Environmental Engineering

UNIVERSITY OF COLORADO **BOULDER**

GRADUATE PROGRAM HANDBOOK

VERSION DATE:

APRIL 6, 2026

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Contents

1 Graduate Program Overview

1.1 Program Objectives

Our Environmental Engineering Graduate Program focuses on the fundamental and applied understanding of the processes which govern natural and engineered treatment systems and the effects that they have on human and ecosystem health. The program includes over 40 research and instructional faculty, and covers topics ranging from ecosystem processes, fate and transport of organic contaminants, alternative energy, air quality, sustainability, and water and wastewater treatment, among others. The objectives of the CU Boulder Environmental Engineering Program are to prepare graduates to:

- Develop new or improved technologies and/or advance the state of knowledge of environmental engineering processes and systems and/or contaminant fate transport in natural systems.
- Independently plan, perform, assess, and communicate high-quality environmental engineering research or design solutions.
- Work and communicate effectively in interdisciplinary endeavors to solve environmental problems.
- Balance the competing social, political, economic, and technical goals entailed in advancing sustainable solutions to environmental problems.

1.2 Mission Statement

The mission of the Environmental Engineering Graduate Program is to equip students with the advanced understanding of the principles of environmental science and engineering, including deep knowledge in their field of specialization, enabling them to contribute to world-leading research and specialized professional practice that help protect human health, welfare, and the environment.

1.3 Environmental Engineering Graduate Degrees

With over 40 research and instructional program and affiliate faculty members, listed here, our graduate students have access to dynamic and interdisciplinary research and courses within our PhD degree, master's degree, and certificate options. Our program benefits from long-standing relationships of participating faculty with researchers in CU Boulder institutes and federal laboratories in the area.

- *PhD Degree:* Environmental engineering PhD students at CU Boulder take part in cutting-edge, innovative research, as well as an intensive course of study. Students focus heavily on research and partake in graduate courses, as well as graduate seminars to prepare their dissertation as they develop the skills to become independent researchers.
- *Master's Degrees:* Environmental engineering Master's degree students can take graduate courses

and participate in research as part of three different MS degree options.

- *Professional Master of Science (MS) Degree:* The Professional MS Degree option includes four tracks, or thematic options: General Environmental Engineering, Air Quality, Energy, and Climate, Water Reuse, and Global Engineering (tied to the Mortenson Center). The Professional MS option targets students and early to mid-career professionals who want to expand on their BS education, focusing on acquiring new skills for their professional growth.
- *Research-Based Master of Science (MS) Degree:* The Research-Based MS option is intended for MS students interested in a short-term research experience, leading to the preparation and defense of a research-based thesis. The program emphasizes education through high-quality research for students interested in careers in industry and the public sector.
- *Bachelor's-Accelerated Master's (BAM) Program:* The BAM degree program offers currently enrolled CU Boulder environmental engineering undergraduate students the opportunity to receive Bachelor's and Master's degrees in a shorter period of time.

1.4 Graduate Certificate Options

Either degree-seeking or non-degree-seeking students can enroll in certificate options offered by our program. These certificates indicate expertise in a focused topic area and are intended primarily for continuing education and non-traditional students, though they can be pursued as a supplement to the Master's or PhD curricula. The EVEN Program currently participates in a certificate in Water Engineering and Management, as well as the Mortenson Center Graduate Certificate, which focuses on global engineering and resilience.

1.5 Contact Information and Personnel

The Environmental Engineering Program is located in the Sustainable Energy and Environmental Complex (SEEC) at CU Boulder, with the following physical and mailing addresses:

Physical address (map):	**Mailing address:**
4001 Discovery Drive	607 UCB
Boulder, CO 80303	Boulder, CO 80309-0607

Overall administration of the graduate program, review of applications, and admissions decisions are handled by the EVEN Graduate Program Committee. This committee consists of at least four current members of our faculty, in addition to the EVEN Associate Director for Graduate Education. Faculty members on the graduate committee are rotated each year and represent a range of different research and educational areas in our department.

The current EVEN graduate leadership is listed below:

Prof. Mike Hannigan
Professor, EVEN Director
Email: micheal.hannigan@colorado.edu
Telephone: 303-735-5045
Room: SEEC S261A

Prof. Marina Vance
Associate Professor, EVEN Associate Director for Graduate Education
Email: marina.vance@colorado.edu
Telephone: 303-735-4567
Room: SEEC S286A

Ms. Heather Mallander
EVEN Program Coordinator
Email: Heather.mallander@colorado.edu
Room: SEEC S261B

Ms. Deanne Sylvester
EVEN Senior Graduate Program Manager
Email: deanne.sylvester@colorado.edu, evengrad.advising@colorado.edu
Telephone: 303-735-5881
Room: ECOT 426 and SEEC S270

Ms. Jenna Rodriguez
EVEN Senior Graduate Program Specialist
Email: jenna.rodriguez@colorado.edu, evengrad.advising@colorado.edu
Telephone: 303-735-5881
Room: ECOT 426 and SEEC S270

Additional staff members that students are likely to interact with are:

- Kayla Boster, Finance and Payroll Coordinator, kayla.boster@colorado.edu
- Danielle Porchetta, Human Resources Generalist, danielle.porchetta@colorado.edu
- Dorothy Noble, Laboratory Manager, dorothy.noble@colorado.edu

A comprehensive list of staff members can be found in the EVEN Faculty and Staff webpage. If you have a question and are not sure whom to contact, you can email evenoffice@colorado.edu for general questions and evengrad.advising@colorado.edu for any graduate advising questions.

1.6 Student Expectations and Policies

A complete list of CU Boulder student, faculty, and staff policies, to which the Environmental Engineering Graduate Program rigorously adheres, can be found here. Select expectations and policies of greatest relevance to environmental engineering graduate students are provided in the following sections.

1.6.1 Honor Code Policy

All students of CU Boulder are responsible for knowing and adhering to the academic integrity policy. Violations of this policy may include cheating, plagiarism, aiding academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported by emailing the Honor Code or by calling their office at 303-735-2273. Students who are found to be in violation of the academic integrity policy will be subject to both academic and non-academic sanctions (including but not limited to university probation, suspension, or expulsion).

The University Honor Code and Procedures are accessible at the Honor Code and Student Code of Conduct website. All Environmental Engineering Program graduate students are expected to adhere to this code.

1.6.2 Classroom Behavior Policy

Students and faculty each have a responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities. Class rosters are provided to instructors with the student's legal name, but instructors will honor student requests to address them by an alternate name or gender pronoun. Students should advise instructors of this preference early in the semester so that they may make appropriate changes to their records. Additional policy details are available at Compliance, Ethics and Policy website.

1.6.3 Discrimination and Harassment Policy

CU Boulder is committed to providing an inclusive environment where all individuals can achieve their academic and professional aspirations free from discrimination, harassment, and/or related retaliation based upon protected classes.

CU Boulder prohibits discrimination and harassment on the basis of protected-class status in admission and access to, and treatment and employment in, its educational programs and activities. For purposes of this CU Boulder policy, "protected classes" refers to race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, and political philosophy.

CU Boulder takes prompt and effective steps reasonably intended to stop any form of protected-class discrimination and harassment, and related violations, to eliminate any hostile environment, to prevent its recurrence, and as appropriate, to remedy its effects.

At CU Boulder, the Office of Institutional Equity and Compliance (OIEC) implements this policy and administers related campus procedures. Anyone who encounters an issue or seeks guidance related to this policy should consult with the OIEC. CU Boulder employees who are mandatory reporters (i.e., "Responsible Employees"), including faculty and graduate advisors, must promptly report allegations of protected-class discrimination and harassment, and related violations, as further outlined in the policy.

The full university Discrimination and Harassment Policy can be viewed here.

Instructors are required to observe religious holidays for absences from class and exams, according to the policies outlined here.

1.7 Mental Health and Other Campus Resources

1.7.1 Counseling & Psychiatric Services (CAPS)

Students with a variety of concerns, such as academics, anxiety, body image, depression, relationships, substance use and more, should contact Counseling & Psychiatric Services (CAPS), which is a confidential, on-campus mental health and psychiatric service.

Website: https://www.colorado.edu/counseling/ *Phone:* 303-492-2277 (24/7 phone)

Location: Center for Community, N352

Office Hours: https://www.colorado.edu/counseling/hours-and-contact

1.7.2 Office of Victim Assistance (OVA)

The Office of Victim Assistance (OVA) also provides free and confidential information, consultation, support, advocacy, and short-term counseling services to CU students, graduate students, faculty, and staff who have experienced a traumatic, disturbing or life disruptive event.

Website: https://www.colorado.edu/ova/ *Email:* assist@colorado.edu

Phone: 303-492-8855 (24/7 phone); after hours press 2 to talk to a counselor

Location: Center for Community, N450

Additional campus resources can be found at https://www.colorado.edu/resources and more general health resources are available at https://www.colorado.edu/healthcenter/.

1.8 Grievance Procedures

The Graduate School established revised grievance procedures, effective April 1, 2019, that can be found in the Graduate School Grievance Procedures website. These procedures are intended to provide a process by which graduate students can communicate concerns related to academic issues or academic conflicts. Should a student need any assistance with these procedures, they should reach out to a graduate advisor or their faculty advisor, where appropriate.

1.9 Academic Calendar and Registration Deadlines

The CU Boulder academic calendar can be found online. Additional information on course add/drop, tuition/fees, and registration deadlines is available from the Office of the Registrar here. While the Graduate Program will make every effort to provide general reminders and information about important dates throughout the academic year, students are expected to be aware of any add/drop deadlines and tuition/fees impacts of their enrollment decisions. If you are unsure of the consequences of adding/dropping a course (especially outside of your university designated enrollment window), please reach out to your Graduate Advisor.

1.10 Online Forms and Helpful Links

Internal Environmental Engineering Forms:

- Course Agreement Form
- Academic Advising Sheet
- Faculty Advising Agreement
- Independent Study Agreement Form

Graduate School Forms:

- Bachelor's Accelerated Master's (BAM) Continuation Form
- Bachelor's Accelerated Master's (BAM) Intent Form
- Candidacy Application for Advanced Degree
- Concurrent Bachelor/Master Forms

- Graduate Program Application
- Graduate Program Change/Addition/Discontinuation Form
- Graduate School Letter of Completion Request
- Graduate Student Request for Extension of Time Limit
- MS Examination Report
- PhD Examination Report
- Request for Transfer of Credit form
- Thesis Approval Form

Additional resources and information of relevance to prospective and current environmental engineering graduate students:

- Environmental Engineering Program
- Graduate School
- College of Engineering
- Mortenson Center for Global Engineering & Resilience
- Buff OneCard
- Bursar's Office
- Health and Wellness Services
- Disability Services
- Employment Accommodations
- Campus Policies
- Graduate School Catalog
- Medical Services
- Office of Information Technology
- Office of Institutional Equity and Compliance
- Office of the Registrar
- Parking and Transportation
- Recreation Services
- Athletics
- Regional Transportation District (RTD)

2 Admissions

In the University of Colorado Boulder (CU) Environmental Engineering Graduate Program, we have a diverse group of graduate students who benefit from—and directly support—an inclusive and supportive educational environment that emphasizes shared excellence. The admissions process plays a critical role in maintaining these values, and we seek to continue growing our graduate program by emphasizing diversity, participation by under-represented groups, community engagement, and technical excellence.

Graduate admissions decisions are made by a committee comprised of the Graduate Program Chair, the graduate advisors, and faculty from the Environmental Engineering Program. When making admissions decisions, this committee conducts a holistic review of all application materials, including the completed application form, Grade Point Averages (GPAs) from prior undergraduate and graduate courses, and transcripts, as well as a statement of purpose, prior job and research experience, and recommendations from individuals who have had an opportunity to observe the ability and performance of the applicant. Although GPAs are considered in admissions decisions, they are examined in the broader context of the entire application, also considering the quality of the undergraduate institution.

Consistent with our mission to create an inclusive environment, substantial consideration is given to special qualities such as student motivation, undergraduate program, initiative in research, professional engineering experience, diversity in economic, social, or cultural background, employment or other experience, leadership, and perseverance in overcoming personal handicaps or disadvantages.

2.1 Eligibility

2.1.1 PhD and Master's Degree Options

For admissions to the Master's, Professional Master's, or the PhD Degree Options, applicants are normally required to hold a Bachelor's degree in engineering, natural sciences, or mathematics from an institution accredited by an agency recognized by the U.S. Department of Education. A complete list of accredited institutions and agencies is available from the Database of Accredited Post-Secondary Institutions and Programs. Students with a B.S. or M.S. degree in a discipline other than Environmental Engineering must have completed or will successfully complete courses in:

- Calculus, Linear Algebra, and Differential Equations (4 semesters)
- Probability and Statistics (1 semester)
- Calculus-based Physics (2 semesters)
- General Chemistry (2 semesters, CU Boulder CHEN 1211/CHEM 1221 equivalent)
- Fluid Mechanics (1 semester)

- Fundamentals of Environmental Engineering (1 semester, CVEN 3414 equivalent)
- A college-level basic or earth science (e.g., Biology, Geology) (1 semester)

One semester of statics is recommended, as it is listed in civil and mechanical engineering as a prerequisite for fluid mechanics. This pertains to students lacking an undergraduate engineering degree who wish to pursue licensure after obtaining a graduate degree. However, the requirements for licensure can vary by state.

If an interested student has an undergraduate degree that does not cover these recommended courses or needs further information, they can contact evengrad.advising@colorado.edu prior to applying. If a student has completed prior graduate coursework or a graduate degree that addresses some or all of the above course recommendations, they are eligible to apply for either the PhD or Master's degree option, even if the undergraduate degree does not satisfy the recommendations. Student eligibility will be assessed based on the information provided in their application and supporting documentation. Students do not need a Master's degree to be admitted to the PhD degree option. Many of our students enroll directly from their undergraduate institution with only a Bachelor's degree.

