



**COLLEGE OF ENGINEERING**  
**UNIVERSITY OF WISCONSIN-MADISON**

# Undergraduate Student Handbook and Curriculum Requirements

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Civil & Environmental Engineering  
Construction Engineering Management Option

Effective  
Spring 2008

This booklet is published by the Department of Civil and Environmental Engineering (CEE) to provide guidance to undergraduates in managing their programs and in selecting courses toward the BS Civil Engineering (BSCE) degree. This booklet supplements information in the UW Undergraduate Catalog. (See <http://www.wisc.edu/pubs/ug/>).

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# **INTRODUCTION TO CIVIL & ENVIRONMENTAL ENGINEERING**

## **Mission of Civil & Environmental Engineering (CEE) Undergraduate Program**

*Create, integrate, and transfer civil and environmental engineering knowledge and practice in the development of professionals, leaders, and citizens that help define and serve societal and environmental needs by applying this knowledge and practice in an effective and sustainable manner.*

## **CEE Educational Objectives**

BSCE graduates are prepared to contribute to their communities through the following career and professional accomplishments:

1. Plan, design, construct and manage both natural and built processes and systems to meet determined needs using technical knowledge, computer tools, and design principles with communication, leadership, and team skills;
2. Utilize measurement and analysis tools along with experimental data in investigating natural and built systems;
3. Understand and incorporate economic, environmental, political, social, safety and global considerations in design, investigation, and construction of natural and built systems;
4. Enhance analysis and design tools and experience through life-long learning; and
5. Serve others through professional responsibility, leadership and participation in professional and public activities, and good citizenship.

## **CEE Program Outcomes**

1. Evaluate constructed facilities and natural systems, structure, processes, or conditions to meet determined societal needs. Design sustainable facilities and systems to meet these needs, while protecting the environment, conserving resources, and maintaining quality of life.
2. Select and apply appropriate analyses methods to solve well-defined problems, related to civil engineering, using knowledge of mathematics, statistics, computer tools, natural and engineering sciences, material properties, and civil engineering.
3. Understand and use instrumentation and methods to obtain data, calibration and validate devices and processes, including assessment of accuracy and errors.
4. Participate in various roles of a team whose function is to define, analyze, and synthesize a solution to an open ended design problem. Understand that problems relevant multi-disciplinary aspects and contemporary issues.
5. Understand the role of a leader and leadership principles and attitudes.
6. Prepare and present well organized written engineering solutions, designs, and plans that are appropriate for a particular audience.
7. Recognize and respond to ethical and legal, economic, health and environment, political, safety, and social factors in decisions that affect project completion, analysis, design, construction, operation, and conduct of duties.
8. Understand common failure mechanisms and analyze the failure risk or actual failure of a process or system.
9. Understand principle elements of project management, construction, and asset management and their relation to project development, operation, and maintenance. Understand fundamentals of business, public policy, and administration and their relation to project development, operation and maintenance.
10. Determine the life-cycle cost of a process, component, or system and perform basic analyses of alternative, feasible solutions for a project.
11. Recognize the need and plan to engage in life-long learning.

## **IMPORTANT CONTACT INFORMATION:**

### **Chair – Prof. Jeffrey Russell**

*russell@engr.wisc.edu*

Office: 2205 Engineering Hall  
(608) 262-7244

### **Undergraduate Chair – Prof. Greg Harrington**

*harringt@engr.wisc.edu*

Office: 3232 Engineering Hall  
(608) 263-7773

### **Student Services Coordinator – Katie Bleier**

*kbleier@engr.wisc.edu*

Office: 2304 Engineering Hall  
(608) 890-0864

## **USEFUL WEBSITES**

Chemistry Learning Center:

<http://www.chem.wisc.edu/areas/clc/signup.htm>

College of Engineering Student Services:

<http://studentservices.engr.wisc.edu/>

Computer-Aided Engineering (CAE):

<http://www.cae.wisc.edu/>

CoE's Student Leadership Center (SLC):

<http://slc.engr.wisc.edu/>

Counseling & Consultation Services (UHS):

[http://www.uhs.wisc.edu/home.jsp?cat\\_id=36](http://www.uhs.wisc.edu/home.jsp?cat_id=36)

Diversity Affairs Office (DAO):

<http://studentservices.engr.wisc.edu/diversity/>

Engineering Career Services (ECS):

<https://ecs.engr.wisc.edu/>

Innovation Days:

<http://studentservices.engr.wisc.edu/innovation/index.html>

International Engineering Studies and Programs:

<http://studentservices.engr.wisc.edu/international/>

LGBTQ Campus Center:

<http://www.wisc.edu/lgbt/>

Math Tutorial Program:

<http://www.math.wisc.edu/~tprogram/>

McBurney Disability Resource Center:

<http://www.mcburney.wisc.edu/>

Steuber Prize for Excellence in Writing:

<http://tc.engr.wisc.edu/steuber/>

Supplemental Instruction Program (Contact Info):

[http://www.engr.wisc.edu/admin/staff/lin\\_jia-ling.html](http://www.engr.wisc.edu/admin/staff/lin_jia-ling.html)

TRIO Student Support Services:

<http://www.education.wisc.edu/trio/>

Tutoring & Academic Assistance (plus drop-in):

<http://studentservices.engr.wisc.edu/classes/tutoring/>

Tutor by Request (one-on-one help):

<https://studentservices.engr.wisc.edu/classes/tutoring/request/>

University Health Services (UHS):

[http://www.uhs.wisc.edu/home.jsp?cat\\_id=22](http://www.uhs.wisc.edu/home.jsp?cat_id=22)

UW Student Job Center:

<http://jobcenter.wisc.edu/>

UW-Madison Undergraduate Catalog:

<http://www.wisc.edu/pubs/ug/>

Veterans' Services:

<http://www.wisc.edu/students/veterans/veterans.html>

Wendt Library:

<http://www.wisc.edu/wendt/>

Writing Center:

<http://www.wisc.edu/writing/>

## TOP TEN SUGGESTIONS FROM COLLEGE OF ENGINEERING SENIORS

- 1. Form Study Groups.** Even if it requires stepping outside your comfort zone to ask someone if he or she would like to study with you, do it. Form study groups for all of your classes each semester.
- 2. Utilize the Free Academic Support Available to Engineering Students.** Free academic support is available to engineering students in the form of tutoring and supplemental instruction services. Details are available here on page 16 or at <http://studentservices.engr.wisc.edu/classes/tutoring>.
- 3. Make Use of TA and Professor Office Hours.** If you need clarification on a concept taught in lecture, want to ask your professor about his or her research, or have questions on a problem set or an upcoming homework assignment, go to office hours for help.
- 4. Talk to Your Advisors.** All Civil & Environmental Engineering majors are assigned both an academic advisor and a faculty advisor. You can find out who they are by logging into your Student Center within your MyUW portal. Check in with your advisors often, especially before you enroll in classes for the upcoming semester. See page 25 for more details.
- 5. Actively Participate in Student Organizations.** The Student Leadership Center (SLC) is the office which advises all of the registered student organizations within the College of Engineering. See page 15 for more details.
- 6. Join Engineering Career Services (ECS) and Attend the Career Fair.** While you do not have to be a member of ECS to meet with ECS staff for jobs search assistance or to utilize ECS print recourses, you should strongly consider joining ECS for access to on-campus interviewing, online job postings, and their online resume referral service. The two large-scale career fairs hosted by ECS at the beginning of each semester are a must if you want to secure an internship, co-op position, or a full-time position after graduation. Details are available on page 13.
- 7. Consider Studying Abroad.** The International Engineering Studies & Programs (IESP) office specializes in helping engineering students explore study abroad opportunities. Details are available on page 14.
- 8. Apply for Scholarships.** There are many scholarships available for engineering students. See page **Error! Bookmark not defined.** for more details on departmental and CoE scholarships. Additional scholarship opportunities exist for undergraduate students from traditionally underrepresented minority groups pursuing engineering degrees. Visit the Diversity Affairs Office (DAO) website for additional details: <http://studentservices.engr.wisc.edu/diversity/enrolled.html#scholarshiplisting>.
- 9. Get Connected with the Diversity Affairs Office (DAO).** The DAO provides guidance and support to underrepresented students and women in the CoE. The office provides a variety of programs and services designed to enhance the cultural, educational, and personal development of all students within the college. Details are available on the web at: <http://studentservices.engr.wisc.edu/diversity/>.
- 10. Begin Thinking about Your Career Path Early.** After you have completed the Engineering Science Requirement and the core courses within the Civil Engineering Requirement, you will begin to take elective courses within the Applied Engineering Requirement. It is in Applied Engineering where you will begin to take courses that fit your career goals (i.e. Construction Management, Environmental Engineering, Structural Engineering, Transportation, etc). A full list of classes in each category of engineering is available on pages 38 through 41. More information on options within CEE (Construction Management, Environmental Engineering) is located on page 27.

# **REGULATIONS, POLICIES, & PROCEDURES**

## **Admission**

### **Initial Classification**

<http://studentservices.engr.wisc.edu/regulations/1.html>

New students admitted to the College of Engineering but not yet to a degree-granting department are assigned the classification of Engineering General Resources (EGR). EGR students should transfer to a degree-granting department as soon as they are eligible. Students may not begin a semester with the EGR classification once they have completed four semesters as an EGR student. Summer session is not considered a semester.

### **Admission to a Degree-Granting Classification**

<http://studentservices.engr.wisc.edu/regulations/3.html>

To be considered for admission to the Civil Engineering (BSCE) major, a student must have:

1. Satisfied the General Education Communication Skills Part A requirement (see General College Requirements on page 26).
2. A minimum of 24 credits.
3. A minimum of 17 credits of calculus, statistics, chemistry, computer science, statics, and physics courses required for an engineering degree. These credits must include Math 222 or Math 276.
4. A grade point average of at least 2.50 for all math courses 217 and above, statistics courses 224 and above, chemistry (all classes), computer science (all classes), EMA 201, and physics courses 201 and above. For one and only one of these courses that a student has repeated, the more recent of the two grades will be used in the calculation.
5. A grade-point average at least 2.00 for all courses not included above in Requirement 4.
6. Successful completion of introductory chemistry (Chem 103/104 or 109 or 116); calculus-based mechanics (EMA 201 or Physics 201, 207, or 247); math through Math 222 or Math 276; and either InterEGR 101 or 160 or another introduction to engineering class from an approved list.<sup>1</sup>

When the number of qualified BSCE applicants exceeds the capacity of the program, admissions will be limited to that capacity. Under these conditions, admission of students will be based on grade point averages, test scores, geographical background, personal background, and diversity. This basis for admission is intended to implement the University's goals of (1) maximizing the success of students who are admitted to a program and (2) achieving a heterogeneous and ethnically diverse student body. It is the student's responsibility to submit a timely application to the Dean's office for admission to the BSCE degree-granting classification.

