| Music Education                      |
| <b>Musical Arts</b>                  |
| Faculty: Music                       |
| Graduate School                      |
| Other Academic Programs              |

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. The language requirement must be completed before students may take the comprehensive exam. 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.