Although we recognize that GPAs alone do not paint a complete picture of an applicant's prior performance and future potential, our most competitive applicants have at least a 3.00 undergraduate grade point average or have completed 9 semester-hours of relevant graduate course work with at least a 3.25 grade point average.

Students must also show promise of ability to pursue advanced study and research, as judged by their scholastic record, three letters of reference, and a personal statement of academic and research interests.

International applicants are required to provide a Verifiable English Proficiency Score Report for the TOEFL, IELTS, or Duolingo exam with their application. English Proficiency Requirements are detailed in the Graduate School website.

2.1.2 Provisional Admissions

The Graduate School requires applicants to have a cumulative minimum GPA of 3.0 from prior undergraduate and graduate study in order to be accepted into the PhD, Master's, or the Professional Master's degree option on a non-provisional basis. Occasionally, applicants with below a 3.0 GPA who demonstrate exceptional credentials in the non-GPA components of the application may be admitted on a provisional basis.

Further information for students admitted on a provisional basis is available here. The terms of your provisional admission will be outlined in your acceptance letter. Program faculty may recommend additional or alternative conditions as appropriate.

According to university policy, students admitted on a provisional basis are not eligible to hold an appointment (i.e., a Teaching or Research Assistant position) without special permission, until they fulfill the specific conditions of their provisional admission. Consequently, the department cannot guarantee initial funding availability for applicants admitted on a provisional basis.

2.1.3 Bachelor's Accelerated Master's (BAM) Degree Program

The Bachelor's Accelerated Master's (BAM) Degree Program options offer currently enrolled CU Boulder undergraduate students the opportunity to receive a Bachelor's and Master's degree in a shorter period of time. Students receive the Bachelor's degree first but begin taking graduate coursework as undergraduates (typically during their junior year). Because some courses are allowed to double count for both the Bachelor's and the Master's degrees, students receive a Master's degree in less time and at a lower cost than if they were to enroll in a stand-alone Master's degree option/program after completion of their Baccalaureate degree. In addition, staying at CU Boulder to pursue a Bachelor's Accelerated Master's Program enables students to continue working with their established faculty mentors/advisors.

Our specific BAM Program for the Environmental Engineering Program enables students to pursue a Bachelor's degree and a Master's degree in environmental engineering. In order to gain admission to the BAM Program described above, applicants must meet the following criteria:

- Must have a cumulative GPA of 3.00 or higher.
- Must have at least junior class standing.

Undergraduate applicants should contact their undergraduate academic advisor to learn more about the BAM Program. Students are also welcome to contact the relevant graduate program advisor to learn more about the Master's degree options and to determine their eligibility for admission to the BAM Program.

More information about the BAM Program, policies, and forms may be found on the Registrar's Office website as well as the Graduate School's website. Eligible students may apply to the BAM program by completing the BAM Intent Form.

2.2 CU Boulder Graduate School Application Requirements

2.2.1 PhD, Master's Degree, and Professional Master's Degree Options Application Requirements

Individual graduate departments may have additional or more restrictive standards by which they evaluate graduate applicants. For more information regarding eligibility for the EVEN Graduate Program, please refer back to Section 2.1. In addition to the EVEN eligibility requisites, applicants to the EVEN Graduate Program must also meet the following standards set forth by the Graduate School at CU Boulder. More information from the CU Boulder Graduate School regarding admissions can be found on the Graduate School Admissions website and the University Catalog's admissions requirements page.

For students not currently enrolled as undergraduate or graduate students at CU Boulder who would like to be considered for the PhD or Master's (i.e. Professional MS or Research-Based MS) degree options, applicants must:

- Hold a Baccalaureate degree from a college or university of recognized standing (or the equivalent) and submit transcripts evidencing the same.
- Show promise of ability to pursue advanced study and research, as judged by the student's scholastic record.
- Have adequate preparation to enter graduate study in the chosen field.
- Have at least a 3.00 undergraduate grade point average. Note: applicants who cannot meet this undergraduate standard may still secure regular admissions if they have completed 9 semester hours of relevant graduate course work with at least a 3.25 average.
- Upload an unofficial copy of all transcripts in the online application. Applicants will be required to submit official transcripts from all prior institutions should they wish to proceed with enrollment/registration in the CU Boulder EVEN Graduate Program.
- Provide three letters of recommendation from qualified referees. Academic references are preferred if you have recently been in an academic setting, otherwise, you may use professional references (i.e., managers, clients, etc.)
- International applicants must observe English proficiency requirements, listed in the Graduate School website.

2.3 Deadlines

2.3.1 PhD and Master's Degree Options - Spring Admissions

Candidates who would like to begin graduate school in the spring semester must apply by the deadline listed below. Candidates should be aware that there may be fewer funding opportunities in the spring admissions cycle, and that the curricula for most graduate programs are designed to begin in the fall semester. However, a small number of students each year elect to start graduate school in the spring semester:

Spring Admissions Application Deadline: October 1st. *Application closes at 11:59pm EST*

2.3.2 PhD and Master's Degree Options - Fall Admissions

Candidates who would like to begin graduate school in the fall semester must apply by the deadline listed below. Candidates who submit applications by the deadlines below will have the highest chance of being considered for funding and will have the best chance of being admitted in time to be invited to our Visit Day in spring for accepted students:

Fall Admissions Application Deadline: December 1st. *Application closes at 11:59pm EST*

2.3.3 Bachelor's Accelerated Master's (BAM) Degree Program Admissions

Eligible students interested in applying to the BAM program can do so throughout the calendar year via the BAM Intent Form. Submission of applications is recommended during either the Fall or Spring semesters of a student's junior year. The deadlines for application are as follows:

- *Fall Semester:* November 1st
- *Spring Semester:* April 1st

Applicants considering applying later in their undergraduate career should familiarize themselves with all deadlines and requirements for progressing from undergraduate to graduate status on the BAM website. More specific information on the BAM Program associated with the EVEN Graduate Program can be found here.

Undergraduate students who have been admitted to a BAM Program must fill out the Master's Continuation Form and the BAM Supplement Form to continue with the Accelerated Master's Program. Both forms should be filled out early in the semester in which applicants will complete their undergraduate requirements, and they must also apply online to graduate with their Bachelor's degree through the Buff Portal. This process must be completed by the following deadlines:

- *Students graduating in May:* February 1st
- *Students graduating in August:* March 1st
- *Students graduating in December:* October 1st

A detailed description of the BAM program and links to all forms are available in the Office of the Registrar Website. For general questions or for more information, please reach out to the EVEN undergraduate advisor, Joanne Uleau. Once in the BAM program, interested students may reach out to the EVEN graduate advising team or their graduate academic advisor for more in-depth information.

2.4 Recruiting Activities

2.4.1 Graduate Program Visit Day

To aid accepted applicants in determining if CU Boulder is the best fit for them, they are invited to participate in our Visit Day for Accepted Graduate Students. Through this event, potential students are given the opportunity to meet faculty, tour campus and our labs, connect with current graduate students, and experience the picturesque beauty that Boulder, Colorado has to offer. This engaging and informative event takes place during spring semester.

2.5 Offers of Admission and Funding

2.5.1 PhD Degree Option

A letter is sent to accepted applicants from the University of Colorado, informing them of its admission decision. If an applicant is accepted, the letter will also list a temporary advisor and any prerequisite courses required by the applicant's specialization program. The applicant must respond to all forms received from the Admissions Office in order to become a student at the University of Colorado Boulder.

If the applicant accepts admission, one original transcript from each college or university attended must be sent directly to the Graduate School Office of Admissions by the school that issued them. If the transcript

is issued to the applicant, the Office of Admissions must receive them in a sealed envelope from the issuing university.

An advising stop will be placed on an incoming graduate student's university record when it is activated (the refundable deposit has been paid). This stop will be removed when the student has contacted their advisor.

Students applying to the PhD degree option will automatically be considered for funding as part of the admissions application process. Applicants will be informed of any available funding in their letters of acceptance. This also includes any offers of financial support in the form of assistantships or fellowships. If we decide to offer financial support in the form of assistantships or fellowships, applicants will be notified when a decision has been made.

2.5.2 Master's Degree Options

Generally, Master's students are expected to self-fund their studies and, in nearly all cases, are admitted to the MS option with no offer of funding. Specifically, TA and RA funding from the EVEN Program is reserved for PhD students, although a limited number of Research-Based MS students may receive a TA or RA appointment through their research advisor. Such appointments are left to the discretion of the advisor and are not guaranteed even with acceptance or transfer into the Research-Based MS option.

In accordance with Graduate School regulations, students in the Professional MS option are not eligible for RA or TA appointments. However, funding opportunities for Professional MS students do exist in the form of hourly employment.

2.5.3 Offer Acceptance Deadlines

The deadline for applicants to accept offers of admission and funding is April 15th for both PhD and Master's Degree Options.

Note that an offer of either admission or funding is only considered "accepted" if the enrollment deposit is paid, in full, by the above deadlines. If the deposit is not paid and no request for deferral has been made prior to the deadline, the offer will be considered as "declined" and will be rescinded by the department at its discretion.

2.5.4 Deferrals

Students who have accepted an offer of admission to either the PhD or Master's options may request a deferral of their admission for up to one year. Both PhD and MS students may request to defer their admission to either the following fall or spring semester. Deferral requests will be considered on a case-by-case basis and should be communicated by email to evengrad.advising@colorado.edu.

Note that some sources of funding may not be deferred to future terms. Applicants considering deferment should make sure to clarify the future availability of any funding offer.

2.6 Internal Applicants and Changes of Program

It is not uncommon for current CU Boulder students to seek admission into the Environmental Engineering Graduate Program. All candidates for admission, including internal applicants, are evaluated based on the same high standards of eligibility enumerated in Section 2.1 by the graduate admissions committee.

2.6.1 Transfers within the Environmental Engineering Program

From Bachelor's to Professional Master's, Master's, or PhD. All current CU Boulder undergraduate students, including those in the Environmental Engineering Program but not in the BAM program, are required to submit applications according to the requirements outlined in Section 2.1 and the deadlines outlined in Section 2.3. These students follow the same application process as external applicants.

From (i) Professional MS (including BAM) to Research-Based Master's, (ii) Research-Based Master's to Professional Master's; (iii) Master's (any kind) to PhD, or (iv) PhD to Research-Based Master's or Professional

Master's. If a current EVEN graduate student is interested in a program change and their faculty advisor supports this decision, the student should reach out to the EVEN Graduate Advising Team, who will support them with the appropriate paperwork and deadlines.

2.6.2 Transfers into the EVEN Program for Current CU Boulder Students

All current CU Boulder undergraduate students outside the Environmental Engineering Program, but not in the BAM programs, are required to submit applications according to the requirements outlined in Section 2.1 and the deadlines outlined in Section 2.3. Application fees are waived for these students.

For current graduate students in other departments at CU Boulder, transfers into either the Master's or PhD degree options can again be initiated by reaching out to the EVEN Graduate Advising Team. Additionally, all such applicants are required to provide:

- The name and contact information of a current member of the CU Boulder faculty who can comment on the appropriateness of the change into the Environmental Engineering Graduate Program. In the case of students transferring into the PhD option without departmental funding, this letter should come from a research advisor who commits to supporting the student for the duration of the PhD.
- A two-page statement from the student outlining reasons for pursuing a degree in environmental engineering, as well as research interests and prior research and professional experience if the student seeks to transfer into the Research-Based MS or PhD options.
- Unofficial transcripts from CU Boulder and all prior undergraduate and/or graduate institutions.
- A current copy of the student's CV. Helpful guidelines on the creation of academic CVs have been compiled by Cornell University and the University of Illinois Urbana-Champaign.

Students requesting transfer into either 1) the MS options; or 2) the PhD option, without request for department funding (i.e., those with an external fellowship or funding secured directly from the Research Advisor), are eligible to transfer at the beginning of any semester.

PhD applicants seeking department funding are only eligible for transfer beginning in a fall semester. In these cases, the form must be submitted by January 15th to be considered for transfer beginning the following fall semester. Students will be considered, in conjunction with all external candidates applying to the PhD option, for a full academic year TA or RA appointment. Note that these procedures and requirements apply even to students who are changing from another PhD program at CU Boulder into the Environmental Engineering PhD Degree option.

As with in-department transfers, BAM students are only eligible to transfer into the PhD option if they have already completed their undergraduate degree(s); additional requirements may be applicable as well. Additionally, BAM students are prevented by university policy from counting any credits that were applied towards both the undergraduate and Master's degrees to a PhD degree; therefore, additional coursework beyond the requirements for the Master's degree will be required.

2.7 Certificate, Non-Degree, and Continuing Education Programs

2.7.1 Mortenson Center in Global Engineering and Resilience Graduate Certificate

Any student currently enrolled in a graduate degree program offered by the College of Engineering and Applied Science at the University of Colorado Boulder may apply for concurrent enrollment in the Mortenson Center in Global Engineering Graduate Certificate. Students interested in completing the Mortenson Center Graduate Certificate must submit a Certificate Enrollment Form signed by the student's academic advisor prior to being able to register for Mortenson courses. General information regarding this graduate certificate can be found here. Please contact Laura MacDonald, Managing Director of the Mortenson Center in Global Engineering and graduate certificate program director, for further information.

2.7.2 Water Engineering and Management Graduate Certificate

The Water Engineering and Management Graduate Certificate complements any graduate degree by providing an in-depth study of the skills and tools demanded by the rigors of the water profession. The courses are available to all graduate students and can be completed on campus or through distance learning. Applicants must meet the admission requirements of holding a baccalaureate degree in engineering or related field and they must convey an understanding of the water profession.