Application periods are as follows:

<b>For Fall Semester:</b>	<b>January 15 to March 1</b>
<b>For Spring Semester:</b>	<b>September 15 to November 1</b>
<b>For Summer Session:</b>	<b>January 15 to March 1</b>

Students not admitted to the BSCE degree program may file an appeal with the Dean.

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<sup>1</sup> For transfer students, the introduction to engineering class is optional and not required. If taken, credits will apply to Liberal Studies.

## Admission to Courses

<http://studentservices.engr.wisc.edu/regulations/4.html>

The CEE department may specify courses as 1) not open to EGR students, or 2) open only to students in the CEE department.

## Transfer Admissions

<http://studentservices.engr.wisc.edu/regulations/5.html>

<http://studentservices.engr.wisc.edu/regulations/6.html>

Individuals, who are already attending another university, including those in the University of Wisconsin System, will need to meet the entry requirements of the BSCE degree program.

While making the decision to apply for a transfer to the UW-Madison BSCE program, please note that all students must meet the following requirements in order to graduate:

1. All students must complete at least 30 credits in residence in the College of Engineering, including 15 credits of work in CEE.
2. All students must complete their last two semesters in residence in the College of Engineering as a full-time student.
3. All students must complete course substitution forms for transfer courses they wish to use as substitutes for curriculum requirements during their **first** semester.

Transfer students sometimes find themselves short of credits in mathematics, physics, or computer science. If you find yourself in that situation, seek advice from an academic advisor in the CEE Student Services Office (you can make an appointment at Room 2304a Engineering Hall).

## Admission to a Second Major

The College of Letters and Science (L&S) offers the possibility of earning a second major in L&S while studying for the BSCE degree. Requirements for an L&S major are described in the *Undergraduate Catalog* for most departments in L&S. Upon graduation, the additional major is noted on the student's transcript.

The College of Engineering Academic Affairs Office and the Registrar's Office have agreed upon the following rules for admission to a second major:

1. The student must obtain advance approval from both the major L&S department and the College of Engineering. This is accomplished by requesting a Declaration of Major Form from the L&S department and submitting it to the College of Engineering Academic Affairs Office (2620 Engineering Hall).
2. The appropriate L&S dean must approve all course substitutions and other modifications of L&S major requirements.

## **Registration**

### **Credit Load Constraints**

<http://studentservices.engr.wisc.edu/regulations/8.html>

The minimum credit load is 12 enrolled credits per semester. The maximum credit load is 20 enrolled credits per semester. For summer sessions and other sessions, there is no minimum credit load and the maximum credit load equals the number of weeks in the session. A student may freely choose to carry any number of credits between a minimum credit load and a maximum credit load, provided that the student is not on academic probation. A student may carry more than a maximum credit load, but only with the recommendation of an advisor and with written approval of the Dean.

A student who wishes to carry less than a minimum credit load must request written permission from the Dean to become a part-time student. Permission can only be requested for definitive reasons. Such reasons may include but are not limited to having one or more of the following:

- a documented disability.
- a necessity of employment or other outside obligation exceeding 15 hours per week.

Part-time permissions must be renewed during the first two weeks of each semester. Part-time students must satisfy all regulations other than the minimum credit load. For any semester for which part-time permission is granted and the semester following it, the academic status of the student is the responsibility of the Dean. A student on academic probation is advised to carry not more than 14 credits per semester unless repeating a course. For every three credits being repeated, the student is advised to carry not more than one additional credit beyond 14, up to a maximum of 16 credits.

### **Credit Load Recommendations**

The curriculum requirements for the BSCE degree can be satisfied in eight semesters of study by completing 15-17 credits of work each semester (see Page 42). However, many students choose to take longer. A nine-semester or ten-semester program may be selected to achieve broader coverage of an area of specialization, penetrate an area more deeply, pursue a certificate program, or pursue a second major. In addition, many students participate in the engineering cooperative education (co-op) program, which requires one or two additional semesters.

### **Enrolling in Courses**

For some courses, students may need permission from either the CEE department or the specific instructor of the course. To obtain permission to enroll in a course in which departmental permission is required, or to obtain the five-digit enrollment code after being given instructor approval, contact Sherry Liantonio via telephone at (608) 890-2420, or email at [stlianto@wisc.edu](mailto:stlianto@wisc.edu).

### **Wait list for courses**

In any given semester, courses may fill up quickly depending on demand. If a student has sufficient reason for enrolling in the closed section, and would like to be placed on a waiting list, he or she should contact Sherry Liantonio (email: [stlianto@wisc.edu](mailto:stlianto@wisc.edu), office: 2304a Engineering Hall) with the following information: 1) Reason for wanting to enroll in the closed section, 2) the five-digit section number, and 3) his or her campus ID number. The department will do whatever it can to assist students in enrolling for the courses they need. However, it cannot be guaranteed that students will be allowed in to the closed section.

## **Course Substitution Requests**

If a student feels that he or she has taken a course either at UW-Madison or another institution that sufficiently covers the material in a required CEE course, the student may complete a Course Substitution Request Form. Along with the Course Substitution Request Form, the student must also provide the syllabus from the course wanting to be substituted and the most up-to-date version of the student's curriculum checklist (see page 44). The request will then make its way through the department and appropriate faculty members before it is approved. The Course Substitution Request Form, along with all departmental forms is located on the CEE website at: <http://www.engr.wisc.edu/cee/current/>.

## **Academic Probation**

<http://studentservices.engr.wisc.edu/regulations/29.html>

A student is placed on Academic Probation when he or she has, in the semester just completed:

1. Attained a GPA less than 2.0; or
2. Passed fewer than 12 credits without part-time permission from the Dean.

Once on probation, the student is continued on probation until either he or she is removed from probation or dropped from the program. Removal from probation takes place when the cumulative grade point average becomes a 2.0 or higher. It is advised that students on probation take no more than 14 credits per semester until removed from probation.

## **Pass-Fail Courses & Credit-No Credit Courses**

<http://studentservices.engr.wisc.edu/regulations/13.html>

Pass-Fail (P-F) is a student-selected, alternative way of being graded in a regularly graded course. Credit-No Credit (CR-N) describes courses approved for two-level grading and is not a student option.

CEE students must take courses P-F in accordance with the College of Engineering Regulations. All engineering students may count two P-F courses toward an undergraduate degree. These courses **MUST** be liberal studies electives. However, students may not use P-F for the required Economics course or the required Environmental Issues course. Note that an ethnic studies class taken P-F will fulfill the Ethnic Studies requirement for any degree in the College of Engineering, but may not do so for degrees in another UW-Madison school or college.

Instructions for adding or canceling P-F requests on the online Course Change Request form can be found here: [http://registrar.wisc.edu/forms/student/cer\\_info.php](http://registrar.wisc.edu/forms/student/cer_info.php). A student may change the grading option of a full-semester course to or from P-F only during the first four weeks of classes.

The P-F agreement is between the student and the Registrar, and is not revealed to the person teaching the course. The person teaching the course submits the appropriate letter grade to the Registrar, who converts C or higher grades to S (Satisfactory), D and F grades to U (Unsatisfactory). Courses designated as CR-N will not be counted in determining the number of P-F courses the student may elect.

## Scholarships

Scholarships within the Civil & Environmental Engineering Department are based strictly on merit (grade point average). There is no application to be completed; all CEE students are considered for departmental scholarships. Rather, CEE students should work hard to attain the highest GPA they are able. Typically, 60 students receive scholarships each year. Scholarship recipients are notified of their award in August. All recipients and their loved ones are encouraged to attend the Annual Scholarship Banquet, which takes place in October to honor the awardees.

For non-departmental scholarships visit <http://studentservices.engr.wisc.edu/money/scholarships/>.

## Grants

<http://grants.library.wisc.edu/index.html>

The Grants Information Collection (GIC) is a collection of print and electronic materials available to students who wish to help fund their university expenses with money other than scholarship aid. The GIC houses numerous databases of grants available to individuals. Students are to conduct their own research into grants, however any reference staff member is available to help show students the location of the collection and answer basic questions. The GIC is open during normal library hours.

Nikki Busch  
(608) 262-3242  
nbusch@library.wisc.edu  
262 Memorial Library

## Graduation

College of Engineering Requirements

<http://studentservices.engr.wisc.edu/regulations/34.html>

It is the student's responsibility to ensure that graduation requirements have been met. All students should regularly consult their DARS (Degree Audit Reporting System) document in conjunction with their faculty advisor and/or academic advisor to ensure that all of the following requirements are met:

1. Have fulfilled the published graduation requirements of the appropriate BSCE curriculum, with all substitutions formally approved.
2. Have a PCR<sup>2</sup> of at least 2.0 for those semesters and sessions containing the last 60 credits taken at UW-Madison or for all credits taken at UW-Madison if fewer than 60.
3. Have a PCR<sup>2</sup> of at least 2.0 for all courses taken in the CEE department that count toward graduation.
4. Have completed at least 30 credits in residence in the College of Engineering, including 15 credits of work in the CEE department.
5. Have completed the last two semesters in residence in the College of Engineering as a full-time student.
6. Have a GPA of at least 2.0 for the last semester, combined last two semesters, and for all work completed at UW-Madison.

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<sup>2</sup> PCR (Point-Credit Ratio) differs from the grade point average in that it involves only those credits that count toward graduation and the related grade points. When a course is repeated, the credits and grade points earned only for the final attempt are included in the point-credit ratio.

### Graduation Requirements for a Second Major

Students must complete the L&S major no later than the semester of graduation with the BSCE degree. Students who have finished all BSCE requirements may delay graduation by one semester in order to finish the L&S degree. In this case, the student **must petition the CEE Department** to delay graduation. If no petition is received, the student will graduate with a BSCE and will **not** be permitted to finish the L&S major. During the student's final semester, all College of Engineering regulations continue to apply.

### Applying for Graduation

Students receiving their bachelor's degree must declare their intent to graduate and graduation month/year (May, August, or December). Students graduating and/or attending commencement declare their intent through the MyUW Student Center. Students intending to graduate in May are allowed to participate in December commencement, and students intending to graduate in December are allowed to participate in May commencement. Because there is no August commencement ceremony, students graduating at this time may attend either the May or December commencement.

### Commencement

For information regarding the Commencement schedules, ordering attire, and parking please visit the following website:  
<http://www.secfac.wisc.edu/commence/>

## **COLLEGE OF ENGINEERING & UW RESOURCES**

### **Counseling & Consultation Services (University Health Services)**

[http://www.uhs.wisc.edu/home.jsp?cat\\_id=36](http://www.uhs.wisc.edu/home.jsp?cat_id=36)

If you are feeling overwhelmed, stressed out, homesick, or just not like yourself, the counselors at Counseling & Consultation Services are there to help. No problem is too large or too small. Counseling & Consultation Services provide individual, group, and relationship counseling, as well as alcohol, tobacco, and other drug abuse services. Individual psychotherapy is an opportunity to talk to a counseling professional and explore personal issues such as stress management, health enhancement, multicultural counseling, career assessment, performance enhancement, and drug or alcohol abuse. Crisis intervention is also available to all students after regular business hours and on the weekends. They will respond to personal crises, traumatic situations, and campus emergencies as quickly as possible. To reach the crisis team, call (608) 265-5600.

