BS in Civil Engineering
Environmental Engineering Option

Undergraduate Student Handbook and Curriculum Requirements

Curriculum 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/). Last updated February 2012.
BS in Civil Engineering—Environmental Engineering Option
Effective for Students Accepted to BSCE Fall 2008 and Later

- **Fall 1**
  - Math 221: Calculus I (5 cr)
  - Liberal Studies (3 cr)
  - Intro to Engr (1-3 cr)
  - Chem 109: 5 cr OR Chem 103 & 104: 9 cr
  - Comm A: 2 cr
  - Total: 16-18

- **Spring 1**
  - Math 222: Calc II (5 cr)
  - EMA 201: Statics (3 cr)
  - ME 170: Graphics (2 cr)
  - Biology: Bot 155, 260, Microbio 101 (3 cr)
  - Ethnic Studies (3 cr)
  - Total: 16

- **Fall 2**
  - Math 234: Calc III (3 cr)
  - EMA 202: Dynamics (3 cr)
  - Stat 311: Statistics (4 cr)
  - Geosci 100, 101, 106 (3 cr)
  - Total: 15-16

- **Spring 2**
  - Math 319: Linear Alg (3 cr)
    - OR Math 230: Ordinary DEQ (3 cr)
  - Math 319: Linear Alg (3 cr)
  - CEE 310: Fluid Mech (3 cr)
  - Applied Engr Elective (3 cr)
  - Total: 16-17

- **Fall 3**
  - CEE 315: Hydroscience (3 cr)
  - Physics 202: Gen. Physics (5 cr)
  - Engr. Outside CEE (3 cr)
  - Pre-Capstone (3 cr)
  - Total: 17

- **Spring 3**
  - CEE 318: Mechanics of Materials (3 cr)
  - CEE 317: Structural Engr (4 cr)
  - CEE 330: Soil Mechanics (4 cr)
  - CEE Elective (3 cr)
  - Total: 16-17

- **Fall 4**
  - CEE 311: Conctr. Mgmt (3 cr)
  - EPD 275: Technical Presentations (2 cr)
  - EPD 397: Tech. Writing (3 cr)
  - Total: 15

- **Spring 4**
  - Applied Engr Elective (3 cr)
  - CEE Elective (3 cr)
  - Total: 16
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I. INTRODUCTION TO CIVIL & ENVIRONMENTAL ENGINEERING

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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

Prepare BSCE graduates to contribute to their communities through the following career and professional accomplishments:
1. Design and construct both natural and built processes and systems to meet determined needs using technical knowledge; computer tools; design principles; and 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. Maintain analysis and design tools and experience through life-long learning and serve others through participation in professional and/or civic activities and responsibilities.

CEE Program Outcomes

At the time of graduation, UW-Madison BSCE students will have attained:

a) An ability to apply knowledge of mathematics, science, and engineering
b) An ability to design and conduct experiments, as well as to analyze and interpret data
c) An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
d) An ability to function on multidisciplinary teams
e) An ability to identify, formulate, and solve engineering problems
f) An understanding of professional and ethical responsibility
g) An ability to communicate effectively
h) The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i) A recognition of the need for, and an ability to engage in life-long learning
j) A knowledge of contemporary issues
k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
l) An ability to explain basic concepts in management, business, public policy, and leadership
m) An ability to explain the importance of professional licensure
n) An ability to understand common failure mechanisms of a component, process, or system and their causes and prevention
II. 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 program are assigned the classification of Engineering General Resources (EGR). EGR students should transfer to a degree-granting program 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 33).
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.¹

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:

- **For Fall Semester:** January 15 to March 1
- **For Spring Semester:** September 15 to November 1
- **For Summer Session:** January 15 to March 1

Students not admitted to an academic program may file an appeal with the Assistant Dean for Student Diversity Academic Services only if they are currently in their fourth semester at UW-Madison.

¹ For transfer students, the introduction to engineering class is optional and not required. If taken, credits may apply to Liberal Studies.
Admission to Courses
http://studentservices.engr.wisc.edu/regulations/4.html

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

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 North or South Student Services Office. See page 13 for contact information.

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 an Engineering 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. Double majoring in chemistry, computer science, math, or physics is often the most efficient for engineering students. However, students willing to devote extra time may double major in any of the liberal arts, including anthropology, biology, economics, Spanish, and theatre. Adding additional majors from colleges other than Letters and Science is not accepted. For example, majors such as finance (School of Business), art (School of Education), and genetics (Agricultural and Life Sciences) cannot be completed in conjunction with an engineering degree. Likewise, students cannot pursue more than one undergraduate engineering degree concurrently.

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 52). 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.

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 sign up on the waiting list available through the Enrollment tab in the Student Center. It is in the student’s best interest to sign up for the waiting list for the section that works best in his or her schedule, rather than enroll in a course section that does not work with his or her class schedule. Students will be notified by email if they have been given permission to enroll. 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 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 53). 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/.

Performance & Evaluation

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. It is advised that students on probation take no more than 14 credits per semester until removed from probation.

Removal from Probation
http://studentservices.engr.wisc.edu/regulations/30.html

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:

1. the student earns a cumulative grade point average becomes a 2.0 or higher;
2. the student earns a semester GPA of 2.0 in the last semester completed;
3. the student has passed 12 or more credits in the last semester completed; and
4. the student has passed at least 24 degree credits in the two most recent semesters in residence.

Drop from the College of Engineering
http://studentservices.engr.wisc.edu/regulations/31.html

A student on academic probation will be dropped at the end of any semester for which that student has submitted a GPA of less than 2.0 or passed fewer than 12 credits for a student without part-time permission from the Dean or passed less than ¾ of the credits attempted for a part-time student.

A student not on academic probation will be dropped at the end of any semester for which that student has passed fewer than half of the credits attempted.
Incomplete
http://studentservices.engr.wisc.edu/regulations/23.html
http://studentservices.engr.wisc.edu/regulations/24.html

An incomplete may be reported for a student who has carried a subject with a passing grade, but because of illness or other unusual and substantiated cause beyond the student's control has been unable to complete the final examination or some limited amount of term work. A student who stays away from a final examination without proof of being prevented from attending as indicated above will receive a grade of F, N, or U (whichever is appropriate). Even with such proof, if the term work has convinced the instructor that the student cannot pass, the grade shall be F, N, or U (whichever is appropriate). At the instructor’s option, a course marked incomplete may be completed at any time no later than last day of class of the student’s next semester of attendance at UW-Madison, or it will lapse into a fail. An incomplete may not be removed after five years of absence from UW-Madison without special permission of the Dean. Such an incomplete remains on the record with a grade of PI and does not lapse into an F, N, or U.

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 program, with all substitutions formally approved.
2. Have a PCR\(^2\) 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\(^2\) 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.

Graduation Requirements for a Second Major

Students must complete the L&S major no later than the semester of graduation with the Engineering degree. Engineering students may earn an additional major in the College of Letters and Science and have the additional major noted on their transcript at the time of graduation.