Students interested in completing the Water Engineering and Management Graduate Certificate must submit an Application Form. More information on this program can be found here.

2.7.3 Non-Degree and Continuing Education

Students not currently enrolled as a degree-seeking student at CU Boulder may be eligible to pursue individual graduate coursework. For consideration, students should complete the Online Enrollment Application through the Office of Continuing Education.

2.8 Faculty Advisor

Accepted applicants will be assigned a faculty advisor as part of the admissions process. Each student's initial faculty advisor will be listed in the acceptance letter attached to the email regarding their admissions decision. If a student wishes to change advisors, this will need to be communicated to both the current and new faculty advisors. If both faculty members agree to the change, the student will need to contact the graduate program advisor to have the change officially made in the Buff Portal.

3 Tuition, Fees, and Funding

We recognize that the cost of studying and living in Boulder is an important consideration for students of all levels. Although tuition and fees are set by the University, in the Environmental Engineering Program we attempt to provide as much financial support as possible for our graduate students. This support includes Teaching and Research Assistant (TA and RA, respectively) appointments and hourly employment opportunities. Through these funding opportunities, we attempt to promote educational and research excellence, diversity, and community, while ensuring that graduate students are able to complete their degrees without undue or unforeseen financial burdens.

3.1 Tuition and Fees

Because tuition and fees are charged at variable rates based on residency, program, student status, and number of enrolled credits each semester, a good understanding of the structure of tuition and fees can help to maximize the return on educational investment.

Detailed information on tuition and fees is available at this section of the CU Bursar's Office website. After choosing the appropriate semester on this page, PhD and MS Thesis student tuition rates are listed under the "Graduate" heading, while Professional MS tuition rates are listed under the "Professional Graduate" heading.

Fees are determined based on a number of factors. To determine the fees for which you are responsible, first identify your graduate status on the Graduate School website. Then, a full list of mandatory fees, by graduate status, can be found on the tuition and fees section of the Bursar's Office website.

Important tuition and fee policies to note are:

- Fees accompany even 1 credit hour of tuition and should be considered when calculating educational costs.
- New domestic PhD students, including current CU Boulder students switching into the PhD option, are required to establish Colorado residency within 1 year of starting the PhD option. Further details on the requirements to establish residency are provided in Section 3.2.
- Students must be enrolled in classes during the first semester in which they enter a new degree option, requiring the payment of tuition and fees. For this reason, it is uncommon (although not impossible) for students to start new degree options during summer terms.

Further questions about tuition and fees can be directed to the graduate advisors.

3.2 Establishing Residency

New domestic PhD students who are not already Colorado residents must establish residency prior to the beginning of their second year. Any student wishing to establish Colorado Residency, including MS students, should act immediately. Residency guidelines and instructions on establishing residency are available at the Registrar's Office website. It takes exactly one year to gain residency and residency status may affect funding opportunities. Students should plan to complete the residency petition in their second semester.

3.3 Funding Overview

3.3.1 PhD Students

PhD students are admitted into the EVEN Graduate Program only after they have identified an advisor, who has committed to support the students for the duration of their PhD work. Typical funding available to PhD students is in the form of TA or RA appointments. TA appointments are offered as part of support for specific courses. RA appointments are offered via specific grants. There are also other funding opportunities available through fellowships. University policy requires appointments for all graduate students be administered on a semester-by-semester basis. As such, if students have any questions about future funding, we encourage them to discuss plans with their faculty research advisor early each semester. Additional questions regarding funding can be directed to the graduate advisors.

3.3.2 Master's Degree Students

Students admitted to the Master's degree options, including BAM students, are expected to secure their own financial support. While Research-Based MS students are eligible for TA and RA appointments, these opportunities are limited. There is no formal application process for Research-Based MS students to pursue assistantships.

Students in the Professional MS option are not eligible for TA or RA appointments, but are eligible for hourly employment as graders, administrative assistants, and research assistants. These positions do not provide coverage of tuition, fees, or health benefits, but do provide hourly pay at the rates described in the Student Employment website.

3.4 Assistantships

Assistantships are the primary mechanism for financially supporting PhD students. Recipients are awarded coverage of tuition, 90% of university health plan costs, and a living stipend in the form of a monthly salary. Students on an assistantship are required to work, either in a teaching or research capacity, for up to 20 hours per week (50% FTE) during the fall and spring terms. During the summer term, students are eligible to receive assistantships with a 40 hours per week work commitment and an increased living stipend, although most students remain on a 20 hour per week appointment throughout the year.

All PhD students are eligible for assistantships. While eligible, MS students receive assistantship funding on a very limited basis. Professional MS students are not eligible to receive assistantships from any department. Further information on appointments is available in the CU Graduate Student Appointment Manual.

3.4.1 Teaching Assistantships

Teaching assistants (TAs) play a vital role in supporting the educational mission of the program and the College of Engineering and Applied Sciences. Under the mentorship of faculty, students have the opportunity to develop their pedagogical skills and further enhance their knowledge in the engineering field. Extensive information and resources for TAs are available in Appendix D.

3.4.2 Research Assistantships

In most cases, research assistants (RAs) are funded directly by faculty through sponsored project or grant funding. As such, specific duties will vary based on the nature of the research and the faculty member. In conjunction with the PhD curriculum, research assistantships provide broad exposure to the research process from grant proposal to publication.

In addition to faculty-funded research assistantships, PhD students may be offered one of two special assistantships in recognition of their outstanding potential. All PhD applicants are automatically considered for special assistantships with their application for admission. Current PhD students are not eligible to be considered for special assistantships.

- *Dean's Graduate Assistantship:* This Assistantship is jointly funded by the Environmental Engineering Program and the College of Engineering and Applied Sciences. It is intended to support outstanding PhD students during their first academic year of graduate studies and encourages them to pursue research in key areas of national and global need.
- *Dean's Graduate Innovation Assistantship:* The Dean's Graduate Innovation Assistantship is jointly funded by the Environmental Engineering Program and the College of Engineering and Applied Sciences. It is intended to support outstanding PhD students for four years of graduate studies and provides additional training opportunities and significant visibility across the college.

There can be an unreasonable expectation that completing a PhD only requires 20 hours of research-related work per week. The Graduate Student Bill of Rights and Responsibilities has a specific clause noting that "Research that directly contributes to the timely completion of a graduate student's thesis or dissertation does not fall under this rule."

3.4.3 Compensation Rates

Monthly stipend compensation rates for student assistantships on a 50% appointment (20 hours per week), based on PhD student status, are the following:

- *Pre-comprehensive exam:* $3224 per month
- *Post-comprehensive exam:* $3466 per month

These rates are subject to review or update each academic year. Additional detail on these PhD student statuses is available in Chapter 4. MS students with RA/TA appointments are paid at the pre-comprehensive exam rate.

3.5 Hourly Employment

The EVEN Program offers several opportunities to students in the form of hourly employment. Students in hourly positions may engage in either course, research, or administrative support. Hourly pay for a research project requires the commitment and support of a faculty advisor.

Hourly positions typically span 5-20 hours per week during the academic year and up to 40 hours per week during the summer. Students in hourly positions are not permitted to work more than 20 hours per week during the academic year or 40 hours per week during the summer. Compensation rates vary by position.

Hourly employment is available for any graduate student who is not funded through a TA or RA position or similar external funding, though requirements can vary based on position.

The graduate program will reach out to students, via the graduate student listserv, when applications are open. Selection for these positions can be competitive due to semester-to-semester variance in the number of positions available.

Occasionally, hourly employment opportunities arise on an ad-hoc basis. Any such opportunities will be marketed to students through the graduate student listserv. Unlike assistantships, hourly employment does not cover tuition, fees, or health insurance.

3.6 Scholarships and Fellowships

A short list of funding opportunities that EVEN students have applied for in the past are listed below. This list does not encompass all external funding opportunities. Faculty advisors may also have more information about external funding opportunities for specific fields of study.

- National Science Foundation Graduate Research Fellowship
- National Defense Science and Engineering Graduate Fellowship
- NASA Earth Science Fellowship

The graduate school provides an extensive list of funding opportunities found here.

3.6.1 Graduate School Dissertation Completion Fellowship

This fellowship is offered by the CU Boulder Graduate School and is intended to provide outstanding PhD candidates with financial support to assist in the process of completing their doctoral dissertations. The fellowship consists of full support for one academic semester (either fall or spring of the following academic year) and includes a monthly stipend equal to that of the current 50 percent Graduate Part-Time Instructor (GPTI) salary, tuition coverage of up to five dissertation hours, mandatory fees, and coverage under the student gold health insurance plan. More information regarding eligibility and the application process for this fellowship can be found on the Graduate Students Grants page of the CU Boulder Graduate School website.

3.6.2 Graduate School Student Research Grants

The Graduate School administers two grant funds that support the research, scholarship, and creative work of graduate students from all departments. Made possible by the generosity of our donors, the Graduate School administers these grant funds, up to $1,200, to support the research, scholarship and creative work of graduate students from all departments.

3.6.3 GPSG Graduate Excellence Awards

The Graduate and Professional Student Government (GPSG) awards Teaching Excellence Awards (TEA), Collegiality and Scholarship Excellence Awards (CSEA), and Diversity, Equity, and Inclusion Excellence Awards each academic year during the spring semester. Each award comes with a monetary prize of $400 paid to recipients through a scholarship applied to their student accounts.

These awards are intended to recognize broad definitions of teaching, scholarship, and DEI work since they know that not all students have the same opportunities. Many applicants are TAs, GPTIs, or RAs or involved in organized DEI groups on campus, but any student is welcome to apply.

3.7 Travel Awards

There are many travel award opportunities available to graduate students. Deadlines for these grants are communicated via the graduate student listserv whenever possible and can be checked at the links below. Please investigate university travel procedures prior to incurring costs because there are university-specific restrictions that prohibit certain expenses on personal credit cards, such as flights.

3.7.1 GPSG Travel Grant

The Graduate and Professional Student Government (GPSG) awards funding (up to $500) to individual graduate students each academic semester to support travel to academic conferences, meetings, or other events related to the student's studies.

3.7.2 Graduate School Travel Grant

This grant has three application cycles per year for domestic (including Mexico and Canada) and international (excluding Mexico and Canada) travel. The dates for the application cycle can be found here.

3.7.3 College of Engineering Student Travel Support

The College of Engineering and Applied Science (CEAS) provides support to students traveling to conferences and other events, usually matching program funding. Please refer to this page for detailed information on how to apply. Graduate students must first apply for, and be denied, funding through the Graduate School before submitting this application.

3.8 Taxes

Graduate students are responsible for taxes according to the rules and regulations of the Internal Revenue Service (IRS). Graduate advisors and financial staff in the Environmental Engineering Program are not

trained or able to provide advice on taxes, but substantial info is available through the Bursar's Office. Please note that there may be special requirements for international students; more information can be obtained here.

3.9 Pre-Enrollment Pay Policy

Faculty will occasionally invite incoming PhD or Research-Based MS students to begin working in their lab prior to the student's first term of enrollment at CU Boulder. In these cases, students are eligible to be paid as an hourly employee but are not eligible for an RA appointment. The hourly rate available may change from year-to-year.

3.10 Important Note on Full-Time Status and Financial Aid

The Graduate School's definition of full-time student status may differ from certain financial aid requirements. Applicants with external funding or deferred loans should confirm enrollment requirements with the financial aid office and sponsors, as these may exceed Graduate School standards.

4 PhD Degree

4.1 Overview

The Environmental Engineering PhD Degree option is available to students who are entering graduate studies for the first time (i.e., with a BS or BA degree), as well as to those who already have a Master's of Science (MS) degree. Many incoming PhD students will have degrees in engineering, although students from other fields, such as physics, mathematics, biology, and chemistry are also routinely admitted and must acquire any missing coursework during the course of their PhD studies. Students graduating with a PhD from the CU Boulder Environmental Engineering Program are expected to have extensive fundamental knowledge in their field of study, in addition to being experts in their area of research.

At the time of application, PhD students may choose from four research focus areas to help guide the selection of courses. These are the Core Research Areas of the EVEN program:

- Air Quality, Energy, and Climate
- Aquatic and Terrestrial Environmental Systems
- Drinking Water, Wastewater, and Water Reuse
- Global Engineering and Resilience, which is usually tied to the Mortenson Center in Global Engineering and Resilience

4.2 PhD Timeline

A PhD student entering without prior graduate coursework will take around 5 years, on average, to complete the PhD degree. However, it is not uncommon for students to finish earlier or later than this average. A student entering the PhD option with prior graduate coursework from another university may be eligible to transfer up to 21 credit hours to CU Boulder and can typically finish in 3-4 years. A student who is working full-time in their field may take significantly longer to complete their degree. Regardless of the time taken to complete the PhD, the primary emphasis is on remaining at CU Boulder long enough to complete high quality research that satisfies the requirements of the PhD dissertation and defense. If a student is nearing the completion of their 6th year in the PhD option, they are required to file a time-limit extension with the CU Boulder Graduate School via this online form. Please contact the graduate advisors for more information on requesting a time limit extension.

The major milestones of the PhD program include:

1. Acceptance into the program
2. Preliminary exam (during the second year in the program)
3. Comprehensive exam (after all coursework is completed and one year before the PhD defense)
4. PhD defense

As the requirements towards the PhD degree are completed, PhD students will advance from pre-preliminary exam status to post-preliminary exam status, then to post-comprehensive exam status. Milestones required to achieve each status are the following:

- *Pre-preliminary exam status (Pre-prelim):* Students enter the PhD degree option with pre-prelim status and will typically remain at this status through their first three semesters at CU Boulder.
- *Post-preliminary exam status (Post-prelim):* Completion of Quantitative analysis requirement and the oral preliminary exam. PhD students typically advance to this status during their 2nd year at CU Boulder. This status is also sometimes referred to as "Pre-Comprehensive Exam" status.
- *Post-comprehensive exam status (Post-comps):* Completion of the comprehensive exam and the course requirement, typically by the end of year 4 at CU Boulder.

