



College of Engineering  
UNIVERSITY OF WISCONSIN-MADISON

# Geological Engineering

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## Undergraduate Student Handbook and Curriculum Requirements

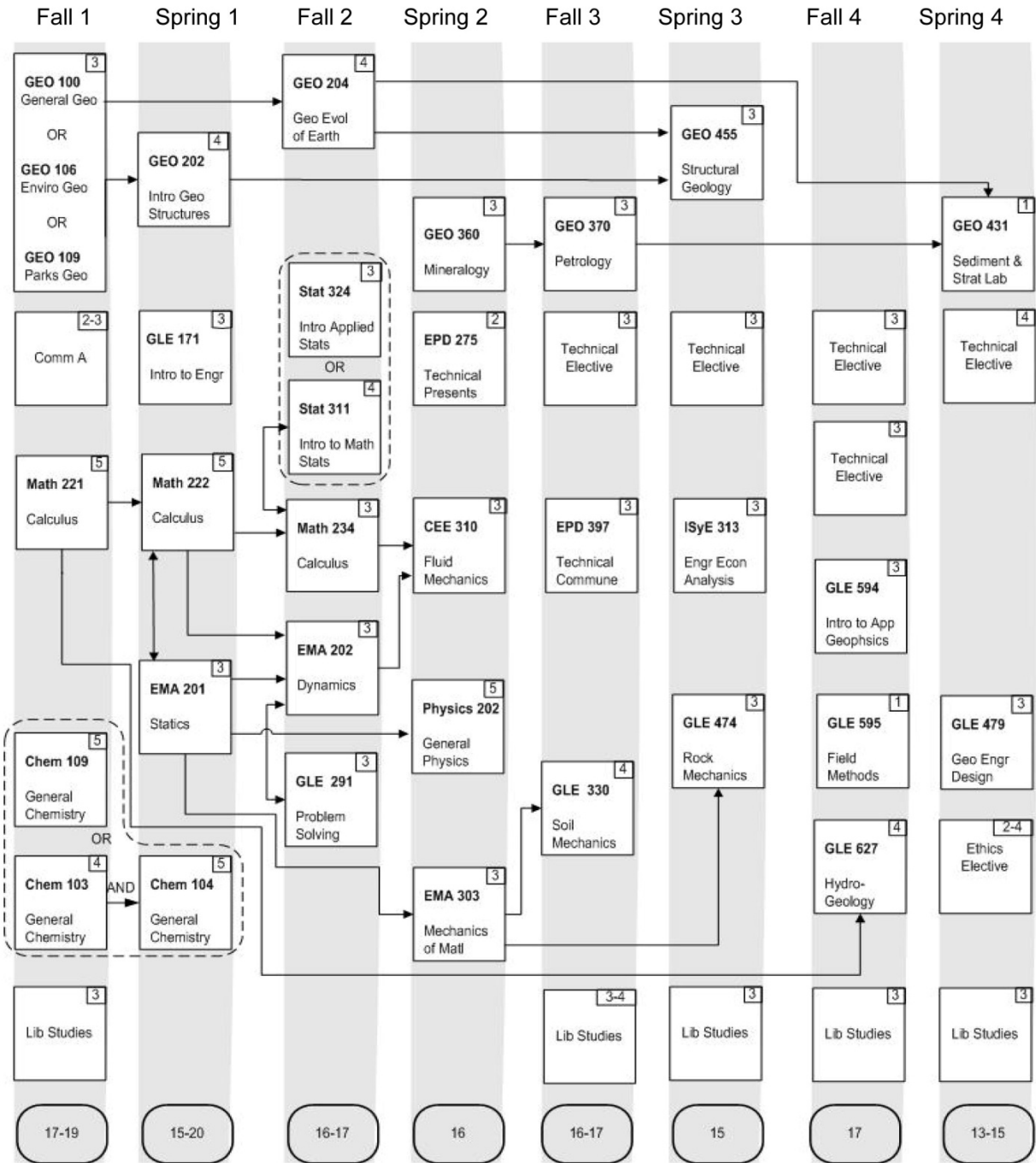
Curriculum Effective  
Fall 2010

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

*Last updated November 2010*

# Geological Engineering

Effective for Students Entering GLE Fall 2010 and Later



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# **I. INTRODUCTION TO GEOLOGICAL ENGINEERING**

## **Important Contact Information**

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[chbenson@wisc.edu](mailto:chbenson@wisc.edu)

Office: 2218 Engineering Hall  
(608) 262-7242

**Undergraduate Chair – Prof. Basil Tikoff**  
[basil@geology.wisc.edu](mailto:basil@geology.wisc.edu)

Office: 179 Weeks Hall  
(608) 262-4678

**Student Services Coordinator – Katie Bleier**  
[kbleier@engr.wisc.edu](mailto:kbleier@engr.wisc.edu)

Office: 2304 Engineering Hall  
(608) 890-0864

## **Mission**

*To create, integrate and transfer geological engineering knowledge by/through the development of citizens and leaders for the state and the nation.*

## **Description of Geological Engineering (GLE) Undergraduate Program**

Geological Engineering integrates two disciplines: Geology and Engineering. Geologists study the Earth; its origins, composition, and evolution. Engineers apply specific principles to practical ends, such as design and building of structures. Geological Engineers help find the best ways to solve Earth-related problems while at the same time protecting the environment.

## **GLE Educational Objectives**

It is the intent of the GLE program that graduates, whether they enter practice, graduate school, or other careers, will demonstrate their proficiency in geological engineering through the following accomplishments:

- Application of geological engineering principles, analyses and synthesis to design and implement projects in the natural and built environment;
- Incorporation of economic, environmental, political, ethical, social, safety, and global considerations to generate sustainable solutions in the natural and built environment;
- Exhibition of strong communication, leadership, and teamwork skills;
- Service to others through professional responsibility and participation in professional and public activities and good citizenship;
- Demonstration of a continuing commitment to and interest in their own and others' education.