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.

\(^2\) 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.
Commencement

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

Second Bachelor’s Degree
http://pubs.wisc.edu/ug/07engineering/reg.html#sec

Persons with a bachelor of science or bachelor of arts degree from UW-Madison or other accredited institutions may, if eligible, pursue a second bachelor's degree from the College of Engineering. Candidates from other institutions and UW-Madison graduates who have been out of school for one semester or more must apply for admission (or readmission) with the regular UW System Undergraduate Admissions application. Continuing UW-Madison students do not need to submit this form but must file a transfer application, available at the EGR Office. All candidates need permission from the Admissions Coordinator of the Engineering Student Services Office.

The following graduate requirements must be met for the second bachelor’s degree: Students must complete a minimum of 30 credits in residence, including 15 credits of work in the degree-granting program. Candidates must complete all university, college, major, and curricular degree program requirements.
III. 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.

Degree Audit Reporting System (DARS)

DARS is an automatic degree audit system intended to enhance the advising process by providing an immediate analysis of how a student is progressing toward completion of a degree. It is the responsibility of the student to make sure your DARS report is accurate and up-to-date. You will not be able to graduate unless your DARS report is completely accurate and complete. To access your DARS report just log in to your MyUW portal (https://my.wisc.edu). Make sure to check your DARS report at least once per semester. A good time to do this is during enrollment time. Consult your advisor as soon as possible if you have any question or notice any errors in the report.

Course Guide

https://my.wisc.edu

Course guide is an online, searchable catalog of courses providing a broad spectrum of course information including the ability to brown course sections offered each term. It is updated six times per day. Log in through your MyUW portal to use this tool during enrollment times to obtain up-to-date information about class options, times, and availability.

Engineering General Resources (EGR) Advisors

All undergraduate students who have been admitted to the COE but are not yet affiliated with a degree-granting program 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 programs, (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 – South Student Services Center

The South Student Services Center serves students in CEE, ECE, and GLE. All undergraduate students who have been admitted to a degree-granting program 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.).

Academic Advisors: Katie Bleier & Mary Possin
2304 & 2308 Engineering Hall
(608) 890-9864, 890-2075
kbleier@engr.wisc.edu, mcpossin@wisc.edu
To schedule an appointment: Online Scheduling Tool

Faculty Advisors

All undergraduate students who have been admitted to a degree-granting program will also be assigned to a faculty advisor. All students are strongly 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.
IV. SCHOLARSHIPS

University & College Wide Scholarships
http://scholarships.wisc.edu/Scholarships/

Scholarships@UW-Madison showcases the range of scholarship opportunities available at UW-Madison, including scholarships offered through the College of Engineering. To access Scholarships@UW-Madison, log in to your MyUW portal with your NetID and password.

Scholarships are awarded to recognize the outstanding academic work of current and future UW-Madison students. Awards range from $400 to $6,000. Some scholarships offer awards for a single academic year while others may be renewable for up to four years. While not the only factor, financial need is often considered in the selection process.

Eligibility criteria will vary, even within individual schools and colleges. Pay particular attention to submission deadlines, as they vary by school and college. Most deadlines are either February 1 or March 1, though some may be earlier.

There is no single date when all scholarships are awarded. Recipients will be notified when final decisions have been made.

Departmental 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. 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.

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
V. TUTORING & ACADEMIC ASSISTANCE

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

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

CEO Student Support Services
http://www.education.wisc.edu/ceo/services.aspx

The Center for Educational Opportunity (CeO) houses the federally-funded TRIO Student Support Services program. Student Support Services (SSS) provides many services similar to the CeO center including: academic advising, assistance with accessing campus services including financial aid, mentoring, tutoring, opportunities to participate in social/cultural activities, career/graduate school advising, and much more. Students interested in becoming an SSS participant must complete an application for the CeO center.

Chemistry Learning Center
http://www.chem.wisc.edu/areas/clc/signup.htm

The mission of the Chemistry Learning Center is to assist students who are enrolled in general and organic chemistry courses in becoming successful and independent learners. Participation is voluntary and there is no fee. They offer a supportive learning environment where students meet in small groups with staff to work out effective strategies for mastering the chemical content. They have resources for students in some lectures of General Chemistry 103 and 104, and some lecture sections of Organic Chem 343 and 345. Please note that not all courses nor lecture sections in a course are covered at all times.

College of Engineering Counseling Service
http://studentservices.engr.wisc.edu/counseling/

The College of Engineering’s Counseling Service is available because it’s easier to concentrate on your studies if you can deal effectively with personal, academic and career concerns. Talking with someone who is objective and empathetic can help you sort through these concerns. Appointments can be made with the College of Engineering Counselor, David Lacocque, by telephoning him at 608/265-5600, emailing him at delacocque@uhs.wisc.edu, or by calling or stopping by the office at 333 East Campus Mall (7th Floor), 608/265-5480. Confidentiality is assured within applicable legal and ethical guidelines. Nothing will be recorded in your academic file.

Diversity Affairs Office (DAO)
http://studentservices.engr.wisc.edu/diversity/

The Diversity Affairs Office (DAO) provides guidance and support to underrepresented students and women in the College of Engineering. DAO also sponsors the Tutor by Request program for all new transfer students and underrepresented students in engineering.
**Drop-In Tutoring**  
http://studentservices.engr.wisc.edu/classes/tutoring/index.html#Wendt

Bring along your friends, study at tables, finish homework, and prepare for exams. Look for the red table signs. Feel free to study at the tables and consult the tutors as needed. Drop-in tutoring is free and open to all.

Sponsored by Engineering Student Services  
Contact Person: Jia-Ling Lin  
Hours: 6:30-9:00 pm (check web for current schedule)  
Location: Wendt Library, 4th floor

**Mathematics Tutorial Program**  
http://www.math.wisc.edu/~tprogram/

The Mathematics Tutorial Program offers free tutoring in a cooperative learning environment for students enrolled in Math 95, 101, 112, 113, 114, 211, 213, 231, 222, 171/217, and 234.