4.3 Requirements

4.3.1 Course Requirement

PhD students must complete a minimum of 30 graduate-level credits at the 5000 level or higher plus 30 research credits. In order to receive credit towards the PhD degree, students must receive a grade of at least B- in each course taken. Courses in which a grade below B- is achieved cannot be counted towards the PhD course requirement. Generally, courses taken on a Pass/Fail basis cannot count towards the PhD course requirement. Students must have a cumulative 3.0 GPA in order to be eligible for graduation.

4.3.2 Graduate Seminar Requirement

In addition to the course requirements, Environmental Engineering PhD students are expected to attend the Environmental Engineering Graduate Seminar throughout their graduate studies, whenever they are able to attend. Attendance to the seminar series is a professional development activity that the program provides to the students and is therefore an integral part of the graduate experience. General information regarding the graduate Seminar Series and upcoming seminars can be found on the EVEN Seminar Series webpage.

4.4 Transfer Credit

Note that students do not need an MS degree to be admitted to the PhD option, but students who already have an MS degree, or have completed eligible graduate level coursework, may transfer up to 21 hours of credits towards the PhD course requirements. More information is available on the Transfer of Credit webpage from the CU Boulder Graduate School. To transfer credits, students must fill out and submit this form to EVEN graduate program advising team. Students must also submit an official transcript showing the credits they wish to transfer. If an official transcript with these credits was not submitted when starting the PhD degree option, a new transcript will need to be submitted.

Note that requests for transfer credit can only be made after completing 6 credits of graduate level coursework at CU Boulder with a 3.00 GPA. These requests should be submitted as soon after completion of this 6-credit requirement as possible. Typically, this means that transfers of credit are processed during the second semester of PhD study at CU Boulder. Additional information on transfer of credits is available in Section 6.5.

4.5 Preliminary Exam

All PhD students must successfully pass the Preliminary Exam, which is intended to assess the potential to successfully complete a PhD in environmental engineering. The objective of the exam is to evaluate a prospective PhD candidate's understanding of aspects of the fundamental areas for environmental engineering and the need for additional courses or other actions that may bolster this understanding.

The Preliminary Examination emphasizes the fundamental topic areas that pertain to the student's planned research topic. The goal is to have the students advance to their PhD Comprehensive Exam with an appropriate level of knowledge regarding their topic of research. The Fundamental Topic Areas in the

Environmental Engineering Program are:

- Contaminant fate and transport
- Environmental chemistry
- Environmental microbiology
- Pollution control and treatment
- Hydrology and water resources
- Aquatic ecology
- Environmental sustainability

Most of these topic areas can be applied to multiple environmental compartments (i.e., air, drinking/wastewater, natural waters, etc.).

4.5.1 Timing of the Preliminary Exam

The exam should be taken during the student's second year in the PhD program, after the completion of the relevant courses in the fundamental areas, including the Quantitative analysis requirement. The preliminary exam may be scheduled during the fall or spring semester of the academic year. PhD students must pass this Preliminary Examination in order to continue in the Doctoral Program. This exam is conducted before the student is allowed to move on to the comprehensive exam. The timeline overview for this exam follows:

1. At the start of the second year in the program: The PhD student requests to take the prelim exam by notifying the EVEN Graduate Director by email. The email must include:
   - the name of the student's PhD advisor,
   - the two fundamental topic areas for the exam,
   - a brief description of the research planned for the PhD degree (100 – 200 words),
   - an unofficial transcript showing graduate coursework at CU Boulder,
   - if needed, a request for an external examination committee member.
2. The Graduate Director establishes a prelim committee and notifies the student and PhD advisor.
3. Schedule the exam with the faculty assigned to the exam committee (at least one month in advance) and book the room (for a two-hour time slot),
4. Prepare a PhD dissertation prospectus and deliver it to the exam committee (at least two weeks in advance).
5. Present and defend the prospectus at the scheduled exam (two-hour exam time, including a 15-min presentation),
6. Immediately after taking the exam, the student must contact the EVEN program advisors for a DocuSign Preliminary Exam Approval Form, which will be routed to all committee members for their signatures.
7. Depending on the result of the exam, progress toward the Comprehensive Examination or fulfill requirements specified by the exam committee.

4.5.2 Preliminary Examination Committee

The Environmental Engineering Graduate Committee will form an examination committee for each student planning to take the preliminary exam. The examination committee will consist of three faculty members – the student's PhD advisor and at least one other Environmental Engineering program faculty familiar with the fundamental areas to be examined. If appropriate, the third member of the committee may be from outside the EVEN program. The student and advisor may include in the request for examination a request for an outside faculty member.

4.5.3 The Preliminary Prospectus

The Preliminary Examination consists of two parts: a PhD dissertation prospectus and an oral presentation. For the PhD dissertation prospectus, the student will write a five-page (double-spaced, 12-point Times New

Roman font, 1" margins) document that focuses on a potential dissertation topic and addresses research questions in at least at least two of the fundamental areas listed above.

The following elements should be included in the prospectus:

1. Problem Statement and Background (3 pages)
2. Research Goals and Objectives (<1 page)
3. General Approach (focusing on a brief description of the steps that will be considered in order to conduct the research, <1 page)
4. Significance and environmental relevance of the research to be pursued (<1 page)
5. References (not included in the 5-page limit)
6. Appendix: A list of the student's Graduate Coursework to date, with grades.

The PhD dissertation prospectus should be planned with and reviewed by the student's PhD advisor. The student should also identify and include in the prospectus the two fundamental areas that are relevant to their research. The student should expect questions from the committee in these, but not limited to, fundamental areas.

For the oral presentation, the student will deliver a presentation of no more than 15 minutes based on the prospectus. This will be followed by an oral examination by a faculty committee. The combination of the presentation and oral examination will take approximately two hours.

4.5.4 Preliminary Exam Results

At the conclusion of the preliminary examination, the examination committee will evaluate the prospectus and the oral presentation. There are three possible outcomes for the preliminary examination: Pass, Conditional Pass, and Fail.

Pass

A "Pass" result accepts the prospectus and oral examination, and the student moves on to the next step of the PhD program, the comprehensive examination (i.e., the PhD thesis proposal). This result may be accompanied by recommendations from the committee. These recommendations are usually in the form of requests to review specific topics or even audition a class. If there are recommendations, the student will work with his or her advisor to address these. Once the recommendations have been addressed, the student must submit a brief summary to the examination committee summarizing the steps that were taken to address them. The recommendations should be addressed within six months of the exam date and ideally before the comprehensive proposal is submitted.

Conditional Pass

A "Conditional Pass" result finds some faults with the prospectus or oral examination that are correctable with revisions to the prospectus, additional course work, or some other conditions. The student will work with his or her advisor to address these conditions. Once these conditions are satisfied, the student may re-take the preliminary exam. Following a "Conditional Pass" result, the Preliminary Examination may be re-taken only once. The second examination will result in a "Pass" or "Fail" result and needs to be taken within 6 months of the original exam date. If additional time is needed before the second examination (i.e., more than six months), the student must submit a written request to the examination committee detailing the reasons why additional time is required. This written request must be submitted before the deadline to re-take the exam has passed. The exam needs to be re-taken before the comprehensive exam is scheduled.

Fail

A "Fail" result finds major faults with the prospectus and oral presentation that are not considered correctable by revision or additional coursework and the student will not continue in the PhD program.

After the preliminary examination, the examination committee will complete the preliminary examination form and return it to the EVEN Graduate Program Advising Team, and it will be filed in the EVEN program

for official recording of the student's progress in the PhD program.

4.6 Comprehensive Exam

The Comprehensive Exam entails preparation of a written Thesis Proposal (Comprehensive Proposal) and defense of the proposal before the student's dissertation committee. An Environmental Engineering PhD degree requires depth of knowledge in the dissertation/research area, as well as breadth of knowledge across the environmental engineering curriculum. Consequently, the Comprehensive Exam is designed to test student knowledge of their proposed research area, and any general knowledge in the field. It is also intended to evaluate whether a student's proposed research project is original and creative work, whether it will make a significant impact in the field, and whether it will qualify for publication in quality peer-reviewed journals. The exam is also an opportunity to demonstrate an ability to present scientific concepts orally. In short, the Comprehensive Exam serves as the gateway to the next phase of the doctoral program: completion of a dissertation.

4.6.1 Comprehensive Exam Timeline

Timing for the exam is determined by the student and their faculty advisor but is normally scheduled after all course work is completed and at least one year before the anticipated date of PhD completion. The student must have passed their Preliminary Exam before scheduling their Comprehensive Exam. Students must have also completed, or have a specific plan to complete, their coursework requirement (including credits transferred from another institution) prior to completing their Comprehensive Exam. The exam should be scheduled by the student, at least a month in advance. A timeline overview follows:

1. After the main coursework is completed (or planned), and at least one year before the PhD defense: Define your comprehensive exam committee along with your research advisor.
2. At least one month in advance, schedule the exam with the committee and book the room (for a three-hour time slot). This exam is closed to the public.
3. At least one month in advance, contact the EVEN Graduate Advising Team to confirm their committee members are eligible to sit on an exam committee. The advisors will walk the student through any necessary paperwork at this stage.
4. Once the Graduate Advising Team has confirmed the committee members, and with at least two weeks advance, the student must prepare the Doctoral Comprehensive Exam Form. This is a required document by the Graduate School that confirms your committee meets all requirements ahead of your exam. It will later act as the document for collecting exam results and committee signatures (initiated by the Grad Advising Team).
5. At two least two weeks in advance of the exam, prepare a PhD Comprehensive Proposal and deliver it to the exam committee. If the proposal needs to be submitted after the two-week deadline, the student must seek approval from the committee to do so. Keep in mind that most times the committee will agree to an extension, but it is still good practice to ask for the extension.
6. Present and defend the proposal at the scheduled exam (2–3-hour exam time, including a 45-min presentation).
7. Upon successfully passing the PhD Comprehensive Exam, complete the Candidacy Application for an Advanced Degree.
8. Depending on the result of the exam, progress toward the PhD Defense or fulfill requirements specified by the exam committee.
9. After the proposal is approved, the student must also give a presentation on their proposed work at an open seminar as part of the Environmental Engineering Seminar Series.

4.6.2 Comprehensive Exam Examination Committee

For the comprehensive exam and your ensuing research, the student will select a thesis committee with the guidance of their faculty advisor(s), consisting of at least five faculty members able to contribute to the

successful completion of the research:

- One of the committee members is the student's PhD advisor.
- At least three of the members must be EVEN program or affiliate faculty.
- At least one committee member must be outside the student's major department. This person can be from another institution. It is recommended that the selected person have a PhD degree, but the Graduate School will accept a non-PhD member with a suitable memo of support.

Once the committee is selected and presented with the comprehensive proposal, the composition of the thesis committee can only be altered with the consent of the PhD advisor, the committee member in question, the remainder of the thesis committee, and the Graduate Committee of the EVEN program.

Once a committee is selected, the next steps are to schedule the exam and develop a comprehensive proposal.

4.6.3 The Comprehensive Proposal

The student must develop a research proposal, which outlines the hypotheses and testing of their future research. The proposal needs to be detailed enough as to provide the committee the opportunity to conduct a detailed evaluation of their proposed research. The proposal must include the following sections (page counts for each section are approximate recommendations, not requirements):

1. **Background and Identification of Research Needs (5-8 pages)**

   In this section, you must show the significance of your research topic. Answer the question, "Why should anyone care about this research?" Then, you must succinctly review the existing literature on your research topic and identify the research questions that remain to be answered. The literature review should not be simply a "listing" of relevant conclusions from previous research; instead, you must demonstrate that you are not only aware of the literature on your subject, but that you are also able to critically evaluate it and use it to identify future research needs.

2. **Hypotheses (1 page)**

   The hypotheses are the "scientific positions" you have taken on the basis of literature review and preliminary work. The hypotheses should be stated as scientific opinions on the unanswered questions raised in the previous section. As such, the hypotheses are the basis of your remaining research and the most important component of your proposal.

3. **Preliminary Results (optional)**

   You may include a brief description of preliminary results (if you have any) that have helped you identify future research needs in your proposal. Your results should be presented in the same manner as the literature reviewed in the previous section because your preliminary results are already part of the scientific knowledge leading you toward future work. This section could also be part of the discussion of one or several of the hypotheses.

4. **Research Plan (8-10 pages)**

   The plan for future research should comprise the bulk of your proposal. The research plan should be driven by the need to test the hypotheses to arrive at answers to the unanswered questions. The plan should be organized into a set of experiments with separate descriptions of materials, methods, data analysis, and expected results. You should anticipate potential experimental outcomes and describe how the experiments will test the hypotheses.

5. **Tentative Schedule and Budget (1 page)**

   You should include a realistic schedule and budget for your research plan. Remember that the graduate school requires at least three semesters of residence prior to the defense of your thesis. The budget should include cost estimates for Salary, Equipment, Expendable Materials and

Supplies, and Travel (for field sites).

6. **References**

   A list of references cited in the text should be included with the following information: Authors, Publication Date, Title, and Source. Present the references in the format used by a journal of your choice. Be complete and accurate.

The entire proposal is limited to 20 pages (double-spaced, 12-point Times Roman font, 1" margins) including tables, figures, schedule, budget, and references. Tables, figure captions, schedule, budget, and references should be single-spaced. The proposal should be well-written and neatly presented. Tables and figures should be integrated into the text rather than at the end of the file. Ask your faculty advisor or fellow students for a past proposal on which to model your proposal.