The College of Engineering and Counseling & Consultation Services have a unique relationship in that CoE students are able to work directly and confidentially with a counselor focused on the concerns related to life as an Engineering student. David Lacocque, PsyD is a staff psychologist who provides psychotherapy, outreach, and consultation to students within CoE.

To schedule an appointment, call: (608) 265-5600

Hours: Mon, Tue, Thur, Fri: 8:30-5:00

Wed: 9:00-5:00

Location: 333 East Campus Mall (7<sup>th</sup> floor)

### **Engineering Career Services (ECS)**

<https://ecs.engr.wisc.edu/public/index.php>

Engineering Career Services provides lifetime tools for successful career development in a rapidly changing world. ECS helps students in preparing for internship/co-op as well as job searches (resume & cover letter writing, listing of potential employers, etc), practicing interviewing skills (mock interviews, sample interview questions), and other important career information such as negotiating job offers and salaries. Students can become lifetime members of ECS by registering and paying a one-time \$20 fee. See page 32 for more information on internships and co-ops.

The staff at ECS teaches a course called Career Orientation (listed as PRO OR 200 under Professional Orientation). The course generally meets one time per week and is worth one credit. Students gain exposure to the world of work and valuable knowledge and skills related to the job search.

Contact Person for Co-op/Internship: John Archambault

Contact Person for current students seeking employment: Susan Piacenza

Telephone: (608) 262-3471

Location: M1002 Engineering Centers Building

## **International Engineering Studies & Programs**

<http://studentservices.engr.wisc.edu/international/>

The International Engineering Studies & Programs office assists College of Engineering students in studying abroad. Programs through IESP are offered throughout the world including, but not limited to: Chile, Australia, Hungary, England, Turkey, China, and Italy. Financial aid is available to all UW degree-seeking students on study abroad programs – even those who have not received aid in the past. In order to obtain a certificate in International Engineering, students must have a five-week (minimum) study abroad experience. For more information on the International Engineering certificate, see page 17.

Contact Person: Amanda Hammatt

Email: [international@engr.wisc.edu](mailto:international@engr.wisc.edu)

Telephone: (608) 263-2191

Location: M1002A Engineering Centers Building

## **McBurney Disability Resource Center**

<http://www.mcburney.wisc.edu/>

Students who have a documented disability, or suspect that they may have an undiagnosed disability are encouraged to contact the McBurney Disability Resource Center to inquire about obtaining academic accommodations. The McBurney Center provides academic accommodations such as: adaptive/assistive technology access, assistive listening devices, document conversion, elevator keys, ASL interpreting, notetaking support, testing accommodations, and reduced credit load recommendations to name a few. Students must provide documentation and be registered with the McBurney Center to receive at Verified Individualized Services & Accommodations (VISA) before they can obtain accommodations.

Telephone: (608) 263-2741

TTY: (608) 263-6393

Hours: Mon-Fri: 8:00-4:30

Location: 1305 Linden Drive (1<sup>st</sup> floor)

## **Medical Services (UHS)**

[http://www.uhs.wisc.edu/home.jsp?cat\\_id=32](http://www.uhs.wisc.edu/home.jsp?cat_id=32)

Students may seek medical assistance through UHS in the following areas: primary care, women's health, HIV and sexually transmitted infections, allergies and immunizations, dermatology, health concerns for those travelling abroad, sports medicine, and psychiatric services. Most medical services are prepaid and included in student fees and tuition.

To schedule an appointment, call: (608) 265-5600

Hours: Mon, Tue, Thur, Fri: 8:30-5:00

Wed: 9:00-5:00

Location: 333 East Campus Mall (5<sup>th</sup> and 6<sup>th</sup> floors)

## Student Leadership Center (SLC)/Student Organizations

There are over 750 registered student organizations at the UW-Madison. Over 50 of those organizations are recognized as official student organizations within the College of Engineering. For a complete listing of the student organizations registered at the UW-Madison, please visit:

<http://soo.studentorg.wisc.edu/sooform/search/default.asp>.

For a complete listing of the student organizations recognized by the College of Engineering, please visit:

<http://slc.engr.wisc.edu/organizations.html>.

The following student organizations are organizations in which many CEE undergraduate students are involved:

American Indian Science and Engineering Society

<http://www.aises.org>

Habitat for Humanity

<http://www.uwhabitat.org/>

American Society of Civil Engineers

<http://www.engr.wisc.edu/studentorgs/asce/>

Hmong Association of Engineers

<http://www.engr.wisc.edu/studentorgs/hae/>

American Water Works Association (AWWA)/  
Water Environment Federation (WEF)

<http://www.awwa.org>

National Society of Black Engineers-  
Wisconsin Black Engineering Student Society

<http://www.engr.wisc.edu/studentorgs/wbess/>

Chi Epsilon Civil Engineering Honor Society

<http://www.chi-epsilon.org/Default.aspx>

Polygon Engineering Student Council

<http://www.engr.wisc.edu/studentorgs/polygon/>

Concrete Canoe Team

<http://www.engr.wisc.edu/studentorgs/canoe/>

Society of Hispanic Professional Engineers

<http://www.shpemadison.org/>

Construction Club

<http://www.engr.wisc.edu/cee/currentundergrad/constclub.html>

Society of Women Engineers

<http://www.engr.wisc.edu/studentorgs/swe/>

Emerging Green Builders

<http://www.engr.wisc.edu/studentorgs/uwegb/>

Steel Bridge Team

<http://www.engr.wisc.edu/studentorgs/bridge/>

Engineering EXPO

<http://engineeringexpo.wisc.edu/>

Transportation Society (UWiTS)

<http://www.engr.wisc.edu/studentorgs/uwits/>

Engineers without Borders (EWB)

<http://ewb.engr.wisc.edu/index.php?lid=in>

Women in Science and Engineering

<http://www.housing.wisc.edu/wise/>

### **Tutoring & Supplemental Instruction**

<http://studentservices.engr.wisc.edu/classes/tutoring/>

Free academic support is available to engineering students through tutoring, study groups, and supplemental instruction.

#### Drop-In Tutoring

Sponsored by Engineering Student Services

Contact Person: Jia-Ling Lin

Hours: 6:30-9:00 pm (check web for current schedule)

Location: Wendt Library, 4<sup>th</sup> floor

Sponsored by Pi Tau Sigma (ME Honor Society)

Courses Covered: ME courses, Math 221, 222, 234, 320.

Hours: Sun-Thurs 7:00-9:00 pm

#### Supplemental Instruction/InterEGR 150

The Supplemental Instruction (SI) Program is an academic support program for “gateway” courses (EMA 201, EMA 202, ME 240, Physics 201 and Physics 202). SI helps to reinforce concepts, bridge gaps between teaching and learning, and supply strategies to promote problem solving skills with understanding. Students interested in SI are asked to commit time to two 60-minute group discussions facilitated by upper class CoE students. Students enroll in InterEGR 150, which is a zero credit course.

Location: Engineering Hall Atrium/Café area

Hours: Vary by semester

#### **Writing Center**

<http://writing.wisc.edu/>

The UW Writing Center provides free of charge face-to-face and online consultations which focus on a number of different writing scenarios (i.e. drafts of course papers, resumes, reports, application essays, cover letters, theses, etc). Writing Center instructors will not edit or proofread papers. Instead, their goal is to teach students to edit and proofread in order to become a better, more confident writer.

Telephone: (608) 263-1992

Location: 6171 Helen C. White Hall

## **CERTIFICATE PROGRAMS**

<http://studentservices.engr.wisc.edu/advising/degrees/certificates.html>

While UW-Madison does not have minors, it does offer organized programs in specific disciplines that lead to a certificate and a transcript notation indicating successful completion. The College of Engineering offers certificates in Biology in Engineering, International Engineering, Japanese Studies and Technical Communications. Others are available from units outside the college.

### Biology in Engineering Certificate

The Biology in Engineering Certificate, administered by Academic Affairs in the College of Engineering, is designed for engineering students who want to strengthen their biology backgrounds. It is offered especially to encourage engineering students in traditional disciplines to prepare themselves to understand the special engineering problems in biology and medicine. A student successfully fulfilling the requirements will have the notation "Biology in Engineering Certificate" added to their transcript.

The 15-credit Biology in Engineering Certificate (BEC) program was designed and will be administered by a Biology in Engineering Certificate Committee composed of faculty from multiple engineering disciplines. Students normally should begin the program during their sophomore or junior year, but seniors may also apply. For more information, visit 2620 Engineering Hall or call 608/262-3484. More information is also available online at:

<http://studentservices.engr.wisc.edu/advising/degrees/certificates.html>

### Integrated Studies in Science, Engineering and Society (ISSES) Certificate

The Certificate in Integrated Studies in Science, Engineering and Society (ISSES) is a new program offered by the Robert F. and Jean E. Holtz Center for Science and Technology Studies and was created especially for undergraduate engineering students. ISSES is designed to aid engineering students in fulfilling their liberal arts requirements, while giving them coherent exposure to the social sciences and humanities in a way that emphasizes the relationship between science, technology, engineering and society. Students enrolled in the ISSES program take Science and Technology Studies (STS) 201: "Where Science Meets Society," a three-credit course designed to give students the tools and language with which to approach the relationship between science, engineering, and society in an integrated and interdisciplinary fashion. Students then complete 12 additional credits chosen from one of four focus clusters: Ethics, Leadership, Design, and General. For more information, contact Professor Daniel Kleinman at (608) 265-3289 or email at [dlkleinman@facstaff.wisc.edu](mailto:dlkleinman@facstaff.wisc.edu).

### International Engineering Certificate

The Certificate in International Engineering provides recognition for a student's efforts to prepare for an international career by learning about one or more countries other than the United States. An undergraduate student in the College of Engineering or the Department of Biological Systems Engineering can earn the Certificate by completing at least 16 credits worth of courses with a primary focus on the language, culture, history, geography, society or institutions of a particular country or region of the world. For reference, information on Areas Studies Programs at UW-Madison is available from the International Institute. More information is available online at:

<http://www.intl-institute.wisc.edu/MemberPrograms/index.htm>

<http://studentservices.engr.wisc.edu/advising/degrees/certificates.html>

### Certificate in Japanese Studies for Engineering Students

The Certificate in Japanese Studies for Engineering Students helps undergraduate engineering students gain conversational and written skills in colloquial Japanese, reading and translation skills in technical Japanese, and an understanding of Japanese culture. Japanese has become an important language in engineering and business. Increasing numbers of American companies conduct business in Japan, and many Japanese companies have expanded their activities in the United States. These companies need engineers who can read and communicate in both English and Japanese. The Certificate in Japanese Studies addresses this need. The certificate requires 27 credits, including three semesters of Japanese language, two semesters of intermediate-level technical Japanese, and one additional course related to Japanese language or culture. Interested students should begin taking Japanese courses in their first year. For more information, contact Professor James L. Davis, Room M1056D Engineering Centers Building, 608/262-4810, or visit the website for the certificate program at [www.engr.wisc.edu/epd/tjc](http://www.engr.wisc.edu/epd/tjc).