## **Educational Outcomes**

The Geological Engineering program will demonstrate that students attain:

An ability to apply knowledge and principles of mathematics, science, and engineering to geological engineering problems. This includes differential equations, calculus-based physics, chemistry, and geological science topics that emphasize geological processes, the identification of minerals and rocks, geophysics, and field methods. This also includes engineering science topics such as statics, properties/strength of materials and geomechanics.

- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints. This requires exposure to topics such as surface and near –surface natural processes, the impacts of construction projects, disposal of wastes, and site remediation.
- An ability to function on multi-disciplinary teams.
- An ability to identify, formulate, and solve geological engineering problems in space and time. This includes knowledge of the physical and chemical properties of earth materials, surface water, ground water and their distribution.
- An understanding of professional and ethical responsibility.
- And ability to communicate effectively
- The broad education necessary to understand the impact of engineering solutions in a global, environmental, and societal context.
- A recognition of the need for, and an ability to engage in life-long learning.
- A knowledge of contemporary issues.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## 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 department, are assigned the classification of Engineering General Resources (EGR). EGR students should apply to a degree-granting department as soon as they are eligible. Students may not begin a semester with the EGR classification once they have completed four semesters as an EGR student. The 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 an academic department in the College of Engineering, a student must have:

1. Satisfied the General Education Communication Skills Part A requirement (see General College Requirements on page 34).
2. A minimum of 24 credits.
3. A minimum of 17 credits of calculus, statistics, chemistry, computer science, statics, and physics courses required for an engineering degree. These credits must include Math 222 or Math 276.
4. A grade point average of at least 2.50 for all math courses 217 and above, statistics courses 224 and above, chemistry (all classes), computer science (all classes), EMA 201, and physics courses 201 and above. For one and only one of these courses that a student has repeated, the more recent of the two grades will be used in the calculation.
5. A grade-point average at least 2.00 for all courses not included above in Requirement 4.
6. Successful completion of introductory chemistry (Chem 103/104 or 109 or 116); calculus-based mechanics (EMA 201 or Physics 201, 207, or 247); math through Math 222 or Math 276; and either InterEGR 101 or 160 or another introduction to engineering class from an approved list.<sup>1</sup>

When the number of qualified 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 degree-granting classification.

Application periods are as follows:

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

Students not admitted to an academic department may file an appeal with the Dean.

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

### **Admission to Courses**

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

Departments may specify courses as 1) not open to EGR students, or 2) open only to students in that specific department.

### **Transfer Admissions**

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

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

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

While making the decision to apply for a transfer to a UW-Madison 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 their specific major.
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 14 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. **All GLE students are encouraged to enroll for a second major in Geology** (See page 40 for information on double majoring in Geology).

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 an Engineering degree can be satisfied in eight semesters of study by completing 15-17 credits of work each semester (see Page 43). 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.

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

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

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

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

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

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

### **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 Online Waiting List System located here: [https://admin.engr.wisc.edu/wait\\_list/](https://admin.engr.wisc.edu/wait_list/). OWLS will be available for students to sign-up on after the first day freshmen students are able to enroll. 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 44). The request will then make its way through the department and appropriate faculty members before it is approved. A copy of the Course Substitution Request Form is located on page 45.

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

### Departmental Requirements

All GLE degree seeking students must complete the Fundamentals of Engineering Exam prior to graduation. See page 28 for more information on registering for the FE Exam and PE licensure in the state of Wisconsin.

### 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.

### Commencement

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

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

## **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 department. 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.

## **Eagle Course Planner**

[https://admin.engr.wisc.edu/course\\_planner/](https://admin.engr.wisc.edu/course_planner/)

The Eagle Course Planner is an online tool to assist you in determining which courses you have already taken, those you still need to complete, and create a plan for taking courses in the upcoming semesters. To use the Course Planner, log in with your NetID and password. Eagle can help you visualize your DARS report, but does not replace the need to review your DARS every semester, as there could be errors in the system. Please consult with your advisor to discuss any discrepancies between Eagle and your DARS report. The DARS system is used across campus and has the final say in your degree progress.

## **Engineering General Resources (EGR) Advisors**

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

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

## **Academic Advisors – 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 department will be assigned to an academic advisor (i.e., a staff advisor). The academic advisor advises students on curriculum requirements; COE and UW-Madison policies and procedures; and the graduate school or professional school application process. An academic advisor can work with students to develop individual educational plans, answer questions about DARS reports, and connect students with other campus resources (e.g., Office of Student Financial Services, Engineering Transfer Admissions, International Engineering Studies and Programs, Engineering Career Services, etc.).

Academic Advisor: Katie Bleier  
2304 Engineering Hall  
(608) 890-9864

[kbleier@engr.wisc.edu](mailto:kbleier@engr.wisc.edu)

To schedule an appointment: [Online Scheduling Tool](#)

## **Faculty Advisors**

All undergraduate students who have been admitted to a degree-granting department will also be assigned to a faculty advisor. All students are **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.

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

## **V. TUTORING & ACADEMIC ASSISTANCE**

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

Free academic support is 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](mailto:delacocque@uhs.wisc.edu), or by calling or stopping by the office at 333 East Campus Mall (7<sup>th</sup> 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, 4<sup>th</sup> 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 (1<sup>st</sup> 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](http://www.engr.wisc.edu/admin/staff/lin_jia-ling.html)).