4.6.4 The Comprehensive Exam Presentation

The presentation should be for a maximum of 45 minutes, and slides or other presentation support is permitted. This presentation should focus on the major hypotheses of the research and how they will be tested. During and after the presentation, the thesis committee will ask questions about the proposed research. After the question period, the committee will privately discuss approval or disapproval of the proposal.

4.6.5 Comprehensive Examination Form

Once the student has determined their faculty committee, they should contact the EVEN graduate advisors to confirm each member's eligibility to participate in the exam process. After this step, students should prepare the Graduate School's Doctoral Comprehensive Exam form. This will populate a DocuSign to automatically collect committee signatures once your exam has taken place.

4.6.6 Comprehensive Exam Results

Approval of the proposal is based on the originality and feasibility of the proposed research and the clarity of the hypothesis-experiment relationships. At the conclusion of the comprehensive examination, the examination committee will evaluate the proposal and the oral presentation. There are three possible outcomes for the comprehensive examination: Pass, Conditional Pass, and Fail.

Pass

A “Pass” result accepts the comprehensive proposal and oral examination, and the student moves on to the next step of the PhD program, preparing for the PhD dissertation defense. Much like in the Preliminary Exam, this result may be accompanied by recommendations from the committee, which can include edits to the proposal such as additional literature review or adjustments to the experimental plan.

Once a student successfully passes their Comprehensive Exam, their next step is Applying for Admission to PhD Candidacy. This is done by completing the Candidacy Application for an Advanced Degree form at the Graduate School website.

Conditional Pass

A “Conditional Pass” result finds faults with the research proposal or oral examination that are correctable with additional work. Depending on the consensus of the committee, the student may be required to:

- Make selected changes to your proposal as specified by the committee members OR
- Completely revise and resubmit your proposal (with or without presenting it again)

Revision requirements would include a time period within which the revisions must be completed. Until your revised proposal is approved by the committee, you should not initiate further research.

Fail

A “Fail” result finds major faults with the PhD proposal and oral presentation. This requires major revisions to the written proposal and for the oral examination to be retaken. Students who fail the Comprehensive Examination may attempt it once more after a period of time to be determined by the examination committee. A student who fails the Comprehensive Exam for the second time will not continue in the PhD program.

4.7 PhD Dissertation

4.7.1 Dissertation Hour Requirement

In addition to coursework, PhD students are required to complete 30 PhD dissertation hours. Students are not able to register for dissertation credits on their own. Thesis, dissertation, and independent study credits can only be added by the Graduate Advisor with the approval of the faculty. Thesis and dissertation hours should be requested via the Course Agreement Form prior to the start of the semester.

The following Graduate School rules apply to enrollment in dissertation hours and should be considered when determining how many dissertation hours to register for each semester:

- PhD students must be registered as full time, regular degree-seeking students at CU Boulder for a minimum of 5 dissertation hours during the semester in which they defend the dissertation.
- A student may not register for more than 10 dissertation credit hours in any one semester, including summer.
- A PhD student is required to register continuously as a full-time student for a minimum of five 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.
- Prior to passing the comprehensive exam, PhD students are considered by the Graduate School to be full-time if they are registered for at least 1 dissertation credit per semester.

There is little advantage to a student registering for more than 30 dissertation hours during their PhD, and students should attempt to complete this requirement in the semester in which they defend. Please contact the graduate advisors for assistance with planning dissertation hour enrollment.

4.7.2 PhD Dissertation Timeline

While specific dates for deadlines can be found at the Graduate School website, the general timeline for these requirements is as follows:

1. Students should coordinate scheduling the examination with the committee and should book the room for a two-hour period. This exam is open to the public.
2. The final dissertation title submission is due about two months into the final semester.
3. The Doctoral Examination Form should be submitted to the graduate advisors at least three weeks prior to the defense.
4. The written dissertation should be sent as a single pdf file by email to all members of the defense committee, as well as to the graduate advisors, at least two weeks before the defense. This deadline is intended to allow the defense committee sufficient time to review the dissertation and to formulate questions and feedback. Prior to the defense, students should contact all members of the committee to assess their areas of interest and concerns. This will help students anticipate any questions that will be asked.
5. The PhD dissertation defense must take place before the Graduate School deadline for each semester. It comprises a 2-hour exam period which includes a 40-50-minute presentation.
6. One week after the defense deadline, students must:
   - Electronically submit the written dissertation
   - Upload the Thesis Approval Form as a supplemental file with the thesis in order for the submission to be complete.

4.7.3 PhD Dissertation Committee

The examination is conducted by a committee consisting of at least five people:

- One committee member (the committee chair) is the PhD adviser.
- One committee member must be outside the student's major department.
- At least three of the members must be EVEN program or affiliate faculty.

The chair and outside member of the committee must have regular or tenured Graduate Faculty appointments. More than one dissenting vote disqualifies the candidate in the final examination. The committee chair and a majority of the committee must be present for the examination.

4.7.4 Written PhD Dissertation

The written dissertation must comply with Graduate School rules and procedures in terms of format and submission. Full details on formatting requirements, as well as deadlines and resources to assist in finalizing your dissertation are available here.

The dissertation title appears on official university transcripts and must be submitted to the Graduate School in addition to the physical signature page from the dissertation. Students are also required to submit the full written dissertation electronically at the ProQuest website.

4.7.5 PhD Dissertation Defense

Before completion of the PhD degree, students must have their dissertation accepted for defense by the thesis committee. Students must pass a dissertation defense, which is a final examination on the dissertation and related topics. In the defense, students are expected to explain their research clearly and concisely, and to discuss how it relates to other research in the field. This is an opportunity for recognition of completed doctoral work. It is also an opportunity for discussion and formal evaluation of the dissertation.

Students should coordinate scheduling the examination with the committee and should schedule the examination for two hours:

- First, the student must present 45–50-minute professional presentation to the examination committee and an audience of other students, faculty, and the public.
- After the presentation, audience questions are entertained.
- The final part of the examination is closed to only the student and the examination committee, when questions are answered covering the field of concentration and related fields.

More than one dissenting vote among the committee constitutes an unsatisfactory exam. A student who fails the exam may attempt it once more after a period determined by the committee.

PhD students must be registered as a full time, regular degree-seeking student, for a minimum of 5 dissertation hours during the semester in which they pass the final exam. If a student is unable to meet the Graduate School's posted defense deadline for that semester, they should consult with their faculty advisor about graduation options.

4.8 Application for Graduation

To graduate with the PhD degree, students must complete all course and dissertation hour requirements, as well as write and defend their dissertation. To graduate with the PhD degree, students must apply online through their myCU portal. On the "Student" tab, select the "Apply for Graduation" link under "Academic Resources. The application for graduation is due a few weeks after the start of the desired graduation semester. Full details on requirements and deadlines can be accessed on the Graduate School Doctoral Graduation webpage. Information regarding upcoming graduation deadlines can also be found on the Registrar's Website. If you did not submit the Candidacy Application for Advanced Degree when completing the comprehensive examination, it must be submitted prior to applying for graduation online.

4.9 Annual Progress Report

The purpose of this report is to evaluate the overall PhD student experience within the Environmental Engineering Program over the previous academic year. This report enables an annual performance assessment meeting between PhD students and their research advisor. Although not required, to help guide in self-reflection, we recommend that students prepare an *Individual Development Plan* (IDP) in conjunction with the annual progress report and edit/review it annually. The IDP is included in this manual in Appendix C. Individual Development Plan.

This report is to be filled annually in the Fall semester, starting in the second year of a student's PhD progress. This report is distributed by the EVEN graduate director as two Google Forms, one to the PhD student and one to the student's advisor. Results of this survey are shared between the student and their research advisors. If the student's progress is found to be "unsatisfactory" by their PhD advisor, the Graduate School's Academic Recovery Plan (ARP) is required to be completed.

4.10 Master's Degree as a PhD Candidate

Although a Master's degree is not required for a PhD, students can earn one while working toward the PhD. This is accomplished by applying for an MS degree when 30 graduate course hours have been completed and all requirements described in Chapter 5 are met. PhD students must notify the graduate program advisor and their faculty advisor within the first two weeks of the semester in which they intend to graduate with the MS degree.

5 Master's Degree

5.1 Overview

Master's degree students in the CU Boulder Environmental Engineering Program take graduate courses and participate in research and/or project-based learning as part of three different degree choices, each leading to a Master of Science (MS) degree in Environmental Engineering.

- *Professional MS Option:* This coursework-focused degree option emphasizes both project-based and curriculum-driven learning. It is targeted at working engineers and undergraduates considering, or already pursuing, a career in industry, but can also be completed with the ultimate goal of matriculating in a PhD degree option.
- *Research-Based MS Option:* This option is intended for MS students interested in a short-term research experience, leading to the preparation and defense of a research-based thesis. The program emphasizes education through high quality research for students interested in careers in industry, the public sector, and academia. In order to enroll in the Research-Based MS Option, students must first secure a faculty advisor.
- *Bachelor's Accelerated Master's (BAM) Program***:** Current undergraduate students in environmental engineering may pursue either a Professional MS or Research-Based MS degree through this option.

Many incoming MS students will have prior degrees in some type of engineering, although students from other fields, such as physics, mathematics, biology, and chemistry are also routinely admitted and can acquire any missing background material during the course of their MS studies.

5.2 Mission Statement

The mission of the Environmental Engineering Graduate Program is to equip students with advanced understanding of the principles of environmental science and engineering, including deep knowledge in their field of specialization, enabling them to contribute to world-leading research and specialized professional practice that helps protect human health, welfare, and the environment.

5.3 Timeline

Most Professional MS students complete the requirements for the degree in 2 years of full-time study, although it is not uncommon to graduate in 3 semesters or to take more than 2 years, particularly if one is also working full-time.

Research-Based MS students typically require at least 2 years to complete their degrees. BAM professional MS students typically require two or three additional semesters of study beyond completion of their

undergraduate degrees.

Full-time study is defined by the Graduate School as enrollment in 5 or more graduate credits per semester. Part-time study is permissible throughout the duration of the program, or for select semesters, if the following Graduate School requirements are met:

- Full-time enrollment for at least 2 semesters; or
- Part-time enrollment for at least 4 semesters; or
- Full-time enrollment for 1 semester and part-time enrollment in 2 or more semesters.

Master's students, whether part- or full-time, must complete their degree requirements within 4 years of their first semester of enrollment. If more time is needed, students can request a time-limit extension from the Graduate School by filing a time-limit extension via this online form. Please contact the graduate advisors for more information on requesting a time limit extension.

5.4 Professional MS Degree Requirements

There are four tracks available to students pursuing the Professional Master's Degree:

1. General Environmental Engineering
2. Air Quality, Energy, and Climate
3. Water Reuse
4. Global Environmental Engineering

All Professional MS students must complete the following coursework requirements to be eligible for graduation:

- 30 graduate-level credit hours must be completed with at least a grade of C in each course, with a minimum cumulative GPA of 3.00.
- Elective courses determined in consultation with the student's faculty advisor.
- For students who have undertaken prior graduate study, up to nine hours of relevant graduate-level coursework may be transferred to meet the course requirements for the MS degree, following the rules established by the Graduate School for transfer credit.

Professional MS Final Exam

Students completing the Professional Master's degree, or generally a coursework-only track, must complete the Graduate School's Final Exam process according to deadlines in their final semester of graduate study in order to graduate. Students must assemble an exam committee of three EVEN faculty members including the student's faculty advisor. The committee is responsible for ensuring the student has completed a satisfactory curriculum for their degree and area of study. The student is responsible for providing an unofficial copy of their transcript for review, ensuring the committee is aware of how they met course requirements, and answer any questions they may have about their curriculum alongside their faculty advisor. Please review the MS Exam Form and connect with the EVEN Graduate Advising Team with any questions on this process.

5.5 Research-Based Master's Degree Requirements

Once a faculty advisor has been found, students may be admitted into the Research-Based Master's Degree option from the Professional MS, BAM, or EVEN PhD options. Research-Based Master's Degree students should consult with their thesis and faculty advisors for course recommendations. Course selection depends on a student's chosen area of emphasis, which is chosen from the Core Research Areas of the EVEN program:

- Air Quality, Energy, and Climate
- Aquatic and Terrestrial Environmental Systems
- Drinking Water, Wastewater, and Water Reuse
- Global Engineering and Resilience, which is tied to the Mortenson Center in Global Engineering and Resilience

All Research-Based Master's Degree students must complete the following requirements to obtain the MS degree:

- 24 graduate-level credit hours must be completed with at least a grade of C in each course, with a minimum cumulative GPA of 3.00.
- Elective courses determined in consultation with the student's faculty advisor.
- For students who have undertaken prior graduate study, up to nine hours of relevant graduate-level coursework may be transferred to meet the MS degree course requirements, following the rules established by the Graduate School for transfer credit.
- A minimum of four and maximum of six semester hours of thesis credit, with a sum of course and thesis credit of at least 30 hours.

5.5.1 Graduate Seminar Attendance

In addition to the course requirements, Environmental Engineering Research-Based MS students are expected to attend the Environmental Engineering Graduate Seminar throughout their graduate studies, whenever they are able to attend. Attendance to the seminar series is a professional development activity that the program provides to the students and is therefore an integral part of the graduate experience. General information regarding the graduate Seminar Series and upcoming seminars can be found on the EVEN Seminar Series webpage.

5.5.2 Faculty Advisor Selection

Students interested in pursuing a Research-Based Master's Degree are required to select a faculty advisor. Interested students can visit our website to find out more about our faculty and their research interests, as well as information for how to contact them. A student must be accepted into the advisor's research group, which is dependent on whether they have space in their group and interest in taking on new members.