**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 (1st floor)

**Supplemental Instruction (SI)/InterEGR 150**  
http://studentservices.engr.wisc.edu/classes/tutoring/supplemental.html

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

**Tutor by Request (one-on-one help)**  
https://studentservices.engr.wisc.edu/classes/tutoring/request/

New transfer students in their first two semesters at UW-Madison and underrepresented students in engineering may be qualified for one-to-one tutoring, if an engineering tutor is available. If you qualify, you are likely to be preauthorized to enroll by visiting the Website listed above. If you believe you qualify and you are not preauthorized to enroll, contact Dr. Lin (http://www.engr.wisc.edu/admin/staff/lin_jia-ling.html).
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
VI. ORGANIZATIONS & LEADERSHIP

**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 (through the Center for Leadership & Involvement), please visit: [http://www.cfli.wisc.edu/student_organizations.htm](http://www.cfli.wisc.edu/student_organizations.htm)

For a complete listing of the student organizations recognized by the College of Engineering, please visit: [http://slc.engr.wisc.edu/organizations.html](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](http://www.aises.org)

- **American Society of Civil Engineers**
  - [http://www.engr.wisc.edu/studentorgs/asce/](http://www.engr.wisc.edu/studentorgs/asce/)

- **American Water Works Association (AWWA)/Water Environment Federation (WEF)**
  - [http://www.awwa.org](http://www.awwa.org)

- **Chi Epsilon Civil Engineering Honor Society**

- **Concrete Canoe Team**
  - [http://www.engr.wisc.edu/studentorgs/canoe/](http://www.engr.wisc.edu/studentorgs/canoe/)

- **Construction Club**
  - [http://www.engr.wisc.edu/cee/currentundergrad/constclub.html](http://www.engr.wisc.edu/cee/currentundergrad/constclub.html)

- **Emerging Green Builders**
  - [http://www.engr.wisc.edu/studentorgs/uwegb/](http://www.engr.wisc.edu/studentorgs/uwegb/)

- **Engineering EXPO**
  - [http://engineeringexpo.wisc.edu/](http://engineeringexpo.wisc.edu/)

- **Engineers without Borders (EWB)**

- **Habitat for Humanity**
  - [http://www.uwhabitat.org/](http://www.uwhabitat.org/)

- **Hmong Association of Engineers**
  - [http://www.engr.wisc.edu/studentorgs/hae/](http://www.engr.wisc.edu/studentorgs/hae/)

- **Chi Epsilon Civil Engineering Honor Society**

- **Polygon Engineering Student Council**
  - [http://www.engr.wisc.edu/studentorgs/polygon/](http://www.engr.wisc.edu/studentorgs/polygon/)

- **Society of Hispanic Professional Engineers**
  - [http://www.shpemadison.org/](http://www.shpemadison.org/)

- **Society of Women Engineers**
  - [http://www.engr.wisc.edu/studentorgs/swe/](http://www.engr.wisc.edu/studentorgs/swe/)

- **Steel Bridge Team**
  - [http://www.engr.wisc.edu/studentorgs/bridge/](http://www.engr.wisc.edu/studentorgs/bridge/)

- **Transportation Society (UWiTS)**
  - [http://www.engr.wisc.edu/studentorgs/uwits/](http://www.engr.wisc.edu/studentorgs/uwits/)

- **Women in Science and Engineering**
  - [http://www.housing.wisc.edu/wise/](http://www.housing.wisc.edu/wise/)
VII. SERVICE UNITS AVAILABLE TO STUDENTS

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 43 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: John Archambault
Telephone: (608) 262-3471
Location: M1002 Engineering Centers Building

Office for Equity and Diversity (OED)
http://oed. wisc. edu/

The Office for Equity and Diversity (OED), promotes, integrates, and transfers equity and diversity principles to nurture human resources and advance the mission of the University of Wisconsin-Madison (university). The OED employs multiple approaches to attain its strategic objectives. These include:

- provide leadership and consultation to develop and implement equity and diversity strategies throughout the campus;
- promoting the use of standardized and proactive human resources processes;
- maximizing human resources through the effective use of continuous improvement principles;
- establishing collaborative partnerships with Schools/Colleges and Divisions; and
- coordinating campus compliance with affirmative action and equal opportunity requirements, referred to as AA/EEO compliance.

The UW-Madison is committed to providing equal opportunity and equal access and to complying with all applicable federal and state laws and regulations and University of Wisconsin System and university non-discrimination policies and procedures. The OED has prepared an informative Website (http://oed. wisc. edu/ dishar. html) containing a series of questions and answers to describe how our discrimination/harassment complaint process works at the university. These questions and answers are meant to help employees, applicants for employment, students, applicants for admission, and anyone using the university’s programs or activities, including visitors to campus, understand how they can file a complaint of discrimination/harassment and how the investigative process works.

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International Student Services
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

Medical Services (UHS)
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 (5th and 6th floors)
VIII. STUDY ABROAD OPPORTUNITIES

Studying abroad offers valuable cross-cultural experiences and the opportunity to improve your language skills, learn to live and work in culturally diverse surroundings, and improve your value on the job market. Planning for your study abroad experience is of utmost importance. This includes meeting with your academic and/or faculty advisor and meeting with the coordinator of the study abroad experience.

When you meet with your academic and/or faculty advisor, please discuss the courses you plan to take abroad in order to ensure an academically successful experience. Make sure you know what courses you need to take overseas to fulfill degree and graduation requirements so that you do not fall behind in your academic progress. Discuss the following topics with your advisor:

- Advisor approval/clearance forms
- Departmental course equivalencies
- DARS designations for courses that fulfill elective credits
- Grading of courses taken abroad
- Completing the last 30 credits abroad (if applicable)

Students are ultimately responsible for understanding how courses taken abroad will or will not fulfill degree requirements.

International Engineering Studies & Programs
http://studentservices.engr.wisc.edu/international/

International Engineering Studies and Programs (IESP) is a service unit within the College of Engineering that prepares UW-Madison engineering students to study abroad. As an IESP participant, you can choose from more than 50 study abroad programs in the Americas, Asia and the Pacific, and Europe and most programs are available for a semester or year. Many programs offer instruction in English. The courses completed abroad can help you make progress towards their engineering degree or allow you to explore additional academic areas.

While abroad on an IESP program, you will maintain student status and you (as an engineering student) will earn pass/fail grades for coursework completed overseas. If you take liberal studies courses while on an IESP program, you can still elect to take up to two additional liberal studies courses pass/fail at UW-Madison. The College of Engineering does not consider study abroad programs in residence; therefore you will need to request a waiver (at the time of application) of the college’s residency requirements if you plan to study abroad during your final 30 credits.

The majority of programs are exchanges, which means that you would pay the same tuition as you currently do at UW-Madison. Financial aid is available to all UW degree-seeking students on study abroad programs – even those who have not received aid in the past. A minimum GPA of 3.0 (for most programs) is required to apply. Application deadlines are October 1 for the spring semester, and March 1 for the fall semester or for the entire academic year.

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 25.

Contact Person: Amanda Hammatt
Email: international@engr.wisc.edu
Telephone: (608) 263-2191
Location: M1002A Engineering Centers Building
International Academic Programs (IAP)
http://www.studyabroad.wisc.edu/

International Academic Programs (IAP) offers over 150 study abroad programs to UW-Madison students across campus. Instruction is in a wide range of languages, including many options in English. Most programs are limited to course options in social sciences and humanities through a limited number of programs do have engineering courses available.

While abroad on an IAP program, you will maintain your student status and you are typically assigned a letter grade for the courses that you will take. If you have questions about the grading basis for a particular course, you will need to talk both to IAP and to your advisor. The College of Engineering does not consider study abroad programs in residence; therefore you will need to request a waiver (at the time of application) of the college’s residency requirements if you plan to study abroad during your final 30 credits.