**Writing Center**

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

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

Telephone: (608) 263-1992

Location: 6171 Helen C. White Hall

## **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>.

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

American Indian Science and Engineering Society  
<http://www.aises.org>

Association for Engineering Geologists (AEG)  
<http://www.aegweb.org>

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

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

Engineers without Borders (EWB)  
<http://ewb.engr.wisc.edu/index.php?lid=in>

Habitat for Humanity  
<http://www.uwhabitat.org/>

Hmong Association of Engineers  
<http://www.engr.wisc.edu/studentorgs/hae/>

National Society of Black Engineers-  
Wisconsin Black Engineering Student Society  
<http://www.engr.wisc.edu/studentorgs/wbess/>

Polygon Engineering Student Council  
<http://www.engr.wisc.edu/studentorgs/polygon/>

Society of Hispanic Professional Engineers  
<http://www.shpe.org/>

Society of Women Engineers  
<http://www.engr.wisc.edu/studentorgs/swe/>

Women in Science and Engineering  
<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 40 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.

## **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](http://www.uhs.wisc.edu/home.jsp?cat_id=32)

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

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

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

Wed: 9:00-5:00

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

## **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 26.

Contact Person: Amanda Hammatt

Email: [international@engr.wisc.edu](mailto: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](mailto: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](mailto: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](mailto: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](mailto: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 (GLE 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 Geological 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 GLE Department Chair. 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 GLE Department Chair, 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 GLE 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 GLE 489.

**Students who (1) satisfy the requirements for an undergraduate degree in Geological Engineering, (2) have a cumulative GPA of at least 3.3, (3) complete a total of at least 8 credits in GLE 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](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 major department 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](mailto: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 Department of Biological Systems Engineering can earn the Certificate by completing at least 16 credits worth of courses with a primary focus on the language, culture, history, geography, society or institutions of a particular country or region of the world. For reference, information on Areas Studies Programs at UW-Madison is available from the International Institute.

### **Certificate in Japanese Studies for Engineering Students**

[www.engr.wisc.edu/epd/tjc](http://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](http://tc.engr.wisc.edu) or contact the TCC Office (<http://tc.engr.wisc.edu/contact.html>) at (608) 262-2472 or in M1080 Engineering Centers Building.

## **Other Certificates – Official List**

[http://registrar.wisc.edu/documents/85\\_Official\\_Certificates.pdf](http://registrar.wisc.edu/documents/85_Official_Certificates.pdf)

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 Geological 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. GLE 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>

**\*\* ALL GLE STUDENTS ARE REQUIRED TO TAKE THE FUNDAMENTALS OF ENGINEERING EXAM \*\***

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 BSGLE 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.

## **Professional Geologist License**

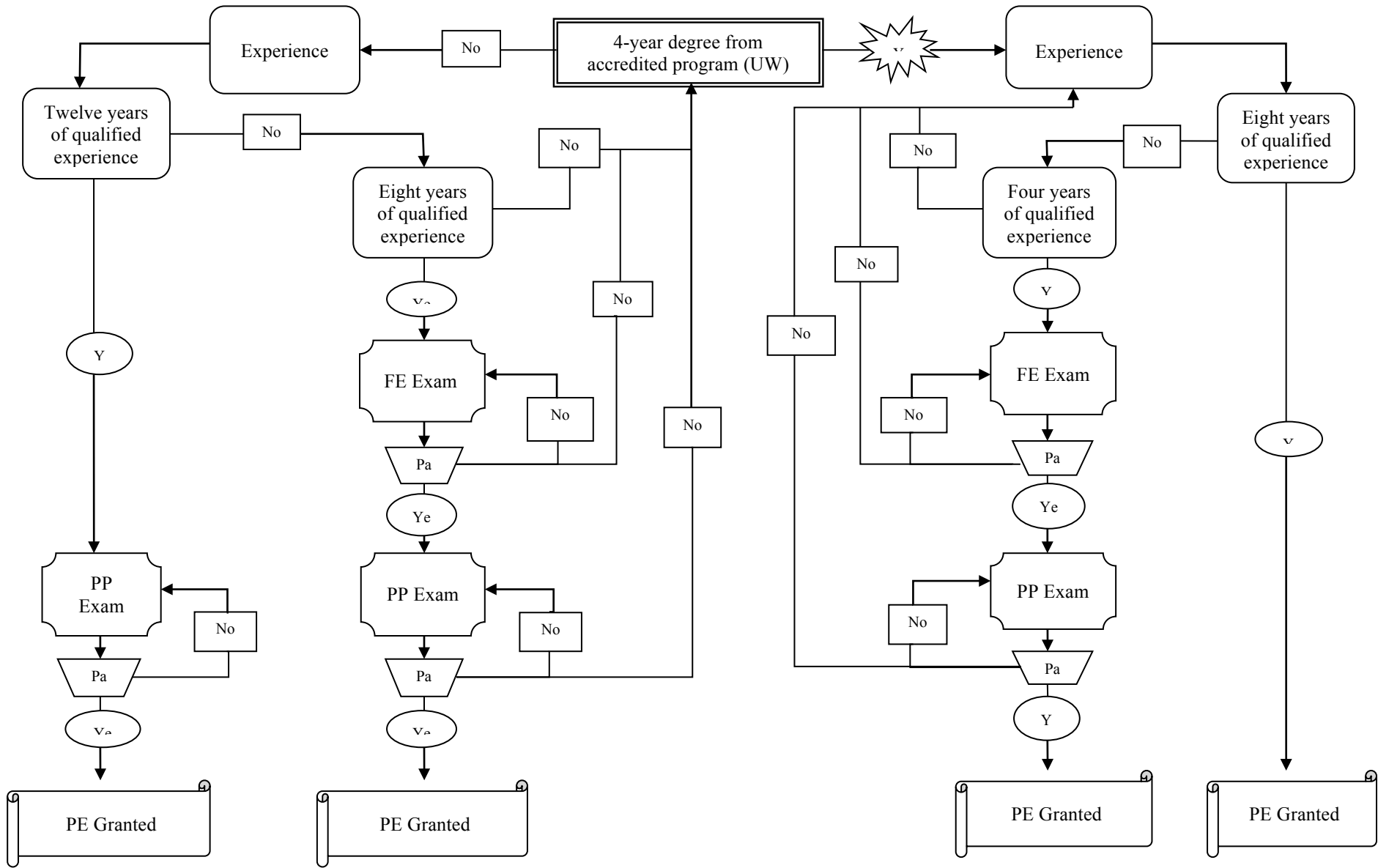
The practice of professional geology means the performance of or the offer to perform any geologic service or work in which the public welfare or the safeguarding of life, health, environment or property is involved. This includes the collection of geological data, consultation, investigation, evaluation, interpretation, planning, or inspection related to a service or work that applied to geology. No person may practice professional geology in the state of Wisconsin unless the person has been duly registered as a professional geologist.