5.5.3 MS Thesis Hours

Students are required to complete a minimum of 4 and maximum of 6 semester hours of thesis credit, with a sum of course and thesis credit of at least 30 hours.

5.5.4 Written Thesis

Students must satisfactorily complete and defend a Master's Thesis under the supervision of a research advisor who is a member of the Environmental Engineering Faculty. The written thesis must comply with Graduate School rules and procedures in terms of format and submission. Full details on formatting requirements are available here, and deadlines and resources to assist in finalizing your thesis are available here. Students are required to submit the full written thesis electronically at the ProQuest website.

5.5.5 Thesis Defense

Students must pass a thesis defense, which is a final examination on the thesis and related topics. In the defense, students are expected to explain their research clearly and concisely, and to discuss how it relates to other research in the field. This is an opportunity for recognition of completed Research-Based MS research. It is also an opportunity for discussion and formal evaluation of the thesis. Failure to defend prior to the end of the proposed final semester may result in the need to register for additional course credits during another semester.

All required forms should be submitted on time according to the following deadlines:

- *To the Department:* The Master's Final Examination Form should be submitted to your faculty advisor at least 3 weeks prior to the defense.
- *To the Committee:* The written thesis should be sent as a single pdf file by email to all members of the defense committee, as well as to the graduate advisors, at least 1 week before the defense. This

deadline is intended to allow the defense committee sufficient time to review the thesis and to formulate questions and feedback. Prior to the defense, students should contact all members of the committee to assess their areas of interest and concerns. This will help students anticipate any questions that will be asked.

Master's students must be registered for at least 1 credit hour during the semester they do the final exam or thesis defense. The examination is conducted by a committee appointed by the chair of the major department and approved by the Dean of the Graduate School, and consists of at least three people, two of which must be EVEN faculty.

The chair of the committee must have a regular or tenured Graduate Faculty appointment. The other committee members must have either regular or special Graduate Faculty appointments. Please contact the Environmental Engineering Program graduate advisors as soon as you form your committee, and no later than 6 weeks prior to your examination, to verify that the necessary appointments are in place. It takes 2-4 weeks to process a faculty appointment. Students should submit a recent CV for any committee member who does not have a faculty appointment to the graduate advisors as soon as possible.

Students should coordinate scheduling the examination with the committee and should schedule the examination for two hours. The examination is wholly oral and open to the public for the first portion of the examination. Students must prepare a professional oral presentation that covers what was written in the thesis. This presentation should be 45-50 minutes in length. This presentation shall be delivered at the final examination to the examination committee. The oral presentation portion of the examination is open to all students and faculty. Questions are entertained at the end of the presentation. The final part of the examination is closed to only the student and the examination committee. During this portion, questions are entertained that cover the field of concentration and related fields. More than one dissenting vote among the committee constitutes an unsatisfactory exam. A student who fails the exam may attempt it once more after a period of time determined by the committee.

More than one dissenting vote disqualifies the candidate in the final examination. The committee chair and a majority of the committee must be present on the Boulder campus for the examination.

5.6 Bachelor's-Accelerated Master's (BAM) Program

The BAM program offers currently enrolled CU Boulder undergraduate students the opportunity to receive both Bachelor's and Master's degrees in a shorter period. Students receive the Bachelor's degree first, but begin taking graduate coursework as undergraduates, typically in their junior year. Because some courses are allowed to double count for both the Bachelor's and the Master's degrees, students receive a Master's degree in less time and at a lower cost than if they were to enroll in a stand-alone Master's degree program after completion of their Baccalaureate degree. In addition, students staying at CU Boulder to pursue a BAM program can continue working with their established faculty mentors. Admissions requirements and procedures for the BAM program are outlined in Chapter 2.

Early in the final semester of the undergraduate degree, students must apply to advance to graduate status by completing the Master's continuation form. This form is due by February 1 for spring graduates, March 1 for summer graduates, and October 1 for fall graduates. Students will matriculate into the master's option without additional departmental review provided they meet the basic continuation requirement of a 3.00 cumulative GPA for a Master's degree in environmental engineering.

Once students enter the BAM program in EVEN, they are treated as any MS student in the program. Most students start as a Professional MS student by default and complete the requirements of the Professional MS option outlined in Section 5.4. Like any Professional MS student, BAM students can shift to the Research-Based MS Degree option if admitted according to the application procedures enumerated in Section 2.6. Additional information on the BAM program can be found at the Office of the Registrar website

here, and BAM program policies are available here.

5.7 Application for Graduation

To graduate with the Master's degree, students must apply online through their myCU portal. On the "Student" tab, select the "Apply for Graduation" link under "Academic Resources."

The application for graduation is due a few weeks after the start of the desired graduation semester. Full details on requirements can be accessed by clicking on the appropriate program at this webpage, and deadlines are available by selecting the appropriate semester for graduation on this webpage.

5.8 Graduate Certificates

Professional MS students have the option to pursue a 9-credit (3 courses) graduate certificate in Global Engineering or Water Engineering Management as they fulfill the 30-credit hour coursework requirement.

Admissions procedures and additional information can be found in Chapter 2.

5.8.1 Mortenson Center Graduate Certificate

Any student enrolled in a graduate program offered by the College of Engineering and Applied Science at the University of Colorado Boulder may apply for concurrent enrollment in the Mortenson Center Graduate Certificate.

5.8.2 Water Engineering Management Certificate

The Water Engineering and Management Graduate Certificate complements a Master's degree by providing an in-depth study of the skills and tools demanded by the rigors of the water profession. The courses are available to all graduate students and can be completed on campus or through distance learning.

6 Curriculum

6.1 Course requirements

All graduate students in the Environmental Engineering graduate program must take the core Environmental Engineering course, CVEN 5464 Environmental Engineering Processes.

The course requirements for each of the Environmental Engineering graduate degree options is listed below. In those lists, the *chemistry requirement* is filled by passing one of:

- CVEN 5404 Water Chemistry
- CHEM 5151 Atmospheric Chemistry or CHEM 5152 Advanced Atmospheric Chemistry

And the *quantitative analysis requirement* is filled by passing one of:

- EVEN 5444 Analytical Methods, Experimental Design, and Applied Data Analysis
- CVEN 5537 Numerical Methods
- CVEN 5454 Statistical Methods in Natural and Engineered Systems
- MCEN 5020 Methods of Engineering Analysis 1

Section 6.3 lists a variety of suggested elective courses in each of our core topical areas.

6.1.1 PhD option (30 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. *Chemistry requirement*
3. *Quantitative analysis requirement*
4. Seven electives

6.1.2 Research-Based MS option (24 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. *Chemistry requirement*
3. *Quantitative analysis requirement*
4. Five electives

6.1.3 Professional MS option

Professional MS: General Environmental Engineering (30 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. *Chemistry requirement*
3. *Quantitative analysis requirement*
4. CVEN 5484 Integrative Environmental and Molecular Microbiology
5. MCEN 5131 Air Pollution Control

6. One of:
   - CVEN 5524 Water Treatment
   - CVEN 5534 Wastewater Treatment
7. Four electives

Professional MS: Air Quality, Energy, and Climate (30 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. *Quantitative analysis requirement*
3. *Chemistry requirement.* One of:
   - CHEM 5151 Atmospheric Chemistry
   - CHEM 5152 Advanced Atmospheric Chemistry
4. MCEN 5131 Air Pollution Control
5. Six electives

Professional MS: Water Reuse (30 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. CVEN 5404 Water Chemistry
3. *Quantitative analysis requirement*
4. CVEN 5484 Integrative Environmental and Molecular Microbiology
5. CVEN 5524 Water Treatment
6. CVEN 5534 Wastewater Treatment
7. CVEN 5594 Water Reuse
8. Two of:
   - EVEN 5584 Sustainability Engineering Design
   - EVEN 6504 Advanced Physical Chemical Water Treatment
   - CVEN 5393 Water Resources Systems and Management
   - CVEN 5424 Environmental Organic Chemistry
9. One elective

Professional MS: Global Environmental Engineering (30 coursework credits)

1. CVEN 5464 Environmental Engineering Processes
2. *Chemistry requirement*
3. CVEN 5484 Integrative Environmental and Molecular Microbiology
4. CVEN 5919 Global Development for Engineers
5. CVEN 5939 Global Development Field Practicum
6. Environmental treatment course, one of:
   - MCEN 5131 Air Pollution Control
   - CVEN 5474 Hazardous Waste Management
   - CVEN 5514 Bioremediation
   - CVEN 5524 Water Treatment
   - CVEN 5534 Wastewater Treatment
7. One of:
   - CVEN 5939 Water, Sanitation and Hygiene (WASH) sequence
   - MCEN 5228 Household Energy Systems in the Global South sequence
8. Select 6 credits from the Mortenson Center Courses
9. One elective

To help guide students with planning their coursework, a Coursework Check Spreadsheet is available on the EVEN website.

6.2 Substitutions to Course Requirements

If course scheduling and availability does not allow a student to complete their degree on the anticipated timeline, a required course may be substituted by another available course. This substitution must be approved by the student's faculty adviser and the EVEN graduate director.

If an EVEN BAM, MS, or PhD student has taken a required 5000-level course at the 4000-level (identical course title, different level, for example CVEN 4/5464 Environmental Engineering Processes) this student is not required to retake this course at the 5000-level and may petition take a different graduate course that adds fundamental knowledge to their environmental engineering degree. This substitution must be approved by the student's faculty adviser and the EVEN graduate director.

6.3 Elective Course Suggestions

Although elective courses can come from a variety of departments throughout the university, below are some courses that are routinely taken by MS and PhD students in each of our core areas, beyond the required coursework for PhD and MS students. These lists are not comprehensive and some of these courses are not offered every year. Please also refer to section 6.1 of this Handbook (Course requirements). Any course that is listed there and not a requirement for your specific track can be taken as an elective.

6.3.1 Air Quality, Energy, and Climate

- EVEN 5830 Environmental Engineering Special Topic: Research Skills for Env Eng
- EVEN 5830 Environmental Engineering Special Topic: Environmental Law for Engrs
- MCEN 5131 Air Pollution Control (usually offered every year)
- MCEN 5161 Aerosols (usually offered every other year)
- MCEN 5141 Indoor Air Pollution (usually offered every other year)
- MCEN 5291 Project-Based Learning in Rural Schools (usually offered in sequential courses in fall and spring)
- EVEN 5830 Environmental Engineering Special Topic: Climate Engineering
- EVEN 5584 Sustainable Engineering Design
- MCEN 5152 Intro to Combustion
- MCEN 5021 Introduction to Fluid Dynamics
- MCEN 5231 Computational Fluid Dynamics
- CHEM 5151 Atmospheric Chemistry (usually offered in fall)
- CHEM 5152 Advanced Atmospheric Chemistry (usually offered in spring)
- CHEM 5121 Practical Laboratory Skills for Analytical Chemistry (usually offered in spring)
- ATOC 5600 Physics and Chemistry of Clouds and Aerosols (usually offered in spring)
- ATOC 5500 Special Topics in Atmospheric and Oceanic Sciences: Instrument Lab
- ATOC 5235 Introduction to Atmospheric Radiative Transfer and Remote Sensing
- MCEN 5032 Sustainable Energy
- MCEN 5135 Wind Energy and Wind Turbine Design
- ATOC 5050 Atmospheric Dynamics
- ATOC 5600 Physics and Chemistry of Clouds and Aerosols
- CVEN 5363 Modeling Hydrologic Systems (usually offered in spring)
- CHEM 5161 Analytical Spectroscopy

6.3.2 Aquatic and Terrestrial Environmental Systems

- EVEN 5584 Sustainable Engineering Design
- EVEN 5830 Special Topic: Research Skills for Env Eng
- EVEN 5830 Special Topic: Advanced Aquatic Chemistry & Instrumental Analysis
- MCEN 5231 Computational Fluid Dynamics

- CVEN 5133 Land Use and Water Quality (usually offered in spring)
- CVEN 5303 Urban Water Systems Analysis (usually offered every other fall)
- CVEN 5363 Modeling Hydrologic Systems (usually offered in spring)
- CVEN 5393 Water Resources Systems and Management
- CVEN 5514 Bioremediation (usually offered every other year)
- CVEN 5544 Solid Waste Management and Resource Recovery (usually offered every other year)

6.3.3 Drinking Water, Wastewater, and Water Reuse

- EVEN 5584 Sustainable Engineering Design
- EVEN 5830 Environmental Engineering Special Topic: Research Skills for Env Eng
- EVEN 5830 Special Topics: Advanced Aquatic Chemistry & Instrumental Analysis
- CVEN 5484 Integrative Environmental and Molecular Microbiology
- CVEN 5514 Bioremediation (usually offered every other year)
- CVEN 5544 Solid Waste Management and Resource Recovery (usually offered every other year)

6.3.4 Global Engineering and Resilience

This focus area is tied to the Mortenson Center in Global Engineering and Resilience, which has specific course requirements and elective options for their graduate certificates listed on their website.

6.4 Deadlines

The Environmental Engineering Program adheres to the deadlines and calendar established by the Office of the Registrar. Students can find these dates for the current and future semesters on. The primary deadlines to be aware of, with dates that vary by semester, are as follows:

- *Last day to add a class:* After this date, students can only be enrolled pending a petition to the Office of the Registrar, submitted by the EVEN Program on behalf of the student. Such requests will only be entertained in exceptional circumstances. This date is typically during the second week of the semester for courses that are the standard 16 week fall spring semester length. Courses that are shorter will have earlier deadlines to add and drop.
- *Tuition and fees payment due:* Students must pay tuition and fees, or enroll in a payment plan, by this date. This date is typically the day following the deadline for the last day to add a class.
- *Last day to drop a class:* After this date, students choosing to drop a course will receive a withdrawal (i.e., grade of 'W') on their transcripts; tuition for dropped courses will not be refunded. This date is typically during the third week of the semester.