For more information, contact IAP at: 250 Bascom Hall, 500 Lincoln Drive, Madison, WI 53706, T: 608/265-6329, F: 608/262-6998, peeradvisor@bascom.wisc.edu. Engineering students with additional questions regarding how their IAP study abroad program will or will not satisfy their engineering degree requirements can contact Bonnie Schmidt (1150 Engineering Hall, 608/262-4822, schmidt@engr.wisc.edu).

Other UW-Madison Study Abroad Experiences

If a UW-Madison engineering student chooses to study abroad through another UW-Madison study abroad unit it is extremely important that the student meet with the following people before going abroad: (1) their academic and/or faculty advisor; (2) the coordinator of the study abroad program; and (3) Bonnie Schmidt (1150 Engineering Hall, 608/262-4822, schmidt@engr.wisc.edu).

Non UW-Madison Study Abroad Experiences

If a UW-Madison engineering student chooses to study abroad through a non UW-Madison program (i.e., either through another university’s study abroad program, an independent study abroad company, or solely on their own initiative), it is extremely important that the student meet with the following people before going abroad: (1) Amanda Hammatt in the International Engineering Studies and Programs office in M1002A Engineering Centers Building, (2) their academic and/or faculty advisor, and (3) Bonnie Schmidt (1150 Engineering Hall, 608/262-4822, schmidt@engr.wisc.edu).

Students who participate in a non UW-Madison study abroad program do not enroll at UW-Madison for the semester(s) they will be abroad. Students must apply for re-entry through the Office of Admissions before they can return to UW-Madison. For information about the online application and recommended deadlines, see http://www.admissions.wisc.edu/reentry.php. Most financial aid packages do not apply towards non UW-Madison study abroad programs. The academic institution abroad must be accredited in order for a student to apply for transfer credit for the courses taken while abroad. See Bonnie Schmidt (contact information above) to discuss possible course equivalencies. An engineering student who participates in a non UW-Madison study abroad program must do so early enough in their academic career so that, at the time of graduation, they are in compliance with the all of these regulations (http://studentservices.engr.wisc.edu/regulations/34.html).
IX. HONORS PROGRAMS

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.

Engineering Honors in the Liberal Arts (EHLA)
http://studentservices.engr.wisc.edu/classes/ehla.html

High-ability students who enter the College of Engineering as first-year students with particularly broad educational goals and exceptional academic skills may be interested in the EHLA program (Engineering Honors in Liberal Arts). It is a clone of the honors program in the College of Letters in Science, and as such gives selected students both access and motivation to take honors-level classes to fulfill basic engineering degree requirements. Note that the College of Engineering does not offer honors classes, except for a few honors independent studies.
X. 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.

Biology in Engineering Certificate

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

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 BEC 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.

Engineering for Energy Sustainability Certificate

http://www.energy.wisc.edu/?page_id=1077

The objective of the Engineering for Energy Sustainability certificate program is to offer undergraduate students a suite of courses addressing energy sustainability that span across the engineering curriculum, with firm roots in “real world” design and engineering practices. Students interested in completing the certificate program must contact a particular faculty member in his or her academic program to apply. The student faculty member must, together complete the Declaration of Intent and Tentative Study Plan in order to enter the certificate program.

Certificate in Engineering Risk, Uncertainty, and Decision Analysis

http://studentservices.engr.wisc.edu/advising/degrees/2009ERUDA.pdf

The design and analysis of engineering systems are becoming much more dependent on the ability of the engineer to analyze the system in the context of uncertainties in system performance, evaluate the reliability of normal operation and the risk of off-normal operation, and then make appropriate decisions to maintain reliability with optimal performance. As a result, many industries such as manufacturing, chemical, and nuclear are looking for engineering graduates with appropriate understanding and knowledge in these areas. The Certificate in Engineering Risk, Uncertainty and Decision Analysis includes courses in statistics and probability, modern uncertainty analysis, decision analysis, and probabilistic reliability and risk assessment. The primary goal of this program is to significantly increase the number of engineers with a fundamental understanding of uncertainty, reliability and risk-based decision making.
Environmental Studies Certificate
http://nelson.wisc.edu/education/programs.html

The Environmental Studies Certificate gives UW-Madison undergraduates a unique opportunity to broaden their studies through interdisciplinary course work related to the environment. Students from any major can learn about environmental problems and issues; study environmental science, policy, literature, history, and philosophy; and take part in environmental research, field work, and case studies. The Environmental Studies Certificate Program requires students to complete a curriculum of at least 26 credits from the program's course list. For more information, visit 70B Science Hall or call 608/262-7520.

Integrated Studies in Science, Engineering and Society (ISSES) Certificate
http://www.sts.wisc.edu/education/undergrad.html

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.

International Engineering Certificate
http://www.intl-institute.wisc.edu/MemberPrograms/index.htm
http://studentservices engr.wisc.edu/advising/degrees/certificates.html

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 Biological Systems Engineering program 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.

Certificate in Japanese Studies for Engineering Students
www.engr.wisc.edu/epd/tjc

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. 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.
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 or contact the TCC Office (http://tc.engr.wisc.edu/contact.html) at (608) 262-2472 or in M1080 Engineering Centers Building.

Other Certificates – Official List


The Office of the Registrar, under the direction of the Office of the Provost and Vice Chancellor for Academic affairs, maintains the official list of certificate programs authorized for the UW-Madison. Only certificates on this official list (Website listed above) appear on the student’s transcript. Listed after each certificate is the code for the College or School through which it can be obtained and the level of student to which it is available.
XI. PROFESSIONAL ENGINEER REGISTRATION

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 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

4-Year Degree From Accredited Program (UW-Madison)

NO

2-year degree from accredited technical program

Pass the Fundamentals of Engineering Exam (FE)

Six years qualified experience

Pass the Practices & Principles Exam

YES

Pass Fundamentals of Engineering Exam (FE)

Four years qualified experience

Pass the Practices & Principles Exam

Professional Engineer License Granted
XII. 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 program must recommend admission in full standing. Senior-graduates may not be admitted on probation (GPA below 3.0). The Senior-Grad Request Form by contacting the Graduate School Office of Admissions, 228 Bascom Hall, (608) 262-0735.

Senior-grads must follow the undergraduate enrollment guidelines to be considered full-time student. In other words, senior-grads must enroll in 12 credits minimum per semester. All senior-graduates pay graduate fees and are eligible for teaching assistantship or project assistantship appointments, including tuition remission. However, they are not eligible for fellowships or research assistantships.

Courses taken as a senior-grad will be noted on the student’s undergraduate transcript. All grade points earned as a senior-graduate are counted in the computation of the cumulative undergraduate grade-point average. 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.