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

1. Attain a BS degree in Geology.
2. Take and pass the Fundamentals of Geology exam.
3. Attain 4 years of work experience in engineering practice.
4. Take and pass the Principles and Practice of Geology exam.
5. Complete the application for professional geologist license and provide evidence of completion of required education and experience for board review.

For more information on the Professional Geologist License, please check out the State of Wisconsin Department of Regulation and Licensing at: <http://drl.wi.gov/prof/geol/cred.htm>

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



## **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 department/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>

Early in their undergraduate studies, students are encouraged to consider the need for obtaining an advanced degree in Geological 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 Geological Engineering at UW-Madison**

Students wishing to be admitted to the Graduate Program in Geological Engineering must satisfy the admission requirements of the UW [Graduate School](#) and the College of Engineering. After admission and acceptance in the Geological Engineering Program, each student will have a three-person Mentor and Evaluation Committee assigned to them. This committee will be appointed by the chair of the Program such that the student's technical areas of interest are best represented. The purpose of this committee is to determine if any deficiencies in the student's undergraduate background must be rectified, establish course

and/or thesis-independent study requirements for the degree being sought as described below, and to determine if these requirements have been satisfactorily met. To help ensure that the student's course of study has appropriate breadth, the Mentor and Evaluation Committee will include at least one member from the College of Engineering, and at least one member from the Department of [Geoscience](#).

For a student to be admitted to the program without deficiencies, he or she is expected to have an undergraduate-level of expertise in several, but not all, of the areas of study associated with an undergraduate degree in Geological Engineering, consisting of mathematics, geology and engineering science. Students who are deemed by their Mentor and Evaluation Committee to be deficient in background will be required to take one or more courses selected to remove the deficiencies. Normally, the credits associated with such courses will be in addition to those required for the degree, but at the discretion of the Mentor and Evaluation Committee, some of the remedial course credits may be counted towards those required for the degree.

### **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. MS without an ABET-accredited BS degree may need to supplement the 24-credit or 30-credit programs with additional coursework as directed by his or her mentor and evaluation committee. PhD applicants do not need an undergraduate degree from an ABET-accredited engineering program However; advanced coursework in a major area of GLE is required.

### **Required GLE Application Materials**

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

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

Fall Enrollment:

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

For Geoscience related financial consideration: January 4<sup>th</sup>

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

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

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

### **Financial Support for Graduate Studies**

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

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

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

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

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

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

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

## **Steps to Follow When Considering Graduate School**

### Preparing to Apply

1. *Two years out*: Start thinking about your future educational plans. Graduate programs often ask for writing samples; try writing an article for publication. Build your resume by working in relevant research experiences by taking GLE 489 or GLE 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. GLE 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 GLE 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 GLE, 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 43).
3. Chemistry: Either Chemistry 109 or Chemistry 103 and 104
4. Introduction to Engineering: GLE 171, or a course from the pre-approved list (this list may be found on the College of Engineering Student Services web page: <http://studentservices.engr.wisc.edu/>)
5. Math: Math 221 and 222
  - Either Math 217 or Math 275 may be used as a substitute for Math 221
  - Math 276 may be used as a substitute for Math 222

### **Department of Geological Engineering Requirements**

In addition to the GCR, the department requires students to take a minimum of 106 additional credits. These credits are distributed among the seven categories shown in the table below. Detailed requirements for each of these categories are provided on Pages 35 through 42. **Error! Bookmark not defined..**

<b>Category</b>	<b>Minimum Credits Needed</b>
Engineering Principles & Professional Issues Requirement	10
Math, Physical Science & Engineering Sciences Requirement	17
Geoscience Core Requirement	22
Geological Engineering Core Requirement	18
Technical Electives Requirement	15
Communication Skills Requirement	5
Liberal Studies Requirement	16
Fundamentals of Engineering Exam	--
<b>Total GLE Credits</b>	<b>103</b>
<b>GCR Credits</b>	<b>22</b>
<b>Total Number of Credits Needed</b>	<b>125</b>

Students and their parents often ask if these requirements can be completed in eight semesters. The answer to this question is yes, but this requires careful planning from the moment a student enrolls at the university. An example 8-semester plan is shown on Page 43.

**Design credits:** The curriculum also requires that all students complete two design courses, designated as 'D' in the list provided on page 37.