Students should familiarize themselves with these dates since it can be difficult or impossible to add/drop classes after the deadlines. Students should add all courses within their enrollment window, which is determined by the Registrar's office. Upcoming deadlines and important enrollment dates can be found on the Academic Calendar.

6.5 Adding or Dropping Courses

6.5.1 Adding Master's Thesis and Doctoral Thesis Credits

Thesis, dissertation, and independent study credits can only be added by the Graduate Program Advisor with the approval of the faculty advisor. Thesis and dissertation hours should be requested via the EVEN Course Agreement Form prior to the start of the semester.

6.5.2 Adding Independent Study Courses

Independent study credits are automatically added upon approval of the independent study petition, as described in Section 6.7. The petition can be found here.

6.5.3 Dropping Courses

Students may drop courses in the Buff Portal at any time before the drop deadline. However, students who wish to drop courses should carefully consider the impact this decision will have on their academic progress, enrollment requirements, visa status, financial aid eligibility, scholarships, graduate appointment requirements, and student housing or health insurance eligibility. It is recommended a student first consult with their faculty advisor, a graduate program advisor, ISSS, etc. before dropping a course.

Students who wish to drop a course after the drop deadline are required to provide justification for the change and have course instructor support. Additional approvals may be required from the EVEN Program Director and the Dean of the graduate school before the drop is considered final. Please consult with a graduate program advisor if you are considering dropping a course after the drop deadline.

Students who wish to withdraw from all classes should consult the Registrar's Office website.

6.6 Transcripts

Official transcripts for current and previous graduate students can be ordered online from the Office of the Registrar. Unofficial transcripts can be downloaded anytime by students through the educational portal.

6.7 Independent Study

An independent study course is defined as research study requiring a high level of self-directed learning. This learning requires students to read, conduct research, and complete written examinations, reports, projects, research papers, portfolios, or similar assignments that are designed to measure competency in the stated objectives. This work may be experiential, directed reading or independent research supervised by a faculty member and approved by the EVEN Program Graduate Committee.

Some activities are specifically prohibited as independent study work, such as internships, volunteer or paid work in a university department, volunteer work of other kinds, work in a business, extra work in a class, and work completed elsewhere. It is strongly discouraged to use an independent study course in place of a regular course offering. Independent study normally consists of directed research which leads to the preparation of a substantive presentation of findings, usually in the form of a written paper or report. Any variation on this format must be approved by the EVEN Program Graduate Committee.

University rules do not normally allow Independent Study credit for internship experiences, work-study or hourly pay work done in departments, or for work also compensated by a salary. In general, an independent study should not be used for resolving scheduling conflicts, making up failed classes or alleviating faculty teaching loads.

6.7.1 Independent Study Requirements

The following minimum criteria must be met to ensure the overall outcomes of the educational experience, the success of the students, and compliance with accreditation standards:

- Students who take independent studies must have a minimum cumulative GPA of 3.3.
- The independent study must include comprehensive objectives in a written form.
- The independent study must demonstrate the relevance and appropriateness to the program outcomes.
- The independent study must promote a high level of self-directed learning.
- The independent study must engage students to interact with the instructor throughout the course.

6.7.2 Enrollment Procedure

The student will develop a plan or idea for independent study and will work with a faculty member to determine the feasibility and supervision of the class. The student and the faculty member will complete the Independent Study Agreement Form including, but not limited to, the following information:

- Course description and area of study, including number of credits to be issued (1 credit hour is

approximately equal to 40 clock hours of proposed independent study activity per semester).
- Learning objectives and outcomes.
- Approach to be used (directed reading, instructions, and supervision, and/or lab experience, exercises, projects, etc.).
- Information on textbooks, references, and reading materials.
- Means of communication between student and faculty member throughout the course of independent study.
- Means of evaluation (one or more), typically consisting of a tangible product such as a project, presentation, written review of the literature, homework assignments or exams.
- Guidelines, schedules, benchmarks and/or milestones, or weekly task breakdowns throughout the semester.

When an independent study is designed and proposed, the rationale for the number of credits awarded by the course should meet the following criteria:

- 1 semester credit hour for each 40 clock hours of documented independent study activities
- The number of allowable independent study credits for any student should be limited to less than or equal to 25% of the total coursework credits required by the student's degree program.

The completed Independent Study Agreement Form should be submitted no later than one week prior to the course add deadline, which can be found here.

6.7.3 Documentation

Through the course of an independent study, it is the student's responsibility to communicate with the instructor and document time spent on the independent study. Activities that constitute time spent on an independent study include, but are not limited to reading, conducting research, completing written examinations, reports, projects, research papers, portfolios, and homework assignments.

To ensure proper documentation, a final report or presentation slides should be provided to the graduate advisors at the end of the semester.

6.8 Transfers of Credit

To request transfer credit, graduate students should complete and submit the Request for Transfer of Credit Form from the CU Boulder Graduate School. To transfer credits, students must fill out and submit this form to the Graduate Advisors with official transcript(s) included.

Requests for transfer credit can only be made after completing 6 credits of graduate level coursework at CU Boulder. These requests should be submitted as soon after completion of this 6-credit requirement as possible. Typically, this means that transfer credit requests are processed during the second semester of study at CU Boulder.

Transfer credits from accredited institutions are accepted by CU Boulder only after approval by the Graduate Director and under the special conditions outlined below. Transfer credit is defined as any credit earned at another accredited institution, credits earned on another campus of the CU Boulder system, or credits earned as a non-degree student within the CU Boulder system. Students seeking a degree from CU Boulder must complete most of their coursework while enrolled in a graduate program as a degree seeking student.

The following rules apply to transferring credit to the CU Boulder Environmental Engineering Program:

- Master's students may transfer up to 9 hours, while PhD students may transfer up to 21 hours.
- BAM students are an exception to the limit above and can transfer up to 12 credits of graduate courses taken at CU Boulder, of which 6 credits can double-count for their BS degree. This limit is increased to 13 credits if one 4-credit course is completed as part of these credits. Only one 4-credit course can be included, and it can either double-count for BS/MS or be used for the "master's degree only" total.

- Work already applied toward a graduate or undergraduate degree received from CU Boulder or another institution cannot be accepted for transfer toward another graduate degree of the same level at CU. In addition, work completed for a doctoral degree may not be applied toward a subsequent master's degree.
- All courses accepted for transfer must be graduate level courses. The course grade must be B or higher. Transfer course work which is to be applied to a graduate degree at CU Boulder and was completed more than 5 years prior to being accepted to the program shall be evaluated by the EVEN Program as to current relevance and applicability to the degree requirements. At the discretion of the EVEN Program, 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 level course work as a degree-seeking student on the CU Boulder campus with a 3.0 GPA. Transferred credits do not reduce the minimum registration requirement but may reduce the amount of work to be done in formal courses.
- Except for students enrolled in the BAM program, seniors at CU Boulder may transfer a limited amount of graduate level work (up to 9 semester hours) provided such work:
  - is completed with a grade of B or above at CU Boulder,
  - comes within the five-year course time limit,
  - has not been applied toward another degree,
  - is recommended for transfer by the department concerned, and such transfer is approved by the Dean of the Graduate School.

6.9 Grade Replacement

A student who receives a grade of C, D, or F in a course may repeat that course once, upon written recommendation by the program director and approval by the Dean of the Graduate School, provided the course has not been previously applied toward a degree. The grade received in a repeated course substitutes for the original grade and only the later grade is used in the Graduate School's manual calculation of the grade point average. The grade the student earned in their most recent prior attempt will still be included on the transcript and in their total attempted units but will be removed and replaced by the latest grade in their cumulative GPA and total earned units as long as that grade is the same or better.

6.10 Change of Record

Change of record requests are required for past-term student record changes and for current-term enrollment requests after add/drop deadlines. Some examples where a change of record request should be made include:

- Any academic record change after the last day of classes (e.g., add, drop, change grading basis or variable credits, expunge, etc.),
- Add a student to a class after the Monday before finals. In such cases, the change of record request must include the student's final grade, because the student will not appear on the grade roster.

Change of record requests can only be made with the graduate advisors and consent of the graduate chair. The program must submit appropriate documentation directly to the Registrar's Office. This office will not accept a student-delivered change of record request. Please reach out to the graduate advisors with any questions about this process.

6.11 Auditing Courses

Degree seeking students cannot audit courses. Students can register for NC (no credit) but will need to pay full price for the course. Please note that for students on a TA or RA appointment, the appointment will not cover the tuition cost of a course taken for no credit.

6.12 Grades of 'Incomplete'

To receive a grade of "I" (or incomplete), the student must receive the consent of the instructor and be able to demonstrate that for documented reasons beyond the student's control, the student was unable to complete course requirements during the semester enrolled. Students are given one year to complete the requirements for the course and receive a letter grade; after one year the incomplete grade automatically changes to an "F."

6.13 4000/5000 Level Courses

The CU Boulder Graduate School requires that there be a difference between 4000 and 5000 level courses that are taught as a combined 4000/5000 section. Students registered at the 5000 level are taking the course for graduate level credit, and thus the course expectations of that student must be at the graduate level. Conversely, students registered at the 4000 level are taking the course for undergraduate level credit, and thus the course expectations must be at the undergraduate level.

There have been instances where a student requests changing course credit from 4000 to 5000 level, or vice-versa. The University allows for this change if the student's grade can be adjusted (or additional requirements met) per documentation provided by the course instructor. One example is where a BAM student enrolls in a course at the 4000 level, and after completion requests a change to 5000 level, due to some unforeseen event. In this example, the course instructor is approached to determine a grade change or asked if additional coursework needs to be completed. While it is up to the course instructor on how to proceed, having a documented difference that can be referenced can save the course instructor significant time and hassle, in addition to maintaining Graduate School requirements.

Course instructors should adjust their course requirements as to best fit their course. A graduate level course generally encourages deeper thought, additional workload, and/or higher expectations of the student. With that in mind, a few examples (non-exhaustive), or suggested differences that could be used to distinguish between 4000 and 5000 level students are:

- Additional project requirements for 5000 level students
- Additional exam problems for 5000 level students
- Additional reading assignments and evaluations for 5000 level students
- Additional reports, homework, or other measure of student performance for 5000 level students
- Inclusion of a teaching role for the graduate students

6.14 Grievance Procedures

The Graduate School established revised grievance procedures, effective April 1, 2019, that can be found here: Graduate School Grievance Procedures. These procedures are intended to provide a process by which graduate students can communicate concerns related to academic issues or academic conflicts. An additional brief guide is available here. Should you need any assistance with these procedures, please make sure to reach out to your Graduate and/or Faculty advisor, where appropriate.

7 Appendix A. History and Summary of Changes

7.1 Leadership History

A detailed history of the EVEN program is listed on the EVEN website. An incomplete list of current and past EVEN Graduate Directors follows:

- Marina Vance (2024 – present)
- Joseph Ryan (2023 – 2024)
- Cresten Mansfeldt, Sheldon Masters, Tony Straub (2022 – 2023)
- Julie Korak (2021 – 2022)
- Joseph Ryan (2020 – 2021)
- Fernando Rosario-Ortiz (2015-2020)
- R. Scott Summers (2000 – 2014)

7.2 Summary of Changes

7.2.1 Sixth Edition, Spring 2026

Edits made to this document included:

- Changing the wording from "mathematical" to "quantitative analysis" in coursework requirement.
- Changing the coursework requirement in the Water Reuse track to include a quantitative analysis course; moving CVEN 5393 to Suggested Electives, removing courses that are no longer taught: CVEN 5554 and CVEN5834; including CVEN 5514 to the Global Engineering track.
- Danielle Porchetta is now in charge of HR for EVEN.
- Minor editorial changes throughout the document.

7.2.2 Fifth Edition, Fall 2025

Edits made to this document included:

- Addition of Appendix C: Independent Professional Development plan for PhD students.
- Addition of a 4-credit course exception to the BAM credit transfer, raising the total from 12 to 13 credits (section 6.8).
- Minor editorial changes throughout the document.

7.2.3 Fourth Edition, Spring 2025

Edits made to this document included:

- Addition of clarification to BAM course requirements (section 6.2).
- Change of course requirements to the MS Thesis option to align with PhD research areas (section 6.1.2) and inclusion of course requirements to the Air Quality, Energy, and Climate PMP track (section 6.1.3).
- Edits to suggested elective course recommendations (section 6.3).
- Editorial changes and link updates throughout the document.

7.2.4 Third Edition, Fall 2024

Prof. Michael Hannigan replaced prof. Daniel Schwartz (interim) as EVEN Program Director. Assoc. Prof. Marina Vance replaced Prof. Joseph Ryan as the EVEN Program Graduate Director. Ms. Heather Mallander replaced Ms. Laura Vaznelis Ward as the EVEN Program Coordinator. Kayla Boster is now in charge of EVEN program finance and HR coordination in the college of engineering.

Substantive edits were made to this document including:

- Change of wording surrounding the timing:
  - for the PhD Preliminary exam, from "no later than the end of the student's third semester or 12 months from the time the student is first enrolled" to "during the student's second year in the PhD program",

  - for the PhD Comprehensive exam, from "within six months of successful completion of the preliminary exam and at least three semesters prior to the dissertation defense" to "after all course work is completed and at least one year before the anticipated date of PhD completion".
- Removal of two appendices detailing the PhD preliminary and comprehensive exams. Now the corresponding information is incorporated in the main text.
- Inclusion of section 6.1 Course Requirements.
- New lists of Core Research Areas (and MS research tracks) and to the Fundamental Topic Areas for PhD prelim.
- Editorial changes and link updates throughout the document.