XIII. 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 15th
- No financial assistance consideration: March 15th

Spring Enrollment: October 15th

Summer Enrollment: March 15th
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 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 programs offer teaching assistantships. This title is appropriate for graduate students who have been assigned teaching responsibilities in an instructional program 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.
XIV. CEE CURRICULUM

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 37).
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

BS in Civil Engineering Program Requirements
In addition to the GCR, the program 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 33 through 46.

<table>
<thead>
<tr>
<th>Category</th>
<th>Minimum Credits Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math/Science Requirement</td>
<td>9</td>
</tr>
<tr>
<td>Natural Sciences Requirement</td>
<td>11</td>
</tr>
<tr>
<td>Engineering Science Requirement</td>
<td>17</td>
</tr>
<tr>
<td>Civil Engineering Requirement</td>
<td>21</td>
</tr>
<tr>
<td>Applied Engineering Requirement</td>
<td>27</td>
</tr>
<tr>
<td>Communication Skills Requirement</td>
<td>5</td>
</tr>
<tr>
<td>Liberal Studies Requirement</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total CEE Credits</strong></td>
<td><strong>106</strong></td>
</tr>
<tr>
<td><strong>GCR Credits</strong></td>
<td><strong>22</strong></td>
</tr>
<tr>
<td><strong>Total Number of Credits Needed</strong></td>
<td><strong>128</strong></td>
</tr>
</tbody>
</table>

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 52.
Design credits

The curriculum also requires that all students complete 16 credits of engineering design. Pages 37 through 51 show the design credits provided by 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.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMA/ME 307</td>
<td>Mechanics of Materials Lab</td>
<td>EMA/ME 306 or con reg</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>CEE 291</td>
<td>Problem Solving Using Computer Tools</td>
<td>EMA 202 or 304</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>CEE 310</td>
<td>Fluid Mechanics</td>
<td>Math 234 &amp; EMA 202</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 311</td>
<td>Hydroscience</td>
<td>CEE 310</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 320</td>
<td>Environmental Engineering</td>
<td>1 year college chemistry</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 330</td>
<td>Soil Mechanics</td>
<td>EMA 303 or 304 or con reg</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 340</td>
<td>Structural Analysis</td>
<td>EMA 303 &amp; ME 307 or con reg</td>
<td>4</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 370</td>
<td>Transportation Engineering</td>
<td>Stats 324 or con reg</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>CEE 395</td>
<td>Materials for Constructed Facilities</td>
<td>EMA 303 &amp; 307</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 498</td>
<td>Construction Project Management</td>
<td>Jr. status or instructor consent</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>CEE 578 pre-req</td>
<td>See page 38 for complete list</td>
<td>See page 38</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 578</td>
<td>Senior Capstone Design</td>
<td>A course with 3 design credits</td>
<td>4</td>
<td>4.0</td>
</tr>
</tbody>
</table>

Subtotal 13.5

Total (must be ≥ 16)
Undergraduate Option Programs

The BSCE Program offers two undergraduate option programs:

- Construction Engineering Management (CEM)
- Environmental Engineering (EV)

Once students have been accepted to the BSCE Program 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 option may be done at any time.
DETAILED CURRICULUM REQUIREMENTS

Math/Statistics Requirement
(9 Credits)

The following courses are required:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 234</td>
<td>Calculus and Analytical Geometry</td>
<td>Math 222</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Stat 324</td>
<td>Introductory Applied Statistics for Engineers</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Stat 311</td>
<td>Introduction to Mathematical Statistics</td>
<td>Math 222 or con reg</td>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td>Math 319</td>
<td>Techniques in Ordinary Differential Equations</td>
<td>Math 222</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Math 320</td>
<td>Linear Algebra and Differential Equations</td>
<td>Math 222</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics 202</td>
<td>General Physics</td>
<td>Math 211 or 221 or H.S. Calc.</td>
<td>5</td>
<td>0.0</td>
</tr>
<tr>
<td>Physics 208</td>
<td>General Physics</td>
<td>Physics 207</td>
<td>5</td>
<td>0.0</td>
</tr>
<tr>
<td>Geoscience 100</td>
<td>General Geology</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Geoscience 101</td>
<td>Elementary Geology</td>
<td>--</td>
<td>5</td>
<td>0.0</td>
</tr>
<tr>
<td>Geoscience 106</td>
<td>Environmental Geology</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Botany/Zoology 151</td>
<td>Introductory Biology</td>
<td>--</td>
<td>5</td>
<td>0.0</td>
</tr>
<tr>
<td>Botany/Zoology 153</td>
<td>Introductory Biology</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Botany/Zoology 260</td>
<td>Introductory Ecology</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Microbiology 101</td>
<td>General Microbiology</td>
<td>Chem 103, 108, 109, or 115</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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:

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

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:

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

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
(27 Credits)

Technical/Natural Science Courses 9 cr
Civil and Environmental Engineering Courses 18 cr

NOTE: These requirements for applied engineering are not applicable to the general CEE program, construction engineering management (CEM), or fluid systems engineering (FSE) option programs. Students interested in the CEM or FSE option programs should consult the curriculum guide for the specific program in which they are interested.

1. Every student must complete a minimum of 18 credits in CEE coursework. These credits may be fulfilled as described in Items 2 through 6 on this page.

2. Every student must complete the following course:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 578</td>
<td>Senior Capstone Design</td>
<td>A course with 3 design credits (see next item)</td>
<td>4</td>
<td>4.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 414</td>
<td>Hydrologic Design</td>
<td>CEE 315 or consent of instructor</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 426</td>
<td>Wastewater Treatment Plant Design</td>
<td>CEE 310 or 316, &amp; CEE 320</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 427</td>
<td>Solid and Hazardous Waste Engineering</td>
<td>CEE 310 or consent of instructor</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 428</td>
<td>Water Treatment Plant Design</td>
<td>CEE 310 &amp; CEE 320</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 522</td>
<td>Hazardous Waste Management</td>
<td>CEE 320 or consent of instructor</td>
<td>3</td>
<td>3.0</td>
</tr>
</tbody>
</table>

4. Every student must complete one of the following intermediate-level laboratory courses:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 410</td>
<td>Hydraulic Engineering</td>
<td>CEE 310 &amp; 311 or instructor consent</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 322</td>
<td>Environmental Engineering Process</td>
<td>CEE 320</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

5. Completion of Items 2 through 4 will fulfill 10 of the required 18 credits of CEE coursework. The remaining 8 credits of CEE coursework may be satisfied by taking any CEE course. If a student takes more than one course in Items 3 and 4, the additional courses will count towards these remaining 8 credits of CEE coursework. The selected course will also be counted towards one of the three specialty groups described in Item 8 on the next page.

6. Up to three credits of CEE 001 (Cooperative Education Program) may be used to meet the 17 credits of CEE coursework (see page 43 for Co-Op Process Description).