### Technical Communication Certificate

The Technical Communication Certificate (TCC) complements all undergraduate engineering degrees. The TCC curriculum helps students gain a broad range of skills in these areas:

- Written, oral, and graphic communication
- Online communication and electronic publishing
- Team projects and interpersonal communication
- Professional communication through the TCC internship

The Technical Communication Certificate has established itself as a program that meets industry and government agencies' demands for engineers with skills as communicators and for communication specialists. Typically, engineers spend half of their time or more communicating in their roles on project teams, as technical experts, or as managers. Because employers value well-developed communication skills, TCC courses will enhance success in co-op/intern positions and post-graduation careers. The more than 200 TCC graduates overwhelmingly confirm not only that the certificate gave them an edge over other candidates during the recruitment process, but also that the communication knowledge, skills, and attitudes they acquired while in the program helped them succeed in their jobs and helped prepare them for the communication and management tasks in today's multifunctional team environments.

The TCC requires 24 credits, including 9 credits in technical courses (many already required for any engineering degree) and 15 credits in technical communication (3 or 5 communication credits might count toward technical, liberal, or free electives, depending on the major). Aside from the relevant courses offered in the TCC, students especially value the close contact with faculty through advising, independent study projects, and collaboration. Students in the program often take on leadership roles in other college or campus-wide student organizations and projects, further developing their communication, team, and management skills. For up-to-date information, visit the Technical Communication Center website at [tc.engr.wisc.edu](http://tc.engr.wisc.edu) or contact the TCC Office (<http://tc.engr.wisc.edu/contact.html>) at (608) 262-2472 or in M1080 Engineering Centers Building.

### Other Certificates

For the current listing of certificates offered outside the College of Engineering Please visit the Official List of Certificate Programs Offered at UW-Madison available at:

[http://registrar.wisc.edu/faculty/degree\\_majors\\_options\\_certificates/85\\_Official\\_Certificates.pdf](http://registrar.wisc.edu/faculty/degree_majors_options_certificates/85_Official_Certificates.pdf)

Only certificates appearing on this official list will appear on a student's transcript.

## **IMPORTANT INFORMATION FOR INTERNATIONAL STUDENTS**

<http://www.iss.wisc.edu/>

To maintain F-1 and J-1 status, international students must be enrolled in a full course of study each fall and spring semester. For undergraduate students, a full course of study is 12 enrolled credits per semester. Summer enrollment is not required by the US federal government for F-1 and J-1 visa holders unless you are a new student (with a summer school reporting date on your I-20 for initial attendance). Check with an advisor in the International Student Services (ISS) Office if you want to confirm that you are in compliance with your visa regulations.

There are valid academic and medical reasons for an international student to reduce his/her credit load. For any semester an international student intends to reduce his/her course load, he/she must complete the Reduced Course Load for F-1 and J-1 Students Form, have his/her academic advisor or medical professional sign the form, and submit the form to the ISS Office for review. The form is available at:

<http://www.iss.wisc.edu/upload/documents/rcl.pdf>

Increases in US national security efforts may have a significant impact on international students' travel and re-entry to the US. Personal interviews, greater scrutiny of documents and background checks have caused significant delays for visa issuance at US consulates/embassies abroad. Consequently, ISS does NOT recommend travel for those international students whose visas have expired and require renewal in order to re-enter the US. Mandatory background checks as well as enhanced security advisory measures have pushed issuance times back to several weeks or even several months. This delay could extend far beyond the summer/winter break period causing students to miss the start of fall/spring semester. Those students who plan to travel over summer/winter break and whose visa is expired are strongly encouraged to speak with an international student advisor at ISS during walk-in advising hours. If you are traveling overseas and your visa is not expired, we are recommending that you obtain a travel signature from ISS. Travel signatures generally take one working day to process.

## **GRADUATE STUDIES**

<http://www.wisc.edu/grad/>

<http://www.wisc.edu/grad/catalog>

<http://www.engr.wisc.edu/cee/prospective/grad/grad>

Early in their undergraduate studies, students are encouraged to consider the need for obtaining an advanced degree in a specialty area within Civil and Environmental Engineering. Some engineering firms consider an MS degree to be an entry-level degree for employment and also consider this important for promotional advancement. Students who are considering a career in academia or research will likely need to consider a PhD degree. Eligibility for entry into a graduate-degree program will be partially determined by performance as an undergraduate student. Students who are qualified for admissions to graduate study are encouraged to discuss this option with their faculty advisors and/or an academic advisor in the CEE/ECE/GLE Student Services Office. More information on UW-Madison graduate studies and graduate financial support (including fellowships) can be found by visiting the links listed above.

### **Graduate Studies in Civil & Environmental Engineering at UW-Madison**

#### Graduate Programs

- Construction Engineering & Management
- Environmental Engineering
- Environmental Fluid Mechanics and Water Resources Engineering
- Geological Engineering
- Geoengineering
- Materials for Constructed Facilities
- Structural Engineering
- Transportation Engineering and City Planning
- Environmental Chemistry & Technology

#### Admission Requirements

Grades: A minimum undergraduate GPA of 3.0 (on a 4.0 scale) for the equivalent of the last 60 semester hours is required for domestic applicants. International applicants must have an academic performance comparable to a 'B' average for all undergraduate coursework. Some students who do not meet these requirements may be admitted on grad school probation.

Undergraduate Degree: Admitted MS-degree applicants with an undergraduate degree from an ABET-accredited engineering program may enroll in a 24-credit MS thesis program or a 30-credit MS independent study program. Admitted MS-degree applicants without an undergraduate degree from an ABET-accredited engineering program need to enroll in a 40-credit MS program. PhD applicants do not need an undergraduate degree from an ABET-accredited engineering program since the academic program for each student is planned on an individual basis. However, advanced coursework in a major area of CEE is required.

#### Required CEE Application Materials

1. Graduate School Application Form: <https://www.gradsch.wisc.edu/eapp/eapp.pl>
2. Statement of Purpose
3. Letters of Recommendation: Three letters must be submitted through the online application
4. Transcripts: Two official transcripts, which may be ordered online. <http://ordertranscript.wisc.edu/>
5. Graduate Record Examination (GRE) scores.

## Deadlines for Submitting Graduate-School Applications at UW-Madison

### Fall Enrollment:

For financial assistance consideration: January 15<sup>th</sup>

No financial assistance consideration: March 15<sup>th</sup>

Spring Enrollment: October 15<sup>th</sup>

Summer Enrollment: March 15<sup>th</sup>

## Financial Support for Graduate Studies

At UW-Madison there are four types of financial support which include: (a) fellowship, (b) project/program assistant, (c) research assistant, and (d) teaching assistant. The most common types of financial support offered to Civil and Environmental Engineering graduate students are research assistantships, teaching assistantships, and fellowships (in that order). Please visit the Graduate School's [Additional Student Financial Resources site](#) for additional information. Applicants apply for financial support when filling out the Graduate School Application Form.

Fellowship: A fellowship is an award that enables a graduate student to pursue a degree full-time. Fellowship recipients are chosen through a competitive process in the national, university, school/college, or department/program level.

Project/Program Assistantship (PA): These titles designate graduate students employed to assist with research, training or other academic programs or projects. Project/Program Assistants are included in the labor agreement between the state of Wisconsin and the Teaching Assistants Association.

Research Assistant (RA): A Research Assistant must be a graduate student working toward a master's or PhD degree. The work performed is primarily to further the education and training of the student. Research Assistants are required to carry a full load each semester (eight to twelve graduate-level credits including research and thesis for MS or PhD nondissertators, three credits for PhD dissertators), and at least two graduate-level credits during the eight-week Summer session (three credits for PhD dissertators).

Teaching Assistant (TA): Many departments offer teaching assistantships. This title is appropriate for graduate students who have been assigned teaching responsibilities in an instructional department under the supervision of a faculty member. Teaching Assistants are included in a labor agreement between the state of Wisconsin and the Teaching Assistants Association.

Tuition Remission: Graduate students who have the equivalent of at least a 33.33% appointment, as a TA, PA, and/or RA, for the length of the Fall or Spring term receive full tuition remission for that term. Students are still responsible for paying their segregated fees.

Continuing graduate students with TA, PA, and/or RA appointments who earned remission of their instructional and non-resident (if applicable) tuition, in the Spring term, and based on eligible appointments, will have their eligibility carry over automatically to the following Summer term of that year. Students are still responsible for paying their segregated fees. Graduate students who have a TA, PA, and/or RA appointments during the summer and did not have a Spring term full tuition remission must have at least a 33.33% appointment for eight weeks during the Summer term, or an appointment of a different percentage and length that net to the equivalent, to be eligible for Summer term tuition remission. Students are still responsible for paying their segregated fees.

## Steps to Follow When Considering Graduate School

### Preparing to Apply

1. *Two years out:* Start thinking about your future educational plans. Graduate programs often ask for writing samples; try writing an article for publication. Build your resume by working in relevant research experiences by taking CEE 489 or CEE 699. Prepare a file to retain all documents pertaining to your future plans.
2. *18 months out:* Research academic programs and identify program application and funding deadlines. Prepare for GRE and/or TOEFL exams and arrange for their scores to be sent directly to the institutions to which you are applying. Identify professional references in preparation of asking for letters of recommendation.
3. *Three months out:* Prepare a draft of your Statement of Purpose. Share this draft with your faculty advisor and the UW Writing Center for feedback. Contact your references and provide them with a copy of your Statement of Purpose and a relevant resume/CV.
4. *Two Weeks Out:* Contact the schools to which you have applied and have official transcripts mailed directly to the program. If you are an international student, allow more time.

### **Senior-Graduate Status**

<http://www.wisc.edu/grad/education/acadpolicy/guidelines.html#160>

Senior-graduates are UW-Madison undergraduate seniors who are within 1-6 credits of completing the requirements for a bachelor's degree and enroll in the Graduate School simultaneously. The student applies through the normal Graduate School process and must meet minimum admission requirements. In addition, the student must submit a senior-graduate form that verifies courses/credits needed to complete the bachelor's degree. The admitting department/program must recommend admission in full standing. Senior-graduates may not be admitted on probation.

All senior-graduates pay graduate fees and are eligible for teaching assistantship or project assistantship appointments, including tuition remission. They are not eligible for fellowships or research assistantships. All grade points earned as a senior-graduate are counted in the computation of the cumulative undergraduate grade-point average. The student's program is subject to the regulations and requirements of the Graduate School. Graduate credit will be awarded only if the requirements for the bachelor's degree are completed by the end of the semester of senior-graduate enrollment. Failure to earn the bachelor's degree within one semester will result in termination of senior-graduate status and loss of credits toward the graduate degree. The student will be granted graduate standing the semester following receipt of the bachelor's degree.