## Detailed Curriculum Requirements

### **Engineering Principles & Professional Issues Requirement**

(10 Credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Credits
<i>One of the following Statistics Courses:</i>			
Stat 324	Introductory Applied Statistics for Engineers	--	3
Stat 311	Introduction to Mathematical Statistics	Math 222 or con reg	4
<i>The following Computer-Based Problem Solving course:<sup>3</sup></i>			
GLE 291	Problem Solving Using Computer Tools	EMA 202 or 304	3
<i>The following Engineering Economics course:</i>			
ISYE 313	Engineering Economics Analysis	Sophomore Status	3
<i>One of the following courses in Professionalism, Ethics, and Sustainability:</i>			
InterEGR 102	Intro to Society's Engineering Challenges	Fr. or Soph. status or cons inst	2
InterEGR 250	Fundamentals of Engineering Ethics	--	1
InterEGR 251	Topics in Engineering Ethics	--	1
EnvrSt 339	Environmental Conservation	Sophomore Standing	4
EnvrSt 441	Environmental Ethics	3 cr. of Philos or Enviro Studies	4
EPD 690	Core Competencies of Sustainability	--	1

### **Mathematics, Physical Sciences & Engineering Sciences Requirement**

(17 Credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits
Math 234	Calculus and Analytical Geometry	Math 222	3
<i>One of the following Physics courses:<sup>4</sup></i>			
Physics 202	General Physics	Physics 201 or equivalent	5
Physics 208	General Physics	Physics 207	5
<i>The following Mechanics courses:</i>			
EMA 202	Dynamics	EMA 210 or 214; and Math 222	3
EMA 303	Mechanics of Materials	EMA 201 & Math 222	3
CEE 310	Fluid Mechanics	Math 234 & EMA 202 or equiv	3

Transfer students must have three equivalent math courses to meet the GCR and GLE calculus requirements. If these courses total fewer than nine credits, one additional math course is required. All transfer students must have (or complete at UW-Madison) a calculus or other math course which includes an introduction to differential equations (i.e. Math 222, 319, or 320).

<sup>3</sup> During the 2007-2008 Academic Year and the Fall 2008 semester, students were allowed to use Computer Science 310 or 302 to fulfill the GLE 291 requirement.

<sup>4</sup> Transfer students may satisfy the physics requirement with a four-credit course in physics having similar content as Physics 202. The additional credit can be satisfied with an additional one credit in Technical Electives see page 26.

### Geoscience Core Requirement

(22 credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Credits
<i>One of the Following Intro Geoscience Courses:</i>			
Geoscience 100	General Geology	--	3
Geoscience 106	Environmental Geology	--	3
Geoscience 109	Geology of the National Parks	--	3
<i>The following Geoscience courses:</i>			
Geoscience 202	Introduction to Geologic Structures	Geosci 101/106/109 or cons inst	4
Geoscience 204	Geologic Evolution of Earth	Geosci 101/106/109 or cons inst	4
Geoscience 360	Mineralogy	1 year college chemistry or con reg	3
Geoscience 370	Petrology	Geosci 360	4
Geoscience 431	Sedimentary & Stratigraphy Lab	Geosci 204, 360, & 370	1
Geoscience 455	Structural Geoscience	Geosci 202/204, 1 semester Physics <sup>5</sup>	3

### Geological Engineering Requirement

(18 credits)

The following courses are required:

Course Number	Course Title	Prerequisites	Degree Credits
<i>The following Geophysics courses:</i>			
GLE 594	Introduction to Applied Geophysics	1 yr. of both college Calculus & Physics	3
GLE 595	Field Methods: Applied Geophysics	--	1
<i>The following Soil, Rock, &amp; Groundwater courses:</i>			
GLE 330	Soil Mechanics	EMA 303 or 304 or con reg	4
GLE 474	Rock Mechanics	EMA 201 or cons inst	3
GLE 627	Hydrogeology	Intro course in Geoscience, Jr. status & Math 221	4
<i>The following Analysis &amp; Design course:</i>			
GLE 479	Geological Engineering Design	Senior standing in GLE and cons inst	3

<sup>5</sup> Geology 203 is a recommended prerequisite or concurrent registration. Geology 456 may be taken concurrently.

## **Technical Electives Requirement**

(15 Credits)

Students must take at least 15 credits in the Technical Electives category. All students must complete at least two designated design courses (noted as D in this handbook) as part of the technical electives. Students may take up to 6 credits of GLE 489, Honors in Research, as technical electives. The technical electives are organized into five different tracks, as described below. Students may select courses within these tracks to focus their coursework in a particular area. However, students may complete the technical electives requirement using courses listed in multiple tracks.

### **Energy, Minerals & Mining**

Geological engineers possess knowledge and a skill set that serve society's need to manage extraction of traditional energy and mineral resources in more sustainable and efficient ways, and to lead in new technologies to limit carbon emissions through geological sequestration or to develop geothermal energy in deeper reservoirs.

Within this track, the 16 cr of liberal studies requirements can be framed to match those of the [Nelson Institute certificate on Energy Analysis and Policy](#) or the [Energy Institute certificate in Energy sustainability](#).

### **Sustainability & Environment**

Methods for quantifying the long-term effects of development, natural resource extraction, and environmental damage are often neglected or misapplied in cost-benefit life cycle analysis. This track intends to produce professionals capable of leading the field in sustainable design and construction. The Sustainability & Environment track focuses on quantification, design, and optimization in relation to the use of natural resources and construction materials/methods as well as minimizing the long term impacts of these activities.

### **Geohazards**

The number of fatalities and amount of economic loss due to geohazards increases every year. These losses may result from various geohazards, such as volcanic eruptions, earthquakes, landslides, flooding and tsunamis. The Geohazards track aims to provide students with the necessary skills to perform analyses that minimize loss of life and economic costs associated with geohazards.

### **Groundwater & Surface Water**

Water is an essential resource for humans and ecosystems. Water is also linked to mineral and energy resource production, waste management, and land reclamation. Population growth and climate change are creating increasing challenges to this resource. Development and sustainable management of groundwater and surface water, including prevention and mitigation of water quality problems, require combined expertise in geoscience, hydrology and water resources engineering offered through the Groundwater & Surface Water track.