7. Up to six credits of research work (CEE 299, CEE 489, and/or CEE 699) may used towards the 17 credits of CEE coursework (see page 44 for description of research credits).
Applied Engineering Requirement (continued from previous page)

8. At least **one CEE course** must be selected from **at least three** of the specialty groups on pages 31 and 32:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 315</td>
<td>Hydrology</td>
<td>CEE 291 &amp; CEE 311 or instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 410</td>
<td>Hydraulic Engineering</td>
<td>CEE 310 &amp; 311 or instructor consent</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 412</td>
<td>Groundwater Hydraulics</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 414</td>
<td>Hydrologic Design</td>
<td>CEE 315 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 416</td>
<td>Optimization &amp; Simulation of Water Resources Systems</td>
<td>CEE 311 or instructor consent</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>CEE 619</td>
<td>Hydroecology</td>
<td>Instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Water Resources**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 411</td>
<td>Open Channel Hydraulics</td>
<td>CEE 311</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 514</td>
<td>Coastal Engineering</td>
<td>CEE 311 or instructor consent</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 618</td>
<td>Measurements in Environmental Fluid Mechanics</td>
<td>Varies by topic</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 618</td>
<td>Sediment Processes in Channel Flows</td>
<td>Varies by topic</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 618</td>
<td>Environmental Fluid Mechanics</td>
<td>Varies by topic</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>CEE 619</td>
<td>Environmental Flows</td>
<td>Varies by topic</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Environmental Fluid Mechanics**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 500</td>
<td>Water Chemistry</td>
<td>Chemistry 103, 104, 221, or equivalent, or cons inst</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 501</td>
<td>Water Analysis – Intermediate</td>
<td>Chemistry 223</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 503</td>
<td>Water Analysis – Intermediate Lab</td>
<td>Chem 223, con reg in CEE 501, cons isnt</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 502</td>
<td>Environmental Organic Chemistry</td>
<td>CEE 500, Chem 343 or equiv, cons isnt</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 629</td>
<td>Environmental Microbial Biotechnology</td>
<td>Senior status</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Environmental Chemistry & Biotechnology**

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 322</td>
<td>Environmental Engineering Processes</td>
<td>CEE 320</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 372</td>
<td>On-Site Wastewater Treatment &amp; Disposal</td>
<td>Chemistry 103</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 426</td>
<td>Wastewater Treatment Plant Design</td>
<td>CEE 310 or 316 and 320 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 428</td>
<td>Water Treatment Plant Design</td>
<td>CEE 310, 320</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 821</td>
<td>Biological Treatment Processes</td>
<td>CEE 320 or instructor consent</td>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 822</td>
<td>Physical/Chemical Treatment Processes</td>
<td>CEE 320 or instructor consent</td>
<td>4</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Water & Wastewater Treatment**
**Applied Engineering Requirement (continued from previous page)**

Item 8 Continued:

At least one CEE course must be selected from at least three of the specialty groups on pages 31 and 32:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geoenvironmental Engineering &amp; Hazardous Wastes Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 427</td>
<td>Solid &amp; Hazardous Wastes Engineering</td>
<td>CEE 310 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 522</td>
<td>Hazardous Waste Management</td>
<td>CEE 320 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 633</td>
<td>Waste Geotechnics</td>
<td>CEE 320 &amp; 330 or instructor consent</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>CEE 635</td>
<td>Remediation Geotechnics</td>
<td>CEE 320 &amp; 330 or instructor consent</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>Occupational and Public Health Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 422</td>
<td>Elements of Public Health Engineering</td>
<td>Instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 631</td>
<td>Toxicants in the Environment: Sources, Distribution, Fate &amp; Effects</td>
<td>Chem 343 &amp; 345 or equiv; Chem 561 or equiv; Physics 103 &amp; 104 or equiv; Math 211; or cons inst</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>Air Pollution Control Engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CEE 423</td>
<td>Air Pollution Effects, Measurement, &amp; Control</td>
<td>Senior status</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>CEE 629</td>
<td>Aerosol and Air Pollution Lab</td>
<td>Senior status</td>
<td>2</td>
<td>0.0</td>
</tr>
</tbody>
</table>
9. A minimum of 9 credits in Technical/Natural Science Coursework may be taken for the Applied Engineering Requirement. Requirements and recommendations for these courses are listed in Items 10 through 15 on this page and the following page.

10. At least three credits of an engineering science course must be taken from outside the CEE Department and must be from a degree-granting program within the College of Engineering. EPD and InterEGR courses are not offered by a degree-granting program and, thus, EPD and InterEGR courses do not count towards this requirement. The Biological Systems Engineering (BSE) Program is not within the College of Engineering and, thus, BSE courses do not count towards this requirement. Recommended courses for this requirement include the following:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE 211</td>
<td>Chemical Process Thermodynamics</td>
<td>Math 234, Physics 201 or equiv, CEE 291</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>CBE 250</td>
<td>Process Synthesis</td>
<td>Chemistry 329 or con reg</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>CBE 320</td>
<td>Introduction to Transport Phenomena</td>
<td>Physics 201, Math 319/320, CBE 250</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>ECE 376</td>
<td>Electrical and Electronic Circuits</td>
<td>Math 222 &amp; Physics 202</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>GLE 627</td>
<td>Hydrogeology</td>
<td>Intro course in Geosci, Jr. status &amp; Math 221</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>ISyE 313</td>
<td>Engineering Economic Analysis</td>
<td>Sophomore status</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>ME 361</td>
<td>Thermodynamics</td>
<td>Math 234 &amp; CEE 291, ME 240 or EMA 202</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>ME 424</td>
<td>Experimental Design for Engineers</td>
<td>Statistics 324</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

11. Any course in the College of Engineering, including CEE, can be counted towards the 10 credits of Technical/Natural Sciences Coursework. These courses cannot have a breadth classification of H, L, S, or Z. Students are allowed to use one EPD or InterEGR course to meet this requirement, provided that the course does not have a breadth designation of H, L, S, or Z. Students are also allowed to use up to 7 credits of BSE courses to meet this requirement, provided that the courses do not have a breadth designation of H, L, S, or Z. Students are encouraged to take classes in CEE to enrich their understanding of the Civil and Environmental Engineering field.

12. Credits from any technical/natural science course offered on the UW-Madison campus may be applied to the 10 credits of Technical/Natural Science Coursework, provided that the course meets the following requirements:

   a. The course must have a breadth designation of B, P, or N.
   b. The course number must be 240 or higher.