Application for senior-graduate status is made at time of application to Graduate School. For more information, contact the Graduate School Office of Admissions and Academic Services, 228 Bascom Hall, 262-2433.

## **PROFESSIONAL ENGINEERING EXAM**

In the field of Civil and Environmental Engineering, becoming a licensed Professional Engineer (PE) is imperative for career advancement and for certifying to the public your commitment to ethical and wise practice with consideration of economic, environmental, public health, and safety issues. Licensure is critically important for those who work at civil engineering firms, and is continually increasing in importance for those who work in construction firms.

The most common and recommended path to a PE license is to follow the following four steps:

1. Attain a BS degree from an ABET-accredited undergraduate engineering program.
2. Take and pass the Fundamentals of Engineering (FE) exam.
3. Attain 4 years of work experience in engineering practice.
4. Take and pass the Principles and Practice of Engineering (PE) exam.

As noted above, the first step in attaining licensure is to receive a BS degree from an ABET-accredited undergraduate engineering program. Our undergraduate engineering program has received this accreditation.

The second step in attaining licensure is successful completion of the FE exam. This exam focuses on the material you learned in your undergraduate degree program. CEE students should plan to take the FE exam during their senior year. The FE Exam is held twice per year, once every April and October. Registration for the test must be completed at least ninety days prior to the exam (mid-January for the April exam and mid-July for the October exam). To register for the exam online, go to the Wisconsin Department of Regulation and Licensing web page at:

<http://drl.wi.gov/prof/engi/cred.htm>

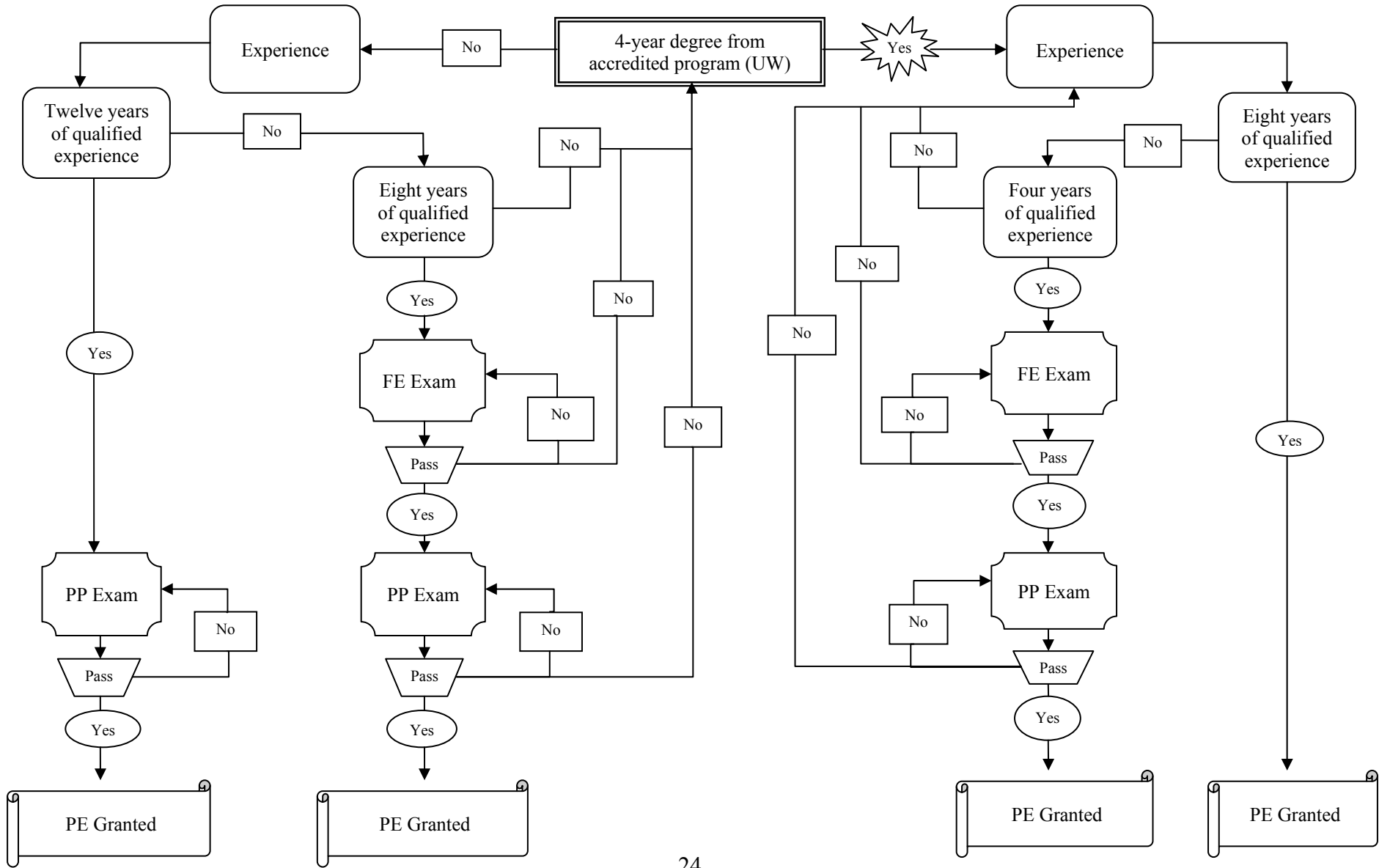
Once you are on this web page, go to Section 2a and click on the link to Engineering Examination Services (EES) for detailed instructions.

Note that all states have similar detailed requirements for completion of Steps 1 and 2. Thus, successful completion of a BSCE from UW-Madison and successful completion of an FE exam taken in Wisconsin will normally be applicable in all states.

Detailed requirements for completion of Steps 3 and 4 can vary significantly from state to state. The website noted above contains basic information on requirements to become a Professional Engineer in Wisconsin. The web page also contains links to detailed information. If a student knows that they will be accepting a job outside of Wisconsin after graduation, then the student would be well-served to look up the requirements that are specific to the state in which they take their job.

As noted above, at least four years of professional, post-college experience are required to apply for the Principles and Practice Examination (PE). However, a portion of the time spent in the completion of graduate-level degrees can count towards the four-years of professional experience.

### Current Registration Process for the State of Wisconsin for Professional Engineers



## UNDERGRADUATE ADVISING

The College of Engineering (COE) encourages students to seek guidance from multiple sources throughout their undergraduate studies. Just as no one mentor can fulfill all of a developing professional's needs, no one advisor can fulfill all of a student's needs. A student will receive richer and more valuable advice by seeking that advice from multiple advisors.

### Role of the Student in the Advising Process

The COE requires, and expects, students to be active in educational planning and advisement. Students are expected to know what their degree requirements are; to monitor their academic progress, which includes knowing what courses have been completed, what courses remain, and what good academic standing means; to be aware of policies and procedures which guide their studies; to consult regularly with an advisor, especially before every registration period; and to be aware of how he/she learns in order to balance course schedules.

### Engineering General Resources (EGR) Advisors

All undergraduate students who have been admitted to the COE but are not yet affiliated with a degree-granting department are given the general classification of Engineering General Resources (EGR). All EGR students receive advising from an EGR advisor in the EGR office (1150 Engineering Hall). Students are welcome to discuss a wide variety of topics with their EGR advisor such as: (a) personal interests and career goals, (b) majors in or outside of engineering, (c) curriculum requirements and course selection, (d) academic support, such as tutoring services and study groups, (e) admission to engineering departments, (f) extracurricular activities, (g) campus resources and services, and (h) referrals for nonacademic problems.

EGR students are required to meet with their EGR advisor at various times throughout their tenure as an EGR student. EGR students should check with the EGR office for detailed information on required advising.

### Academic Advisors

All undergraduate students who have been admitted to a degree-granting department will be assigned to an academic advisor (i.e., a staff advisor). The academic advisor advises students on curriculum requirements; COE and UW-Madison policies and procedures; and the graduate school or professional school application process. An academic advisor can work with students to develop individual educational plans, answer questions about DARS reports, and connect students with other campus resources (e.g., Office of Student Financial Services, Engineering Transfer Admissions, International Engineering Studies and Programs, Engineering Career Services, etc.). The way to meet with an academic advisor in the CEE/ECE/GLE Student Services Office is to make an individual appointment or to stop in during drop-in advising times. To schedule an individual appointment or to inquire about drop-in advising with an academic advisor, use the [Online Scheduling Tool](#) or contact Sherry Liantonio via telephone at 608/260-2420 or stop by her office in 2304a Engineering Hall.

### Faculty Advisors

All undergraduate students who have been admitted to a degree-granting department will also be assigned to a faculty advisor. All students are encouraged to take the initiative to build a mentoring relationship with their faculty advisor as well as with other faculty members. Building a mentoring relationship with faculty is best done by meeting in person with faculty for scholarly advice such as guidance on research/independent study projects and advice on post-graduation plans. Faculty advisors are the best advisors to see for questions about course content, questions about course intensity, and for help selecting advanced coursework or advanced electives to align with your post-graduation plans.

# **DEGREE REQUIREMENTS**

## **General College Requirements**

All entering engineering students must complete the following General College Requirements (GCR) prior to entering a degree-granting program in the College of Engineering. The GCR may be satisfied by a number of different courses depending on the student's background and interest. As a result, the number of credits taken as part of the GCR may vary from a minimum of 22 to a maximum of 29, depending on the selection of courses. *Only 22 credits will count towards the CEE Degree.*

The General College Requirements include:

1. Fulfillment of Communication A General Education Requirement (EPD 155 or equivalent)
2. Physics: Either EMA 201 or Physics 201
  - In CEE, transfer students who have received credit for Physics 201 are encouraged to take EMA 201 and use their Physics 201 credits as a substitute for EMA 202 in the Engineering Science Requirements (see Page 29).
3. Chemistry: Either Chemistry 109 or Chemistry 103/104
4. Introduction to Engineering: One course from InterEGR 160, InterEGR 101, or a course from the pre-approved list (this list may be found on the College of Engineering Student Services web page: <http://studentservices.engr.wisc.edu/>)
5. Math: Math 221 and 222
  - Either Math 217 or Math 275 may be used as a substitute for Math 221
  - Math 276 may be used as a substitute for Math 222

## **Department of Civil and Environmental Engineering Requirements**

In addition to the GCR, the department requires students to take a minimum of 106 additional credits. These credits are distributed among the seven categories shown in the table below. Detailed requirements for each of these categories are provided on Pages 28 through 36.