7.2.5 Second Edition, Fall 2022

Prof. Joseph Ryan is now EVEN Program Interim Director (after Prof. Rosario-Ortiz). Ms. Laura Vaznelis Ward replaced Ms. Laurence Lambert as the EVEN Program Coordinator. Ms. Jenna Rodriguez and Ms. Deanne Sylvester replaced Ms. Kelly Lewis as the EVEN Program Graduate Program Advisors.

As the EVEN Program has been integrated into the College of Engineering and Applied Science Program of Programs. As part of this transition, Kayla Boster and Ashley West have taken over EVEN Program specific finance and HR coordination.

7.2.6 First Edition, Fall 2020

This is the first edition of the EVEN Graduate Program Manual.

Prof. Rosario-Ortiz is the EVEN Program Interim Director. Ms. Laura Vaznelis Ward is the EVEN Program Coordinator. Ms. Kelly Lewis is the EVEN Program Graduate Program Advisor.

8 Appendix B. Resources for Teaching Assistants

8.1 Center for Teaching and Learning

The Center for Teaching and Learning (CTL) is a graduate and professional student development program that strives to encourage graduate students to embrace teaching as an intellectual and inclusive act and to pursue their personal and professional development through participation in the program. The CTL provides workshops that focus on pedagogical techniques and professional development. The CTL also holds two training events each year, the Fall Intensive and Spring Conference, which are open to all graduate students.

To encourage graduate students to focus on gaining teaching skills, the CTL also offers two graduate certificates: the Certificate in College Teaching (CCT) and the Future Faculty Development Certificate (FFD). The CCT helps graduate teachers develop a confident classroom presence, good interactional skills, and a firm foundation in college teaching. Graduate students must teach for two semesters to pursue this certificate. The FFD offers graduate students the opportunity to pursue a project on teaching at the college level under the guidance of a faculty mentor. Graduate students are not required to teach to pursue this certificate. Links to the requirements for each certificate/credential are listed below:

- Certificate in College Teaching (CCT)
- Future Faculty Development Certificate (FFD)
- College Teaching Credential (CTC)

8.2 Grading

The method of grading for homework, quizzes and exams will be determined by the course instructor. Some faculty have a preferred methods for each type of assignment or assessment. However, we encourage TAs to suggest different methods to grade more efficiently (so that the TA can focus on other teaching responsibilities). Examples of ways to grade more efficiently are listed below.

- Make sure that all assignments created have clear goals and instructions. This way, students will have more consistent answers that will be easier to grade.
- Use different grading scales for different assignments:
  - check +, check, check- (for quizzes, homework, response papers, quick reports or presentations, etc.)
  - 100-point numerical scale (for exams, certain types of projects, etc.)
  - pass-fail or credit-no-credit (for preparatory work)
- Grade one problem at random from each homework assignment.
- Post quizzes on Canvas, so they can be graded automatically.
- Limit your comments or notations to those your students can use for further learning or improvement.
- Spend more time on guiding students in the process of doing work than on grading it.

For more information on grading, click here for a some good resources from Vanderbilt University.

8.3 Faculty Expectations

Faculty expectations of each TA should be determined before the semester begins. We recommend that all Tas meet with the faculty member instructing the course they are assigned to and use the following document to go through the expectations for each class.

8.4 Best Practices

8.4.1 General Reminders

- Review student privacy policies outlined by the university (FERPA).
- When paid to be a TA, TAing is your main priority. For example, if a TA responsibility conflicts

with lab meeting time it would be important to try to reschedule lab meeting to a time that would not conflict. If this is not possible, working with the instructor and your PI to suggest a compromise (e.g. attend lab meeting every other time) would be another option.
- Be professional with your professor and your students. Communicate openly with your professor, especially regarding semester and summer breaks.
- Set boundaries for yourself. While it is important to respond to students' questions quickly, you may want to communicate to your students that you will not respond to email after a certain time in the evening.
- You must introduce yourself to your TA class during the first week of school and send an email to the class.

8.4.2 Scheduling Office Hours

To schedule a room for office hours in the EVEN wing of the SEEC building, please contact the EVEN Program Coordinator. When contacting the Program Coordinator, please include the following information:

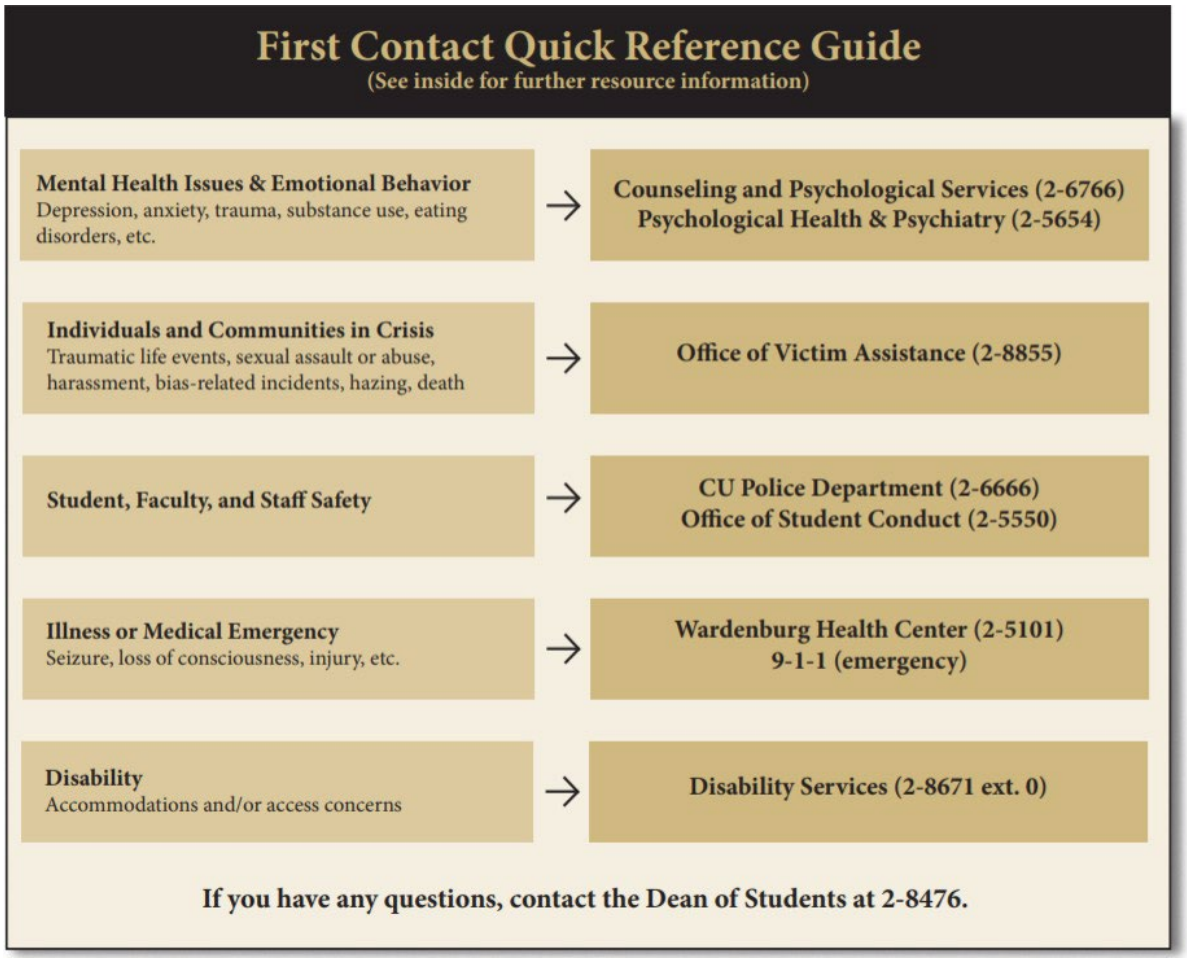
- Course number and title
- Day(s) of the week for office hours or date(s) for review sessions.
- Start and end time. It's also helpful for the Program Coordinator to know whether their preferred start and end time are flexible (i.e.: prefer 6-7 PM but could also do 7-8 PM).
- Anticipated attendance. Classrooms tend to fall into 25+, 45+, 60+, 80+, and 120+ seat ranges. So those are good options to keep in mind.

Note: There are many events that occur in the SEEC Building throughout the year and office hours could move around when these events occur during your scheduled time.

8.4.3 Students in Distress

If you notice that a student in your class is in distress, take action according to the situation. The CU Boulder Red Folder website can help guide how to deal with certain situations.

As an employee of CU Boulder, you are a mandatory reporter. CU-Boulder policy requires any supervisor who becomes aware of a complaint of protected class discrimination and harassment and sexual harassment (including sexual assault, intimate partner abuse, and stalking) or related retaliation, to promptly report it to the Office of Institutional Equity and Compliance (OIEC) if the alleged perpetrator is an employee or a student. For more information on how to report to a disclosure from a student or colleague, see the CU Boulder Office of Victim Assistance Mandatory Reporting website.



First Contact Quick Reference Guide
(See inside for further resource information)

Mental Health Issues & Emotional Behavior Depression, anxiety, trauma, substance use, eating disorders, etc.	→	**Counseling and Psychological Services (2-6766)** **Psychological Health & Psychiatry (2-5654)**
Individuals and Communities in Crisis Traumatic life events, sexual assault or abuse, harassment, bias-related incidents, hazing, death	→	**Office of Victim Assistance (2-8855)**
Student, Faculty, and Staff Safety	→	**CU Police Department (2-6666)** **Office of Student Conduct (2-5550)**
Illness or Medical Emergency Seizure, loss of consciousness, injury, etc.	→	**Wardenburg Health Center (2-5101)** **9-1-1 (emergency)**
Disability Accommodations and/or access concerns	→	**Disability Services (2-8671 ext. 0)**

If you have any questions, contact the Dean of Students at 2-8476.

8.5 Additional Pedagogical Resources

- Teaching resources from Brown University
- Collected Wisdom: Strategies and Resources from TAs to TAs (Carnegie Mellon University)

9 Appendix C. Individual Development Plan

The Individual Development Plan (IDP) helps PhD students in Environmental Engineering set and track goals for academic progress, professional growth, and personal development. It is meant to support ongoing conversations between students, their faculty advisors, and the graduate program. The IDP complements the Annual Progress Report required by the EVEN Graduate Program. Students should review and update their IDP once per year and discuss it with their advisor. The plan is flexible and should evolve as research and career interests develop.

1. **Reflection on Career Goals**

Reflect broadly on where you would like to be in a decade and how your degree fits into this goal. Consider the following guiding questions:

- What type of work or impact do you hope to have in your career?
- Are there relationships with mentors, advisors, or faculty that you hope to cultivate?
- What specific skills (methods or techniques) do you need to acquire?
- What presentations do you anticipate giving?
- Do you plan on publishing any papers, and where?
- Are you planning to apply for funding, fellowships, or grants during your degree?

2. **Self-Assessment**

Reflect on your current skills, strengths, and areas for growth for the current academic year. You may use self-assessment tools (e.g., https://myidp.sciencecareers.org/)

Technical / Research Skills

- Strengths:
- Areas for improvement:
- Planned actions:

Writing and Communication

- Strengths:
- Areas for improvement:
- Planned actions:

Teaching and Mentoring

- Strengths:
- Areas for improvement:
- Planned actions:

Professional Development (e.g., networking, time management)

- Strengths:
- Areas for improvement:
- Planned actions:

Leadership and Collaboration

- Strengths:
- Areas for improvement:
- Planned actions:

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3. **Academic Goals for the current academic year**

Define specific, measurable, achievable, relevant, and time-bound (SMART) goals for your coursework, research milestones, and technical skill development.

If this is not your first year writing an IDP, review last year's goals and either update them for the coming year or include new ones if complete.

Goal #1:

Timeline:

Goal #2:

Timeline:

Goal #3:

Timeline:

4. **Professional and Career Goals for the current academic year**

Plan for long-term professional growth. Consider short-, medium-, and long-term objectives such as conference participation, publications, networking, internships, workshops and trainings, or post-graduation pathways. In this category, also consider leadership positions on campus (e.g., student organizations), or among professional associations or societies.

If this is not your first year writing an IDP, review last year's goals and either update them for the coming year or include new ones if complete.

Goal #1:

Timeline:

Goal #2:

Timeline:

Goal #3:

Timeline:

5. **Degree Timeline and Milestones**

Use the table below to outline expected milestones and key development goals based on your stage in the program. The length of training may vary for each student, so adapt the table below for your own trajectory and progress.

If this is not your first year writing an IDP, review last year's table and adjust your milestones accordingly. Use this as an opportunity for reflection:

- How did your actual progress compare to your plan?
- Did you encounter any obstacles or unexpected changes?
- What adjustments are needed moving forward?

Year	Key Program Milestone	Research and Professional Goals	Skill Development

Example Program Milestones:

- Complete core coursework
- Attend EVEN seminars
- Take and pass Preliminary Exam
- Take and pass Comprehensive Exam
- Draft dissertation chapters
- Present at the EVEN seminar
- Defend PhD Dissertation

Example Research and Professional Goals:

- Identify dissertation topic and develop research plan
- Apply for fellowships
- Conduct research and collect data
- Analyze data and prepare figures
- Write manuscript draft
- Present at a conference or research symposium
- Submit first-author manuscript
- Join the Three Minute Thesis competition
- Prepare and submit job applications

Example Skill Development:

- Time management and productivity training
- Training in specific instrumentation / computational method / data analysis technique
- Training in proposal writing and scientific communication
- Leadership, collaboration, and teaching experience
- Networking with professionals in your field