   The following are suggested courses:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochem 301</td>
<td>Introductory Biochemistry</td>
<td>Chemistry 341 or 343</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Chem 341</td>
<td>Introductory Organic Chemistry</td>
<td>Chemistry 104, 107, or 109</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Chem 561</td>
<td>Physical Chemistry</td>
<td>Chem 110/221/223, Math 222, Physics 201</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Envir St 502</td>
<td>Air Pollution &amp; Public Health</td>
<td>Jr. status &amp; a course in Biology</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Geol 629</td>
<td>Contaminant Hydrogeology</td>
<td>Geosci 627 &amp; college chem or cons inst</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Microbiol 303</td>
<td>Biology of Microorganisms</td>
<td>Prev. course in Botany, Zoo, Biocore or Gen Bio; 1 sem. Organic chem. or con reg</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Soil Sci 425</td>
<td>Environmental Microbiology</td>
<td>Bacteriology 303, Chemistry 341/343</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Soil Sci 523</td>
<td>Soil Microbiology &amp; Biochemistry</td>
<td>Chem 104; Bact 303/374/Biochem 501</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Soil Sci 621</td>
<td>Soil Chemistry</td>
<td>Soil Sci 326; Chemistry 221</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Zoo 315</td>
<td>Limnology: Aquatic Resources</td>
<td>Intro course in Biology</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Zoo 548</td>
<td>Ecology of Rivers &amp; Streams</td>
<td>Chem 103, 104; Zoo 315 or equiv.</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>
Applied Engineering Requirement (continued from previous page)

Requirements and recommendations for Technical/Natural Science electives (continued from previous page)

13. Students who are considering graduate study are encouraged to take an additional mathematics course as a technical/natural science elective. Recommended courses include:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 321</td>
<td>Applied Mathematical Analysis</td>
<td>Math 223 or 234</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Math 340</td>
<td>Matrix and Linear Algebra</td>
<td>Math 234 or 222 &amp; 240</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Stat 311</td>
<td>Mathematical Statistics</td>
<td>Math 223 or con reg</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Stat 333</td>
<td>Applied Regression Analysis</td>
<td>Consent of instructor</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Stat 424</td>
<td>Experimental Design for Engineers</td>
<td>Stat 224</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

14. With the exception of the following, courses carrying a breadth designation of H, L, S, or Z may not be counted as technical/natural sciences electives.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acct IS 300</td>
<td>Accounting Principles</td>
<td>Jr. status</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Gen Bus 301</td>
<td>Business Law</td>
<td>2nd sem. Jr. – at least 72 credits</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>MHR 300</td>
<td>Organizational Behavior</td>
<td>Sophomore status</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

15. Every student is strongly encouraged to take one course that includes economics. The following courses are recommended:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 494</td>
<td>Civil &amp; Environmental Engineering Decision Making</td>
<td>Math 221 or instructor consent</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>ISyE 313</td>
<td>Engineering Economic Analysis</td>
<td>Sophomore status</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
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:

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

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.
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:

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

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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPD 397</td>
<td>Technical Writing (strongly recommended)</td>
<td>EPD 275, Jr. status</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>English 201</td>
<td>Intermediate Composition</td>
<td>3 credits of Intro Lit.</td>
<td>3</td>
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</tr>
<tr>
<td>English 203</td>
<td>Creative Writing</td>
<td>3 cr. of Intro Lit., Sophomores only</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>English 315</td>
<td>Advanced Expository and Critical Writing</td>
<td>Instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Breadth</th>
<th>Course Level</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Econ 101</td>
<td>Principles of Microeconomics</td>
<td>rS</td>
<td>E</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Econ 102</td>
<td>Principles of Macroeconomics</td>
<td>S</td>
<td>E</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Econ 111</td>
<td>Principles of Economics-Accelerated Treatment</td>
<td>rS</td>
<td>E</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

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

   Note: None of these courses carry design credits.

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Cross Listing Departments</th>
<th>Course Title</th>
<th>Breadth</th>
<th>Course Level</th>
<th>Degree Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Envir St 112</td>
<td>--</td>
<td>Environmental Studies: The Social Perspective</td>
<td>S</td>
<td>E</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 113</td>
<td>--</td>
<td>Environmental Studies: The Humanistic Perspective</td>
<td>H</td>
<td>E</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 139</td>
<td>Geography</td>
<td>Resources and People</td>
<td>S</td>
<td>E</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 307</td>
<td>--</td>
<td>Literature of the Environment: Speaking for Nature</td>
<td>L</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 309</td>
<td>Geography</td>
<td>People, Land, Food: Comparative Study of Ag Systems</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 339</td>
<td>Geography</td>
<td>Environmental Conservation</td>
<td>S</td>
<td>I</td>
<td>4</td>
</tr>
<tr>
<td>Envir St 343</td>
<td>Economics</td>
<td>Environmental Economics</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 400</td>
<td>--</td>
<td>Environmental Decision-Making</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 441</td>
<td>Agriculture &amp; Applied Econ</td>
<td>Environment &amp; Global Economy</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 444</td>
<td>Philosophy</td>
<td>Environmental Ethics</td>
<td>Z</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>Envir St 448</td>
<td>Political Sci</td>
<td>Energy Policy and Politics</td>
<td>S</td>
<td>D</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 449</td>
<td>Econ, Poli Sci</td>
<td>Government and Natural Resources</td>
<td>S</td>
<td>D</td>
<td>3-4</td>
</tr>
<tr>
<td>Envir St 453</td>
<td>Philosophy</td>
<td>Aesthetics of the Natural Environment</td>
<td>H</td>
<td>D</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 460</td>
<td>History, Geoscience</td>
<td>American Environmental History</td>
<td>Z</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 477</td>
<td>Anthropology</td>
<td>Anthropology, Environment, and Development</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 497</td>
<td>History</td>
<td>A Natural History of Man</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 537</td>
<td>Geography</td>
<td>Culture and Environment</td>
<td>S</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>Envir St 644</td>
<td>History</td>
<td>Mankind in the American Environment</td>
<td>S</td>
<td>I</td>
<td>3</td>
</tr>
<tr>
<td>Envir St 668</td>
<td>--</td>
<td>Green Politics: Global Experience, American Prospects</td>
<td>S</td>
<td>D</td>
<td>3</td>
</tr>
</tbody>
</table>
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”.

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 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 towards 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

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 290</td>
<td>Construction Systems</td>
<td>Sophomore Status</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 392</td>
<td>Building Information Modeling</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 491</td>
<td>Legal Aspects of Engineering</td>
<td>Senior Status or instructor consent</td>
<td>3</td>
<td>0.5</td>
</tr>
<tr>
<td>CEE 492</td>
<td>Integrated Project Estimating and Scheduling</td>
<td>Junior Status</td>
<td>3</td>
<td>0.8</td>
</tr>
<tr>
<td>CEE 494</td>
<td>Civil &amp; Environmental Engineering Decision Making</td>
<td>Math 221 or instructor consent</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 496</td>
<td>Electrical Systems for Construction</td>
<td>Physics 202</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 497</td>
<td>Mechanical Systems for Construction</td>
<td>Physics 202</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 596</td>
<td>Constructability Analysis</td>
<td>Junior Status</td>
<td>3</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Special Topics: Architectural Design for Construction</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Special Topics: Construction Field Observation</td>
<td>--</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Field Engineering Workshops</td>
<td>--</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Special Topics: Leadership Development for Project Managers</td>
<td>--</td>
<td>1-4</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Modeling of Micro-Mechanics of Asphalt Mixes</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Special Topics: Research Methods-CEM</td>
<td>--</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 698</td>
<td>Special Topics: Sustainability Principles and Practices for Construction</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Environmental Engineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 322</td>
<td>Environmental Engineering Processes</td>
<td>CEE 320</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 372</td>
<td>On-Site Waste Water Treatment and Dispersal</td>
<td>Chemistry 103</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 422</td>
<td>Elements of Public Health Engineering</td>
<td>--</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 423</td>
<td>Air Pollution Effects, Measurement and Control</td>
<td>Senior Status</td>
<td>3</td>
<td>2.0</td>
</tr>
<tr>
<td>CEE 424</td>
<td>Environmental Engineering Laboratory</td>
<td>Chemistry 103 or equivalent</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 426</td>
<td>Design of Wastewater Treatment Plants</td>
<td>CEE 310 or 316 and 320 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 427</td>
<td>Solid and Hazardous Waste Engineering</td>
<td>CEE 310 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
</tbody>
</table>
AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES
(continued from previous page)