### **Infrastructure**

There are many challenges that need to be overcome to address the ageing infrastructure of this country as well as develop cost effective solutions for new infrastructure in developing nations. The Infrastructure track is developed to provide students a background that enables them to perform engineering calculations to design, construct, assess the current condition (level of safety), and develop repair and retrofit solutions for civil engineering structures resting on, or constructed in, soil or rock.

### Technical Electives & Number of Credits

Course Number	Course Title	Prerequisites	Energy, Minerals, & Mining	Sustainability & Environment	Geohazards	Groundwater & Surface Water	Infrastructure
BSE 356	Sustainable Residential Construction	Math 112		3			
BSE 367	Renewable Energy Systems	College Algebra & Physics	3	3			
CBE 511	Energy & Sustainability	--	3	3			
CEE 311	Hydroscience	CEE 310				3	
CEE 315	Hydrology	GLE 291 & CEE 311				3	
CEE 320	Environmental Engineering	1 yr college chem.		3			
CEE 357	Intro to Geographic Information Systems	GLE 291	4		4		
CEE 412	Groundwater Hydraulics	--				3	
CEE 427	Solid & Hazardous Waste Engineering	CEE 310	3D*				
CEE 500	Water Chemistry	Chem 103 & 104 or 109				3	
CEE 514	Coastal Engineering	CEE 311			3D		
CEE 619	Hydroecology	Instructor consent		3		3	
CEE 649	Sustainable Construction	--		3			3
CEE 698	Sustainable Development Principles & Practices	--		2			
EMA 405	Practicum in Finite Elements	EMA 202 and 303 or 306	3		3		3
Geosci 320	Geomorphology	Geosci 101/106/109			3	3	3
Geosci 326	Fluvial Geomorphology	Geosci 101/106/109			3	3	
Geosci 390	Global Geophysics	Math 221			3		
Geosci 410	Minerals as a Public Problem	--	3	3			
Geosci 411	Energy Resources	College level math	3	3			
Geosci 420	Glacial & Pleistocene Geology	Geosci 101/106/109				3	3
Geosci 430	Principles of Stratigraphy	Geosci 101/106/109 & 204				3	3
Geosci 457	Conducted Field Trip	Geosci 370 or con reg	2				
Geosci 459	Field Geology	Geosci 455 & Instructor consent	6		6		
Geosci 462	Geologic Hazards	GLE 330 or Geosci 455 or GLE 474			3		

\* Note: D = Design Elective

**Technical Electives & Number of Credits (continued from previous page)**

Course Number	Course Title	Prerequisites	Energy, Minerals, & Mining	Sustainability & Environment	Geohazards	Groundwater & Surface Water	Infrastructure
Geosci 515	Principles of Economic Geology	Geosci 204 or Instructor consent	4				
Geosci 533	Resources From Space	Sr. status	3				
Geosci 629	Contaminant Hydrogeology	Geosci 627 & College Chemistry		3D		3D	
GLE 401	Wind Energy Design & Construction	Jr. status	3D	3D			3D
GLE 444	Practical Aspects of GPS Surveying	Math 221 & 222			2		2
GLE 475	Rock Mechanics Applied to Environmental Problems	GLE 474 for Instructor consent	3				
GLE 530	Seepages & Slopes	GLE 330	3D		3D	3D	3D
GLE 531	Retaining Structures	GLE 291 & 330	3D				3D
GLE 532	Foundations	GLE 291 & 330					3D
GLE 597	Borehole Geophysics	Math 221/222, EMA 201/202, Physics 202, & GLE 594			3		
GLE 633	Waste Geotechnics	CEE 320 & GLE 330		3D			
GLE 635	Remediation Geotechnics	CEE 320 & GLE 330		3D			
GLE 730	Engineering Properties of Soils	GLE 330					3
GLE 732	Unsaturated Soil Geoen지니어ing	Grad St. & GLE 330 or Instructor consent		3		3	
GLE 735	Soil Dynamics	EMA 530, 545 or Instructor consent			3D		3D
SoilSci 321	Soils & Environmental Chemistry	Chem 103/104 or 109		3			
SoilSci 324	Soils & Environmental Quality	Chem 103/104 or 109, Jr. status		3			

\*Note: D = Design Elective

## Technical Electives (continued from previous page)

### Double Major in Geoscience

Students completing the Geological Engineering curriculum are also eligible to earn a degree in Geology with no additional course work. Students are encouraged to earn both degrees. To enroll in the dual-degree program, students must obtain a dual-degree form from the Dean's Office in the College of Engineering. Once completed, this form must be submitted to the Department of Geoscience (2<sup>nd</sup> Floor of Weeks Hall) for signature. Once signed, the student returns this form to the Dean's Office in the College of Engineering.

### 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. Geological 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 (GLE 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 credit may count towards Technical Electives depending on the content of the work completed. Students should consult with both their faculty and academic advisors to determine how the co-op credit will count towards his or her degree.

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

The typical recruiting timeline is shown below:

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

For GLE 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.

**Technical Electives (continued from previous page)**

**Research Credits (GLE 299, GLE 489, and GLE 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 Geological Engineering. This can be accomplished by registering for Honors in Research (GLE 489) or Independent Study (GLE 299 or GLE 699) in the semester that the research is conducted.

If a student wishes to obtain design designation for their work, they must submit a course substitution request form with appropriate justification for the design designation. 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.

**Independent Study (GLE 299 or GLE 699)**

Like GLE 489, independent study students perform research under the direction of individual GLE faculty members. However, there are no expectations for a student to create knowledge, participate in writing research papers, or produce a senior thesis. GLE 299 is open to freshmen while GLE 699 requires sophomore standing. The student works with his/her independent study advisor to determine whether he/ she should sign up for GLE 299 or GLE 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.