<b>Category</b>	<b>Minimum Credits Needed</b>
Math/Statistics Requirement	9
Natural Science Requirement	11
Engineering Science Requirement	17
Civil Engineering Requirement	21
Applied Engineering Requirement	30
Communication Skills Requirement	5
Liberal Studies Requirement	16
<b>Total CEE Credits</b>	<b>109</b>
<b>GCR Credits</b>	<b>22</b>
<b>Total Number of Credits Needed</b>	<b>131</b>

Students and their parents often ask if these requirements can be completed in eight semesters. The answer to this question is yes, but this requires careful planning from the moment a student enrolls at the university. An example 8-semester plan is shown on Page 42.

**Design credits:** The curriculum also requires that all students complete 16 credits of engineering design. A worksheet for these design credits is provided on Page 34. Pages 38 through 41 show the design credits provided by CEE courses.

## **Undergraduate Option Programs**

The CEE Department offers three undergraduate option programs:

- Construction Engineering Management (CEM)
- Environmental Engineering (EV)
- Fluid Systems Engineering (FSE)

Once students have been accepted to the CEE Department they may choose to apply to one of the option programs. Students are not required to join an option program.

Each option has a separate set of applied engineering requirements and these are detailed in curriculum guides that are specific to the option program. Students are strongly encouraged to read the appropriate curriculum guide prior to joining an option and to fully understand the implications of joining an option on time to graduation. For example, the CEM option requires a minimum of 131 credits for graduation rather than a minimum of 128 credits.

Students who complete an option program still receive an accredited BS Degree in Civil Engineering and the transcript will show that the student has completed the option.

For more information or to apply to an option, please see Katie Bleier in 2304 Engineering Hall. For the EV option, admission is limited to 20 students per year. Applications to join the EV option are typically accepted in early October and early March. Due to the limited enrollment, admission to the EV option is based on a student's academic performance. Enrollment in the CEM or FSE options may be done at any time.

## DETAILED CURRICULUM REQUIREMENTS

### Math/Statistics Requirement

(9 Credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
Math 234	Calculus and Analytical Geometry	Math 222	3	0.0
<i>One of the following statistics courses:</i>				
Stat 324	Introductory Applied Statistics for Engineers	--	3	0.0
Stat 311	Introduction to Mathematical Statistics	Math 222 or con reg	4	0.0
<i>One of the following advanced mathematics courses:</i>				
Math 319	Techniques in Ordinary Differential Equations	Math 222	3	0.0
Math 320	Linear Algebra and Differential Equations	Math 222	3	0.0

Students who completed Statistics 224 before Spring 2008 can use this course to fulfill the statistics requirement. For students who take Statistics 311, which is 4 credits, the excess credit may be used in the Applied Engineering Requirement.

### Natural Sciences Requirement

(11 Credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
<i>One of the following physics courses:</i>				
Physics 202	General Physics	Math 211 or 221 or H.S. Calc.	5	0.0
Physics 208	General Physics	Physics 207	5	0.0
<i>One of the following geoscience courses:</i>				
Geoscience 100	General Geology	--	3	0.0
Geoscience 101	Elementary Geology	--	5	0.0
Geoscience 106	Environmental Geology	--	3	0.0
<i>One of the following biology courses:</i>				
Botany/Zoology 151	Introductory Biology	--	5	0.0
Botany/Zoology 153	Introductory Biology	--	3	0.0
Botany/Zoology 260	Introductory Ecology	--	3	0.0
Microbiology 101	General Microbiology	Chem 103, 108, 109, or 115	3	0.0

#### Notes:

- Transfer students may satisfy credit deficiencies in the Natural Sciences Requirement with other courses having a breadth classification of B, P, or N. However, the following courses may *not* be used to satisfy credit deficiencies in the Natural Sciences Requirement:
  - Astronomy 100
  - Botany 240
  - Meteorology 100
  - 100-level Physics courses.
- A score of "5" on the AP Biology Test is accepted for Biology 153.

## Engineering Science Requirement

(17 Credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
EMA 202	Dynamics	EMA 201 or 214; and Math 222	3	0.0
EMA 303	Mechanics of Materials	EMA 201 & Math 222	3	0.0
EMA/ME 307	Mechanics of Materials Lab	ME/EMA 306 or EMA 304 or con reg	1	0.5
CEE 310	Fluid Mechanics	Math 234 & EMA 202 or equiv	3	0.0
CEE 340	Structural Analysis I	EMA 303 & EMA/ME 307 or con reg	4	1.5
CEE 395	Materials for Constructed Facilities	EMA/ME 303 & 307	3	1.0

Physics 201 may be used for EMA 202. In such a case, students must take EMA 201 to fulfill the GCR. If both EMA 201 and 202 have been taken along with Physics 201, EMA 202 CANNOT count towards the Engineering Outside CEE requirement within Applied Engineering. Instead EMA 202 will fulfill three credits of Natural Electives within the Applied Engineering requirement.

## Civil Engineering Requirement

(21 credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
ME 170	Civil Engineering Graphics	--	2	0.0
CEE 291	Problem Solving Using Computer Tools	EMA 202 or 304	3	0.5
CEE 311	Hydroscience	CEE 310	3	1.0
CEE 320	Environmental Engineering	1 year college chemistry	3	0.0
CEE 330	Soil Mechanics	EMA 303 or 304 or con reg	4	1.0
CEE 370	Transportation Engineering	Statistics 324 or con reg	3	0.5
CEE 498	Construction Project Management	Jr. status or instructor consent	3	0.5

During the 2007-2008 Academic Year and in the Fall 2008 semester, students were allowed to use CS 310 or CS 302 to fulfill the CEE 291 requirement.

**Applied Engineering Requirement**  
(30 Credits)

**Civil & Environmental Engineering Courses**  
**Technical/Business Courses**

**21 credits**  
**9 credits**

**NOTE:** These requirements for applied engineering are not applicable to the general civil (CEE), environmental engineering (EV), or fluid systems engineering (FSE) option programs. Students interested in the CEE, EV option, or FSE option programs should consult the curriculum guide for the specific program that they are interested in.

1. Every student must complete a minimum of 21 credits in CEE coursework. These credits may be fulfilled as described in Items 2 through 7 on this page.
2. Every student **must** complete the following course:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 578	Senior Capstone Design	A course with 3 design credits (see next item)	4	4.0

3. Prior to taking CEE 578, every student **must** complete at least one of the following courses:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 445	Steel Structures I	CEE 340	3	3.0
CEE 447	Concrete Structures I	CEE 340	3	3.0

4. Students must take the following Construction Management Courses:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 491	Legal Aspects of Engineering	Sophomore status or instructor consent	3	0.5
CEE 492	Project Estimating & Scheduling	Junior status	3	0.8

5. Students **must take two** 1-credit co-ops or internships. A summer internship equals one-credit; a co-op equals one-credit. See page 32.
6. Completion of Items 2 through 5 will fulfill 15 of the required 21 credits of CEE coursework. The remaining 6 credits of CEE coursework may be satisfied by taking any CEE course. If a student takes more than one course in Item 3, the additional course will count towards these remaining 6 credits of CEE coursework.
7. Up to six credits of research work (CEE 299, CEE 489, and/or CEE 699) may be used towards the 21 credits of CEE coursework (see page 33 for description of research credits).

**Applied Engineering Requirement (continued from previous page)**

8. A minimum of nine credits in Technical/Business Coursework may be taken for the Applied Engineering Requirement. Requirements and recommendations for these courses are listed in Items 9 and 10.
9. Students must **take two** 3-credit Business Courses. Choose from:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
ACCT 300	Accounting Principles	Jr. status	3	0.0
Finance 300	Introduction to Finance	Jr. status, Econ 101, and Gen Bus 303	3	0.0
MHR 300	Organizational Behavior	Sophomore status	3	0.0
Real Estate 611	Residential Property Development	Real Estate 306 or instructor consent	3	0.0

10. In order to fulfill the three credits in Engineering Outside CEE requirement, students must **choose one** of the following courses:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
ISyE 313	Engineering Economic Analysis	Sophomore status	3	0.0
ISyE 315	Production Planning & Control	Stats 311 & CEE 291	3	0.0
ISyE 349	Introduction to Human Factors	Intro probability or stats course	3	0.0
ISyE 417	Health Systems Engineering	ISyE 313, 320, 321 or instructor consent	3	0.0

## Applied Engineering Requirement (continued from previous page)

### Co-op Process Description

The Cooperative Education Program allows for students to undertake full-time supervised paid engineering positions, interspersed within their period of full-time study, as part of the undergraduate education and degree program. Civil Engineering students typically work either January through August or May through December.

One academic degree credit is given for each semester of co-op work. A maximum of three co-op course credits (CEE 001) are acceptable as Applied Engineering electives toward the BS degree. The experience the student receives must be submitted in a four to five page work report to the co-op office to determine the assignment of the grade. The Department will consider a portion of the co-op credits for Design credits. The student's CEE advisor (or another CEE faculty person) must evaluate the portion of the work that is Design in order for it to receive credit. A copy of the work report should be in the advisor's student file if Design is awarded.

Students are strongly encouraged to pursue academic credit for their co-op assignment, regardless of whether it is necessary or not for their degree. It will be applicable toward satisfying requirements for PE licensing.

To participate in the co-op program, students must register the semester **before** the desired work period (no retro credits will be accepted). Engineering Career Services (M1002 Engineering Centers Building) coordinates the program. Students must go through John Archambault, the Director of the Cooperative Education and Internship Program in order to sign up for a co-op.

The typical recruiting timeline is shown below:

Fall	Spring	Activity
September	January	Career Services – first week of classes, on-going throughout the semester.  Career Fair – Typically over 200 employers participate to identify students for on-campus interviews
October	February	On-campus interviews
November	March/April	Second interviews, offers received
December	May	Pre-work meetings

For CEE students who did not initially receive offers to co-op, the co-op office has been successful in finding placements by contacting possible employers directly. Advisors may also have suggestions of possible employers or refer students to other faculty in a particular area of interest for such suggestions.

## **Applied Engineering Requirement (continued from previous page)**

### **Research Credits (CEE 299, CEE 489, and CEE 699)**

Students can earn up to six credits towards their applied engineering requirements by performing research under the supervision of faculty in the Department of Civil and Environmental Engineering. This can be accomplished by registering for Honors in Research (CEE 489) or Independent Study (CEE 299 or CEE 699) in the semester that the research is conducted.

If a student wishes to obtain design credits for their work, they must submit a course substitution request form with appropriate justification for the number of design credits requested. Justification shall include a detailed description of the work performed and a statement from the faculty member who supervised the work. A description of each research option is provided below.

### **Honors in Research (CEE 489)**

To be eligible for this program, a student must have completed at least two semesters on the UW-Madison campus with a cumulative GPA of **at least 3.5**. The program is open to students majoring in Civil Engineering. A senior thesis worth a minimum of three credits is required and should be written in the style of a graduate thesis. The thesis advisor determines the grade which the student receives for the thesis. A bound copy of the thesis should be submitted to the CEE Associate Chair of Undergraduate Programs. The senior thesis should be presented by the student to a committee in a publicly announced seminar.