Environmental Engineering (Continued)

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 428</td>
<td>Water Treatment Plant Design</td>
<td>CEE 310, 320</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 500</td>
<td>Water Chemistry</td>
<td>Chemistry 103, 104, 221, or equivalent, instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 501</td>
<td>Water Analysis-Intermediate</td>
<td>Chemistry 223</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 503</td>
<td>Water Analysis-Intermediate Lab</td>
<td>--</td>
<td>1</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 522</td>
<td>Hazardous Waste Management</td>
<td>CEE 320 or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 609</td>
<td>Special Topics: Sol-Gel Chemistry</td>
<td>Instructor consent</td>
<td>1-3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 609</td>
<td>Special Topics: The Chemistry of Air Pollution</td>
<td>Instructor consent</td>
<td>1-3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 619</td>
<td>Special Topics</td>
<td>--</td>
<td>1-3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 629</td>
<td>Special Topics in Environmental Engineering</td>
<td>Senior status</td>
<td>1-3</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Geoengineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 530</td>
<td>Seepage &amp; Slopes</td>
<td>CEE 330</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 531</td>
<td>Retaining Structures</td>
<td>CEE 330, 291, or instructor consent</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>CEE 532</td>
<td>Foundations</td>
<td>CEE 330, 291, or instructor consent</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 534</td>
<td>Field Methods in Geological Engineering</td>
<td>CEE 330 &amp; GLE 474 or instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 631</td>
<td>Toxicants in the Environment: Sources, Distribution, Fate &amp; Effects</td>
<td>Chem. 343 &amp; 345 or equiv.; Chem 561 or equiv.; Physics 103 &amp; 104 or equiv.; Math 211; or instructor consent</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 633</td>
<td>Waste Geotechnics</td>
<td>CEE 330 &amp; 320 or instructor consent</td>
<td>3</td>
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<tr>
<td>CEE 635</td>
<td>Remediation Geotechnics</td>
<td>--</td>
<td>3</td>
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AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES
(continued from previous page)

Geospatial Information Engineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 251</td>
<td>Engineering Spatial Measurements</td>
<td>Math 221, ME 170 or 231</td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 357</td>
<td>An Introduction to Geographic Information Systems</td>
<td>Intro course in environmental studies or mapping science &amp; an intro course in computer programming or computer concepts</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>CEE 444</td>
<td>Practical Applications of GPS Surveying</td>
<td></td>
<td>2</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 556</td>
<td>Remote Sensing Digital Image Processing</td>
<td></td>
<td>3</td>
<td>1.0</td>
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</table>

Structural Engineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE 440</td>
<td>Structural Analysis II</td>
<td>CEE 340</td>
<td>3</td>
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</tr>
<tr>
<td>CEE 442</td>
<td>Wood Structures I</td>
<td>CEE 340</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 445</td>
<td>Steel Structures I</td>
<td>CEE 340</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 447</td>
<td>Concrete Structures I</td>
<td>CEE 340</td>
<td>3</td>
<td>3.0</td>
</tr>
<tr>
<td>CEE 543</td>
<td>Precast Concrete</td>
<td>CEE 447</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 545</td>
<td>Steel Structures II</td>
<td>CEE 445</td>
<td>3</td>
<td>0.0</td>
</tr>
<tr>
<td>CEE 547</td>
<td>Concrete Structures II</td>
<td>CEE 447</td>
<td>3</td>
<td>3.0</td>
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<tr>
<td>CEE 641</td>
<td>Highway Bridges</td>
<td>CEE 445 and CEE 447</td>
<td>3</td>
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</tr>
<tr>
<td>CEE 649</td>
<td>Special Topics: Art in Engineering Architecture</td>
<td>--</td>
<td>1-3</td>
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</tr>
<tr>
<td>CEE 649</td>
<td>Special Topics: Sustainable Energy Building Design</td>
<td>--</td>
<td>3</td>
<td>1-3</td>
</tr>
</tbody>
</table>
## AREAS OF SPECIALIZATION WITHIN CEE AND DESIGN CREDITS FOR CEE COURSES
(continued from previous page)

### Transportation Engineering

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Prerequisites</th>
<th>Degree Credits</th>
<th>Design Credits</th>
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<td>Environmental Impact of Transportation Systems</td>
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<td>Advanced Highway Materials &amp; Construction</td>
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<td>CEE 375</td>
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### Water Resources Engineering

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<td>CEE 311</td>
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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 table provides an example of a semester-by-semester planning grid that meets the requirements for the BS degree in civil engineering. Students are strongly encouraged to develop such a grid with assistance from their advisor.

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
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<tr>
<td><strong>Fall</strong></td>
<td>Math 221 5 cr</td>
<td>Math 234 3 cr</td>
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<td>CEE 320 3 cr</td>
<td>CEE 370 3 cr</td>
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<td>Stat 324 3 cr</td>
<td>CEE 311 3 cr</td>
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<td>EPD 397 3 cr</td>
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<td>Liberal Studies Elective 3 cr</td>
<td>Bot 153, Bot 260, or Microbiol 101 3 cr</td>
<td>Econ 101,102, or 111 3-4 cr</td>
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<td>EMA/ME 307 1 cr</td>
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<td>EPD 275 2 cr</td>
<td>CEE 395 3 cr</td>
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## CURRICULUM CHECKLIST
University of Wisconsin – BS in Civil Engineering

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<th>General College Requirements</th>
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<th>Applied Engineering Requirements</th>
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<td>Math 222</td>
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<td><strong>Math/Statistics Requirements</strong></td>
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<td><strong>Civil Engineering Requirements</strong></td>
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<td>Courses</td>
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<td>Outside CEE</td>
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<td>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</td>
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USEFUL WEBSITES (NOT MENTIONED ELSEWHERE)

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<td>Associated Students of Madison</td>
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<td>Bursar’s Office</td>
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