**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. If students wish to count transfer credits towards the Communication Skills requirement, they should contact Laura Grossenbacher, Director of the Engineering Professional Development program, at grossenb@engr.wisc.edu or 262-8073.

Speech-Related Course:

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
EPD 275	Technical Presentations	Sophomore status	2	0.0

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

Writing-Related Course:

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

Course Number	Course Title	Prerequisites	Degree Credits	Design Credits
EPD 397	Technical Writing	Jr. status	3	0.0

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

## Liberal Studies Requirement

(16 Credits)

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

**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.

1. **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 course chosen must be worth at least three credits. This course may be taken Pass/Fail, but this course will not transfer to a major outside the College of Engineering (see Page **Error! Bookmark not defined.**).

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

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

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

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

## SAMPLE COURSE PLANNING GRID

### Geological Engineering

As noted previously, many students and their parents want to know if the GLE degree requirements can be completed in 8 semesters. This can be done, but requires careful planning and a desire to major in Geological engineering upon entry to UW-Madison. Students are strongly encouraged to work with EGR and GLE 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 Geological Engineering. Students are strongly encouraged to develop such a grid with assistance from their advisor.

Year 1		Year 2		Year 3		Year 4	
Fall		Fall		Fall		Fall	
Math 221	5 cr	Math 234	3 cr	CEE 310 or Stats 324	3 cr	Technical Electives	6 cr
Chem 109	5 cr	EMA 202	3 cr	EPD 275	2 cr	GLE 594	3 cr
Comm A	2 cr	GLE 291	3 cr	GLE 330	4 cr	GLE 595	1 cr
Geoscience 100, 106, or 109	3 cr	Geoscience 360	3 cr	Geoscience 431	1 cr	GLE 627	4 cr
		Geoscience 202	4 cr	Liberal Studies Elective	3 cr	Liberal Studies Elective	3 cr
				ISyE 313	3 cr	FE EXAM	
Total Credits	15	Total Credits	16	Total Credits	16	Total Credits	17
Spring		Spring		Spring		Spring	
Math 222	5 cr	Physics 202	5 cr	EPD 397	3 cr	GLE 479	3 cr
EMA 201	3 cr	Geoscience 370	3 cr	Geoscience 455	4 cr	Technical Electives	6 cr
GLE 171	1 cr	Stats 324 or CEE 310	3 cr	GLE 474	3 cr	Liberal Studies Elective	3 cr
Geoscience 204	4 cr	EMA 303	3 cr	Professional Issues	1 cr	Liberal Studies Elective	3-4 cr
		Liberal Studies Elective	3-4	Technical Electives	3 cr	FE EXAM	
Total Credits	13	Total Credits	17-18	Total Credits	14	Total Credits	16-17

## CURRICULUM CHECKLIST

University of Wisconsin - Department of Geological Engineering

General College Requirement			Engineering Principles & Professional Issues			Geological Engineering Core Requirement		
Courses	Cr	Grade	Course	Cr	Grade	Courses	Cr	Grade
Communication A/EPD 155	2		Statistics 324 or 311	3-4		GLE 594	3	
Math 221	5		GLE 291	3		GLE 595	3	
Math 222	5		ISyE 313	3		GLE 330	4	
EMA 201	3		Professional Issues	1		GLE 474	3	
Chemistry 103 & 104 or 109	5		Geoscience Core Requirement			GLE 627	4	
GLE 171	1		Course	Cr	Grade	GLE 479	3	
Physical & Engineering Sciences Requirement			Geoscience 101, 106, or 109	3				
Courses	Cr	Grade	Geoscience 202	4		Communication Skills Requirement		
Math 234	3		Geoscience 204	4		Courses	Cr	Grade
Physics 202 or 208	5		Geoscience 360	3		EPD 275	2	
EMA 202	3		Geoscience 370	3		EPD 397	3	
EMA 303	3		Geoscience 431	1				
CEE 310	3		Geoscience 455	4				
Technical Electives Requirement				Liberal Studies Requirement				
Courses	Cr	Design Course (D)	Grade	Courses	Cr	H, L, Z, or e	E, I, A, or D	Grade
1.				1.				
2.				2.				
3.				3.				
4.				4.				
5.				5.				
6.								
				Check box on right if six credits of coursework having breadth classification of H, L, or Z have been completed				
Total	15			Check box on right if two courses from one department AND one of those courses has level classification of I, D, or A have been completed				



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

**GLE Request for Course Substitution**  
Please submit form to 2304 Engineering Hall

Student Name: \_\_\_\_\_  
Campus ID: \_\_\_\_\_  
Classification: \_\_\_\_\_

Date: \_\_\_\_\_  
Advisor: \_\_\_\_\_

**Describe the requested substitution(s):** All reference to courses must include the course number, full title and number of credits as they appear on your UW-Madison DARS report. Course titles and numbers from other institutions may be included here.