Before signing up for this program, the student should identify and obtain the concurrence of an appropriate professor to serve as his/her thesis advisor. The thesis advisor should verify that the student will participate in the creation of new knowledge, experience the research process, and make a contribution so that it would be appropriate to include the student's name on scholarly publications resulting from the research. The research need not be an independent effort by the student, but can be participation in a larger team effort, as long as it meets these criteria.

The student should submit a letter to the Associate Chair of Undergraduate Programs in the CEE Department, which should request admission, stating the approximate topic of his/her proposed research, and identifying the proposed thesis advisor under whose guidance he/she will be working. The topic should be appropriate to the major. A letter from the proposed thesis advisor supporting the application should be included.

Once a student is admitted to the program, the student will register for credit in CEE 489. Students may register for 1 to 3 credits per semester. A grade of "P" (Progress) will be assigned each semester until the student completes the senior thesis or drops out of the program, at which time a final grade is assigned. This becomes the grade for all credits taken in CEE 489.

**Students who (1) satisfy the requirements for an undergraduate degree in Civil Engineering, (2) have a cumulative GPA of at least 3.3, (3) complete a total of at least 8 credits in CEE 489, and (4) complete a senior thesis with a final grade of B or better, will receive the designation "Honors in Research" on their transcript.**

### **Independent Study (CEE 299 or CEE 699)**

Like CEE 489, independent study students perform research under the direction of individual CEE faculty members. However, there are no expectations for a student to create knowledge, participate in writing research papers, or produce a senior thesis. CEE 299 is open to freshmen while CEE 699 requires sophomore standing. The student works with his/her independent study advisor to determine whether he/ she should sign up for CEE 299 or CEE 699. The student also works with his or her independent study advisor to determine the number of credits that will be awarded and to determine expectations for workload. Six credits of independent study may be counted towards the applied engineering requirement.

## Applied Engineering Requirement (continued from previous page)

### Design Credits

A student graduating with a Civil Engineering degree must have sixteen or more design credits. Pages 38 through 41 provide a listing of design credits in CEE courses.

As shown below, required courses account for 13.5 of the required 16.0 design credits. Thus, students only need to find a minimum of 2.5 design credits in their applied engineering electives.

Up to three of the design credits for courses taken in the Applied Engineering category may be taken in the College of Engineering outside of CEE.

The criteria for determining design credits for Co-Op, Special Topics, Practicum and Independent Study courses should be based on the document approved September 7, 1973 by the CEE faculty entitled “Design in Civil Engineering Curriculum.” A copy of the student’s Engineering Co-Op (CEE 001) report must be placed in the student’s file if design credits are taken.

Students must take special care to check design credits that were in effect for courses during the semester they were taken.

**Entries in the table below include required courses. Students should work with their advisor to fill in the open spaces to keep track of design credits in their elective courses.**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
EMA/ME 307	Mechanics of Materials Lab	EMA/ME 306 or con reg	1	0.5
CEE 291	Problem Solving Using Computer Tools	EMA 202 or 304	3	0.5
CEE 310	Fluid Mechanics	Math 234 & EMA 202	3	0.0
CEE 311	Hydroscience	CEE 310	3	1.0
CEE 320	Environmental Engineering	1 year college chemistry	3	0.0
CEE 330	Soil Mechanics	EMA 303 or 304 or con reg	4	1.0
CEE 340	Structural Analysis	EMA 303 & ME 307 or con reg	4	1.5
CEE 370	Transportation Engineering	Stats 324 or con reg	3	0.5
CEE 395	Materials for Constructed Facilities	EMA 303 & 307	3	1.0
CEE 498	Construction Project Management	Jr. status or instructor consent	3	0.5
CEE 578 pre-req	See page 30 for complete list	See page 30	3	3.0
CEE 578	Senior Capstone Design	A course with 3 design credits	4	4.0
Subtotal				13.5
Total (must be $\geq 16$ )				

## Communication Skills Requirement

(5 Credits)

Communication Skills Courses **MUST** be selected from the lists below. Students must choose at least one Speech-Related course and one Writing-Related course.

### Speech-Related Courses:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
<b>EPD 275</b>	<b>Technical Presentations (strongly recommended)</b>	Sophomore status	2	0.0
Com Arts 105	Public Speaking	--	2	0.0
Com Arts 181	Elements of Speech (Honors)	--	3	0.0
Com Arts 262	Theory & Practice of Argumentation and Debate	--	3	0.0
Com Arts 266	Theory & Practice of Group Discussion	--	3	0.0

**Note:** EPD 275 counts towards the Technical Communication Certificate offered by EPD.

### Writing-Related Courses:

These courses satisfy the UW-Madison Communication Skills Part B General Education Requirement

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
<b>EPD 397</b>	<b>Technical Writing (strongly recommended)</b>	Jr. status	3	0.0
English 201	Intermediate Composition	3 credits of Intro Lit.	3	0.0
English 203	Creative Writing	3 cr. of Intro Lit., Sophomores only	3	0.0
English 315	Advanced Expository and Critical Writing	Instructor consent	3	0.0

**Note:** EPD 397 counts towards the Technical Communication Certificate offered by EPD.

## Liberal Studies Requirement

(16 Credits)

Courses counted towards this requirement must have a breadth designation of H, L, S, or Z (*H = Humanities, L = Literature, S = Social Sciences, Z = Either Humanities or Social Science*). Foreign language courses are considered to have a designation of H by the College of Engineering (see next page for more details on these courses). EPD 101 is also considered a liberal studies course.

**At least 16 credits must be selected from the items below and on the next page.** No more than six of the 16 credits may be taken pass/fail. However, the required economics and environmental issues courses may not be taken pass/fail.

### 1. An economics course must be selected from the following list:

**Note:** The required economics course cannot be taken pass/fail

Course Number	Course Title	Breadth Classification	Course Level	Degree Credits	Design Credits
Econ 101	Principles of Microeconomics	rS	E	4	0
Econ 102	Principles of Macroeconomics	S	E	3	0
Econ 111	Principles of Economics-Accelerated Treatment	rS	E	4	0

### 2. An environmental issues course must be selected from the following list:

**Note:** The required economics and environmental issues courses cannot be taken pass/fail. None of these courses carry design credits.

Course Number	Cross Listing Departments	Course Title	Breadth Class	Course Level	Degree Credits
Envir St 112	--	Environmental Studies: The Social Perspective	S	E	3
Envir St 113	--	Environmental Studies: The Humanistic Perspective	H	E	3
Envir St 139	Geography	Resources and People	S	E	3
Envir St 307	--	Literature of the Environment: Speaking for Nature	L	I	3
Envir St 309	Geography	People, Land, Food: Comparative Study of Ag Systems	S	I	3
Envir St 339	Geography	Environmental Conservation	S	I	4
Envir St 343	Economics	Environmental Economics	S	I	3
Envir St 440	--	Environmental Decision-Making	S	I	3
Envir St 441	Philosophy	Environmental Ethics	Z	A	4
Envir St 448	Political Sci	Energy Policy and Politics	S	D	3-4
Envir St 449	Econ, Poli Sci	Government and Natural Resources	S	D	3-4
Envir St 453	Philosophy	Aesthetics of the Natural Environment	H	D	3
Envir St 460	History, Geoscience	American Environmental History	Z	I	3
Envir St 477	Anthropology	Anthropology, Environment, and Development	S	I	3
Envir St 497	History	A Natural History of Man	S	I	3-4
Envir St 537	Geography	Culture and Environment	S	A	4
Envir St 644	History	Mankind in the American Environment	S	I	3-4
Envir St 668	--	Green Politics: Global Experience, American Prospects	S	D	3

### **Liberal Studies Requirement (continued from previous page)**

3. **An ethnic studies course must be selected.** Ethnic Studies courses are courses that count towards the UW Madison Ethnic Studies Requirement and are indicated in the timetable by a lower case “e”. This course may be taken Pass/Fail, but this course will not transfer to a major outside the College of Engineering (see Page 10).

The ethnic studies course is a requirement that all UW students must take, which considers ethnic/racial minorities that have been marginalized or discriminated against in the U.S. Because issues of ethnic diversity and religion are often intertwined and cannot easily be separated, courses that focus only on religion may, where appropriate, fulfill the this requirement.

4. A minimum of six credits must be taken from courses having a breadth classification of H, L, or Z. The environmental issues course and the ethnic studies course may be used to satisfy this requirement, but they cannot be double-counted towards the total of 16 credits needed.
5. A minimum of six credits must be taken from the same department or program. At least one of these courses must be an upper-level course. Upper level courses are classified in the timetable as a course at level I, A, or D (*I = Intermediate, A = Advanced, D = Intermediate or Advanced*). Foreign language retro credits may be used to fulfill this requirement. Courses taken to meet the economics, environmental issues, and ethnic studies requirements may also be used to meet this requirement, but they cannot be double-counted towards the total of 16 credits needed.

#### **Using foreign language courses to meet the liberal studies requirement:**

- As noted earlier, foreign language courses are considered to have a breadth designation of H.
- Retro credits, which are credits awarded by foreign language departments for successful completion of a higher level course, do NOT count toward the total of 16 credits needed.
- Retro credits do NOT count as part of the minimum six credits of H, L, or Z.
- Retro credits may be used to satisfy the depth requirement (I, D, or A level) if the credits were given an I, D, or A level designation.
- Foreign language credits taken to make up a high school deficiency for campus entrance may NOT be used towards the liberal studies requirement.

## AREAS OF SPECIALIZATION WITHIN CEE & DESIGN CREDITS FOR CEE COURSES

The following lists of courses have been developed to aid in guiding students who may choose to emphasize one or more areas of study within CEE. This list may also be used to aid students in selecting courses with design credits.