**Necessary update to DARS report as a result of the substitution(s):**

Move \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ : \_\_\_\_\_  
Course Credits DARS Section Requirement Sub-requirement

Move \_\_\_\_\_ from \_\_\_\_\_ to \_\_\_\_\_ : \_\_\_\_\_  
Course Credits DARS Section Requirement Sub-requirement

Example:

Move GLE 699 2 from Extra Coursework to Technical Electives : Geoenvironmental Electives  
Course Credits DARS Section Requirement Sub-requirement

**Provide Justification for the substitution(s):**

**Advisor Recommendation:**

**Required Documents:** Please attach the following:

- Current DARS Report
- Course Syllabus and/or Course Outline

**Approved:**

GLE Undergraduate Chair: \_\_\_\_\_

Date: \_\_\_\_\_

Advisor: \_\_\_\_\_

Date: \_\_\_\_\_

## USEFUL WEBSITES (NOT MENTIONED ELSEWHERE)

Academic Calendar	<a href="http://www.secfac.wisc.edu/acadcal/">http://www.secfac.wisc.edu/acadcal/</a>
Adult and Student Services	<a href="http://www.dcs.wisc.edu/info/">http://www.dcs.wisc.edu/info/</a>
Associated Students of Madison	<a href="http://www.asm.wisc.edu/">http://www.asm.wisc.edu/</a>
Bursar's Office	<a href="http://www.bussvc.wisc.edu/bursar/bursar.html">http://www.bussvc.wisc.edu/bursar/bursar.html</a>
Campus Safety	<a href="http://www.safeu.wisc.edu/">http://www.safeu.wisc.edu/</a>
Child Care and Family Resources	<a href="http://occfr.wisc.edu/">http://occfr.wisc.edu/</a>
Code of Conduct	<a href="http://students.wisc.edu/saja/misconduct/misconduct.html">http://students.wisc.edu/saja/misconduct/misconduct.html</a>
College of Engineering Student Services	<a href="http://studentservices.engr.wisc.edu/">http://studentservices.engr.wisc.edu/</a>
Commencement	<a href="http://www.secfac.wisc.edu/commence/">http://www.secfac.wisc.edu/commence/</a>
Computer-Aided Engineering	<a href="http://www.cae.wisc.edu/">http://www.cae.wisc.edu/</a>
Course Guide	<a href="http://public.my.wisc.edu/portal/render.userLayoutRootNode.uP">http://public.my.wisc.edu/portal/render.userLayoutRootNode.uP</a>
Information Technology, Division of	<a href="http://www.doit.wisc.edu/">http://www.doit.wisc.edu/</a>
Innovation Days	<a href="http://innovation.wisc.edu/">http://innovation.wisc.edu/</a>
International Student Services	<a href="http://iss.wisc.edu/">http://iss.wisc.edu/</a>
Job Center, UW Student	<a href="http://jobcenter.wisc.edu/">http://jobcenter.wisc.edu/</a>
LGBT Campus Center	<a href="http://lgbt.wisc.edu/">http://lgbt.wisc.edu/</a>
Morgridge Center for Public Service	<a href="http://www.morgridge.wisc.edu/index.html">http://www.morgridge.wisc.edu/index.html</a>
Multicultural Student Center	<a href="http://msc.wisc.edu/msc/">http://msc.wisc.edu/msc/</a>
New-Student Programs	<a href="http://www.newstudent.wisc.edu/">http://www.newstudent.wisc.edu/</a>
Recreational Sports, Division of	<a href="http://www.recsports.wisc.edu/">http://www.recsports.wisc.edu/</a>
Registrar, Office of the	<a href="http://www.registrar.wisc.edu/">http://www.registrar.wisc.edu/</a>
SAFE Nighttime Services	<a href="http://www2.fpm.wisc.edu/trans/Safeservices.asp">http://www2.fpm.wisc.edu/trans/Safeservices.asp</a>
Schedule of Classes	<a href="http://registrar.wisc.edu/schedule_of_classes.htm">http://registrar.wisc.edu/schedule_of_classes.htm</a>
Software Training for Students	<a href="http://www.doit.wisc.edu/training/student/">http://www.doit.wisc.edu/training/student/</a>
Steuber Prize for Excellence in Writing	<a href="http://tc.engr.wisc.edu/steuber/">http://tc.engr.wisc.edu/steuber/</a>
Student Advocacy and Judicial Affairs	<a href="http://students.wisc.edu/saja/index.html">http://students.wisc.edu/saja/index.html</a>
Student Financial Aid, Office of	<a href="http://www.finaid.wisc.edu/">http://www.finaid.wisc.edu/</a>
Student Health Insurance Plan	<a href="http://www.uhs.wisc.edu/home.jsp?cat_id=116">http://www.uhs.wisc.edu/home.jsp?cat_id=116</a>
Student Life, Division of	<a href="http://students.wisc.edu/">http://students.wisc.edu/</a>
Student Shop, College of Engineering	<a href="http://coestudentshop.engr.wisc.edu/">http://coestudentshop.engr.wisc.edu/</a>
Transfer Student Services	<a href="http://www.newstudent.wisc.edu/transfer/">http://www.newstudent.wisc.edu/transfer/</a>
Transportation Services	<a href="http://www2.fpm.wisc.edu/trans/">http://www2.fpm.wisc.edu/trans/</a>
Undergraduate Catalog	<a href="http://pubs.wisc.edu/ug/">http://pubs.wisc.edu/ug/</a>
University Apartments	<a href="http://www.housing.wisc.edu/universityapartments/">http://www.housing.wisc.edu/universityapartments/</a>
University Housing	<a href="http://www.housing.wisc.edu/">http://www.housing.wisc.edu/</a>
University Police Department	<a href="http://www.uwpd.wisc.edu/">http://www.uwpd.wisc.edu/</a>
Veteran Services	<a href="http://students.wisc.edu/veterans/veterans.html">http://students.wisc.edu/veterans/veterans.html</a>
Visitor and Information Programs	<a href="http://www.vip.wisc.edu/">http://www.vip.wisc.edu/</a>
Wendt Library	<a href="http://wendt.library.wisc.edu/">http://wendt.library.wisc.edu/</a>
Wisconsin Experience	<a href="http://www.learning.wisc.edu/">http://www.learning.wisc.edu/</a>
Wisconsin Union	<a href="http://www.union.wisc.edu/">http://www.union.wisc.edu/</a>