### **Construction Engineering and Management**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 491	Legal Aspects of Engineering	Senior Status or instructor consent	3	0.5
CEE 492	Integrated Project Estimating and Scheduling	Junior Status	3	0.8
CEE 494	Civil & Environmental Engineering Decision Making	Math 221 or instructor consent	3	1.0
CEE 496	Electrical Systems for Construction	Physics 202	3	0.0
CEE 497	Mechanical Systems for Construction	Physics 202	3	3.0
CEE 596	Constructability Analysis	Junior Status	3	1.0
CEE 698	Special Topics: Architectural Design for Construction	--	3	0.0
CEE 698	Special Topics: Building Information Modeling	--	2	0.0
CEE 698	Special Topics: Construction Field Observation	--	1	0.0
CEE 698	Special Topics: Leadership Development for Project Managers	--	1-4	0.0
CEE 698	Special Topics: Research Methods-CEM	--	1	0.0
CEE 698	Special Topics: Sustainability Principles and Practices for Construction	--	3	0.0

### **Environmental Engineering**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 322	Environmental Engineering Processes	CEE 320	3	0.0
CEE 372	On-Site Waste Water Treatment and Dispersal	Chemistry 103	2	0.0
CEE 422	Elements of Public Health Engineering	--	3	0.0
CEE 423	Air Pollution Effects, Measurement and Control	Senior Status	3	2.0
CEE 424	Environmental Engineering Laboratory	Chemistry 103 or equivalent	2	0.0
CEE 426	Design of Wastewater Treatment Plants	CEE 310 or 316 and 320 or instructor consent	3	3.0
CEE 427	Solid and Hazardous Waste Engineering	CEE 310 or instructor consent	3	3.0
CEE 428	Water Treatment Plant Design	CEE 310, 320	3	3.0
CEE 500	Water Chemistry	Chemistry 103, 104, 221, or equivalent, instructor consent	3	0.0
CEE 501	Water Analysis-Intermediate	Chemistry 223	2	0.0
CEE 503	Water Analysis-Intermediate Lab	--	1	0.0
CEE 522	Hazardous Waste Management	CEE 320 or instructor consent	3	3.0

**AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES**

(continued from previous page)

**Environmental Engineering (Continued)**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 609	Special Topics: Sol-Gel Chemistry	Instructor consent	1-3	0.0
CEE 609	Special Topics: The Chemistry of Air Pollution	Instructor consent	1-3	0.0
CEE 619	Special Topics	--	1-3	0.0
CEE 629	Special Topics in Environmental Engineering	Senior status	1-3	0.0

**Geoengineering**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 530	Seepage & Slopes	CEE 330	3	3.0
CEE 531	Retaining Structures	CEE 330, 291, or instructor consent	3	3.0
CEE 532	Foundations	CEE 330, 291, or instructor consent	3	3.0
CEE 534	Field Methods in Geological Engineering	CEE 330 & GLE 474 or instructor consent	3	0.0
CEE 631	Toxicants in the Environment: Sources, Distribution, Fate & Effects	Chem. 343 & 345 or equiv.; Chem 561 or equiv.; Physics 103 & 104 or equiv.; Math 211; or instructor consent	3	0.0
CEE 633	Waste Geotechnics	CEE 330 & 320 or instructor consent	3	0.0
CEE 635	Remediation Geotechnics	--	3	2.0

**Geospatial Information Engineering**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 357	An Introduction to Geographic Information Systems	Intro course in environmental studies or mapping science & an intro course in computer programming or computer concepts	4	1.0
CEE 444	Practical Applications of GPS Surveying		2	0.0
CEE 556	Remote Sensing Digital Image Processing		3	1.0

## AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES

(continued from previous page)

### Structural Engineering

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 440	Structural Analysis II	CEE 340	3	0.5
CEE 442	Wood Structures I	CEE 340	3	3.0
CEE 445	Steel Structures I	CEE 340	3	3.0
CEE 447	Concrete Structures I	CEE 340	3	3.0
CEE 543	Precast Concrete	CEE 447	3	0.0
CEE 545	Steel Structures II	CEE 445	3	0.0
CEE 547	Concrete Structures II	CEE 447	3	3.0
CEE 614	Highway Bridges	CEE 445 and CEE 447	3	0.0
CEE 649	Special Topics: Art in Engineering Architecture	--	1-3	0.0
CEE 649	Special Topics: Sustainable Energy Building Design	--	3	1-3

### Transportation Engineering

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 570	Environmental Impact of Transportation Systems	--	3	0.0
CEE 571	Urban Transportation Planning	CEE 370 or instructor consent	3	1.0
CEE 573	Geometric Design of Transport Facilities	CEE 370	3	3.0
CEE 574	Traffic Control	CEE 370	3	3.0
CEE 576	Advanced Pavement Design	CEE 375	3	3.0
CEE 679	Special Topics: Advanced Topics in Traffic Flow and Safety	Instructor consent	3	0.0
CEE 679	Special Topics: Advanced Transportation Demand and Supply Modeling	Instructor consent	3	0.0
CEE 679	Special Topics: Travel Behavior Analysis	Instructor consent	3	0.0
CEE 695	Design and Construction of Bituminous Mixtures	CEE 395 or CEE 575	1-3	0.0

**AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES**

(continued from previous page)

**Water Resources Engineering**

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
CEE 315	Hydrology	CEE 291 & CEE 311 or instructor consent	3	0.0
CEE 410	Hydraulic Engineering	CEE 310 & 311 or instructor consent	3	1.5
CEE 411	Open Channel Hydraulics	CEE 311	3	1.5
CEE 412	Groundwater Hydraulics	--	3	0.0
CEE 414	Hydrologic Design	CEE 315 or instructor consent	3	3.0
CEE 514	Coastal Engineering	CEE 311 or instructor consent	3	1.5
CEE 618	Special Topics: Environmental Fluid Mechanics	Varies by topic	1-3	0.0
CEE 618	Special Topics: Field Assessment of Changing Climate on Great Lakes	Varies by topic	3	0.0
CEE 618	Special Topics: Sediment Processes and Engineering	Varies by topic	1-3	0.0
CEE 619	Special Topics in Hydrology	Instructor consent	1-3	0.0

## SAMPLE COURSE PLANNING GRID

As noted previously, many students and their parents want to know if the CEE degree requirements can be completed in 8 semesters. This can be done, but requires careful planning and a desire to major in civil and environmental engineering upon entry to UW-Madison. Students are strongly encouraged to work with EGR and CEE advisors to increase the odds of success.

The following tables provide an example of a semester-by-semester planning grid that meets the requirements for the CEM option. **The first grid illustrates an eight semester plan; completing the two required internships/co-ops during the summer breaks between sophomore and junior year and junior year and senior year.**

Year 1		Year 2		Year 3		Year 4	
Fall		Fall		Fall		Fall	
Math 221	5 cr	Math 234	3 cr	CEE 340	4 cr	CEE 498	3 cr
Chem 109	5 cr	CEE 320	3 cr	CEE 370	3 cr	CEE 445 or 447	3 cr
Comm A	2 cr	Stat 324	3 cr	CEE 311	3 cr	CEE 492	3 cr
Intro to Engineering Course	1-3 cr	EMA 202	3 cr	EPD 397	3 cr	Liberal Studies Elective	3-4 cr
Liberal Studies Elective	3 cr	Bot 153, Bot 260, or Microbiol 101	3 cr	Econ 101,102, or 111	3-4 cr	Business course	3 cr
Total Credits	16-18	Total Credits	15	Total Credits	16-17	Total Credits	15-16
Spring		Spring		Spring		Spring	
Math 222	5 cr	EMA 303	3 cr	Environmental Studies Elective	3 cr	CEE 578	4 cr
EMA 201	3 cr	EMA/ME 307	1 cr	CEE 330	4 cr	Applied Engr Electives	6 cr
ME 170	2 cr	Outside CEE	3 cr	CEE 395	3 cr	Business course	3 cr
Geol 100, 101, or 106	3 cr	CEE 310	3 cr	Physics 202	5 cr	CEE 491	3 cr
Ethnic Studies Elective	3 cr	CEE 291	3 cr	EPD 275	2 cr		
		Math 319 or 320	3 cr				
Total Credits	16	Total Credits	16	Total Credits	17	Total Credits	16

This grid illustrates an nine to ten semester plan; completing the two required internships/co-ops during both the summer leading up to and the fall semester of the fourth year.

Year 1		Year 2		Year 3		Year 4		Year 5	
<b>Fall</b>		<b>Fall</b>		<b>Fall</b>		<b>Fall</b>		<b>Fall</b>	
Math 221	5 cr	Math 234	3 cr	CEE 340	4 cr	Co-op	(2)	CEE 578	4 cr
Chem 109	5 cr	CEE 320	3 cr	CEE 492	3 cr	Note: Including co-op taken during previous summer		CEE 491	3 cr
Comm A	2 cr	Stats 324	3 cr	Business course	3 cr			Business course	3 cr
Intro to Engr	1-3 cr	EMA 202	3 cr	CEE 370	3 cr			CEE electives	6 cr
Liberal Studies	3 cr	Biology Req.	3 cr	EPD 275	2 cr				
Total credits	16- 18	Total credits	15	Total credits	15- 16		Total credits	1	Total credits
<b>Spring</b>		<b>Spring</b>		<b>Spring</b>		<b>Spring</b>		<b>Spring</b>	
Math 222	5 cr	EMA 303	3 cr	Envir Studies	3 cr	CEE 445 or 447	3 cr	Any remaining courses if needed	
EMA 201	3 cr	EMA/ME 307	1 cr	CEE 330	4 cr	CEE 498	3 cr		
ME 170	2 cr	EPD 397	3 cr	CEE 395	3 cr	CEE 311	3 cr		
Geology Req.	3 cr	CEE 310	3 cr	Physics 202	5 cr	Econ	3-4 cr		
Ethnic Studies	3 cr	CEE 291	3 cr			Liberal Studies	3cr		
		Math 319 or 320	3 cr						
Total credits	16	Total credits	16	Total credits	15	Total credits	15- 16	Total credits	?

## CURRICULUM CHECKLIST

University of Wisconsin - Department of Civil and Environmental Engineering

General College Requirements			Engineering Science Requirements				Applied Engineering Requirements			
Courses	Cr	Grade	Courses	Design Cr	Cr	Grade	Courses	Design Cr	Cr	Grade
Comm A/EPD 155	2		EMA 202	0.0	3		CEE 578	4.0	4	
Math 221	5		EMA 303	0.0	3		CEE 445 or 447	3.0	3	
Math 222	5		EMA/ME 307	0.5	1		CEE 491	0.5	3	
EMA 201	3		CEE 310	0.0	3		CEE 492	0.8	3	
Chem 109	5		CEE 340	1.5	4		CEE 001	0.0	1	
Intro Eng	2		CEE 395	1.0	3		CEE 001	0.0	1	
Math/Statistics Requirements			Civil Engineering Requirements				Business	0.0	3	
Courses	Cr	Grade	Courses	Design Cr	Cr	Grade	Business	0.0	3	
Math 234	3		ME 170	0.0	2		Outside CEE		3	
Math 319/320	3						CEE elective		3	
Stat 311/324	4/3		CEE 291	0.5	3		CEE elective		3	
Natural Science Requirements			CEE 311	1.0	3					
Courses	Cr	Grade	CEE 320	0.0	3					
Phys 202/208	5		CEE 330	1.0	4					
Geo 100/101/106	3/5		CEE 370	0.5	3					
Bot 151/153/260 or Microbiol 101	3/5		CEE 498	0.5	3					
Comm Skills Requirements			Liberal Studies Requirements							
Courses	Cr	Grade	Requirement	Course Taken		H, L, S, or Z	E, I, D, or A	Cr	Grade	
EPD 275	2		Economics							
EPD 397	3		Envir Issues							
Extra Course Work			Ethnic Studies							
Courses	Cr	Grade	Other							
			Check box on right if student has completed 6 credits of coursework having breadth classification of H, L, or Z							
			Check box on right if student has completed two courses from one department AND one of those courses has level classification of I, D, or A							