Engineers design products and develop solutions to society’s national and global challenges. The variety of engineering projects requires engineers to have an understanding of people and their values. Engineers blend their knowledge and practical experience with their communication and teamwork skills to work as members of diverse, multidisciplinary teams. Engineers frequently make decisions affecting the development of society and the direction it will take.

The University of Wisconsin–Madison College of Engineering is one of the best places in the world for an engineering education. The outstanding curriculum and the world-class faculty focus on providing students with the technological tools, resources, and knowledge to develop solutions to problems in fields ranging from medicine to energy to manufacturing—and many more.

In the classroom and in the lab, students study and grow their skills, yet they also enrich their academic experience outside of the classroom through opportunities such as international study, field research, internships, laboratory experience, and entrepreneurial opportunities.

Learning isn’t confined to the classroom. It can happen anywhere—in the Engineering Hall study lounge, in the state-of-the-art makerspace, or in casual conversation on Engineering Mall. As Badger engineers, students are surrounded by some of the smartest, most innovative people in the world. The faculty do more than teach. They immerse students in interdisciplinary activities and offer real design challenges—and students can actually design and build products that solve those challenges.

In a college internationally renowned for its research, there also are many opportunities for undergraduate students to work directly with faculty members to propose and conduct research, and to publish and patent their results.

The Wisconsin Experience is not limited to academics. Across the university, there are a host of ways to get involved in the campus community. From the UW Marching Band to student government, students can find a home at UW.

A College of Engineering education will not only offer students the time of their lives, it will also prepare them to change life as we know it.

**DEGREES/MAJORS/CERTIFICATES**

- Biology in Engineering for Engineering Majors, Certificate (http://guide.wisc.edu/undergraduate/engineering/college-wide/biology-engineering-engineering-majors-certificate)
- Biomedical Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/biomedical-engineering/biomedical-engineering-bs)
- Chemical Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/chemical-biological-engineering/chemical-engineering-bs)
- Civil Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/civil-environmental-engineering/civil-engineering-bs)
- Computer Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/electrical-computer-engineering/computer-engineering-bs)
- Electrical Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/electrical-computer-engineering/electrical-engineering-bs)
- Engineering Physics, B.S. (http://guide.wisc.edu/undergraduate/engineering-engineering-physics/engineering-physics-bs)
- Geological Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/civil-environmental-engineering/geological-engineering-bs)
- Industrial Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/industrial-systems-engineering/industrial-engineering-bs)
- International Engineering, Certificate (http://guide.wisc.edu/undergraduate/engineering/college-wide/international-engineering-certificate)
- Mechanical Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/mechanical-engineering/mechanical-engineering-bs)
- Naval Science, BNS (http://guide.wisc.edu/undergraduate/engineering/college-wide/naval-science)
- Nuclear Engineering, B.S. (http://guide.wisc.edu/undergraduate/engineering/engineering-physics/nuclear-engineering-bs)
- Technical Communication, Certificate (http://guide.wisc.edu/undergraduate/engineering/engineering-professional-development/technical-communication-certificate)

**PEOPLE**

“If you think of the challenges that we face—energy, transportation, clean air and water, building the next generation of computing and communications technologies as we use up our raw materials —those are problems engineers must address. I’d like our students and faculty to take the leadership role in solving those problems in their classrooms and research.”

—Dean Ian Robertson

**COLLEGE OF ENGINEERING LEADERSHIP** (HTTPS://WWW.ENGR.WISC.EDU/ABOUT/LEADERSHIP)

Dean: Ian M. Robertson
Policies and Regulations

Admissions

REGULATIONS

Official regulations regarding enrollment, scholarship, and graduation for undergraduates in the College of Engineering.

Admissions

1. Direct Admission

New students are admitted directly to the degree program (major) of their choice or to the College of Engineering as Engineering Undecided. Progression requirements must then be satisfied as described in Regulations 3–7.

2. Degree Programs (Majors)

Biomedical Engineering (BME)
Chemical Engineering (CHE)
Civil Engineering (CEE)
Computer Engineering (CMPE)
Electrical Engineering (EE)
Engineering Mechanics (EM)
Engineering Physics (EP)
Geological Engineering (GLE)
Industrial Engineering (IE)
Materials Science and Engineering (MSE)
Mechanical Engineering (ME)
Nuclear Engineering (NE)

PROGRESSION

3. First Year Progression Requirements

To automatically progress in a College of Engineering (CoE) degree program (major) after direct admission or to switch between engineering degree programs, students must complete the following requirements after their first two semesters of residency at UW–Madison:

A. 24 credits completed at UW–Madison. Special topics, independent study, seminar, pass/fail, and credit/no credit courses will not be included in the 24 credits except for required INTEREGR 110 Introduction to Engineering and English as a Second Language courses.

B. General Education Communications Part A (Comm A) requirement. If Comm A is not completed as a graded course at UW–Madison (i.e., completed through placement test, AP/IB, or transfer credit), then a liberal studies course of at least 3 credits with a breadth designation of Humanities, Literature, or Social Sciences must be taken on a graded basis at UW–Madison.

C. INTEREGR 110 Introduction to Engineering

D. Math course sequence through MATH 222 Calculus and Analytic Geometry 2 or MATH 276 Topics in Calculus II

E. Four core courses, required for engineering degree programs (majors), completed at UW–Madison, as defined below:

Second Bachelor's Degree

The College of Engineering does not accept second undergraduate degree applications. Second degree students (https://www.engr.wisc.edu/admissions/undergraduate-admissions/returning-adults-second-degree-students) might explore the Biological Systems Engineering program at UW–Madison, an undergraduate engineering degree elsewhere, or a graduate program in the College of Engineering.
1. **Math**: A minimum of two math courses numbered MATH 217 Calculus with Algebra and Trigonometry II or above; or one math course 300 level or above. If the math requirement for the degree program (major) is complete or the student has completed the calculus sequence through MATH 234 Calculus--Functions of Several Variables, then additional math courses numbered MATH 217 Calculus with Algebra and Trigonometry II or above or additional courses from the science requirement in Regulation 3.E.2. can be taken to complete the four core course requirement. Excludes MATH 228 WES Calculus Supplement, MATH/HIST SCI 473 History of Mathematics, special topics, independent study, seminar, pass/fail, and credit/no credit courses.

2. **Science**: A minimum of two science courses required for engineering degree programs (majors) as defined in the table below. If the math and science requirements for the degree program are complete, then departmental engineering courses 200 level and above can be taken to complete the four core course requirement. Excludes EPD, InterEGR, special topics, independent study, seminar, pass/fail, and credit/no credit courses.

   - For biomedical engineering and chemical engineering majors, the following science requirements apply:
     - One course must be CHEM 104 General Chemistry II or higher
     - One course must be PHYSICS 201 General Physics/E M A 201 Statics or higher

   If above two requirements are completed, select from additional science courses below.

   - For majors in civil engineering, computer engineering, electrical engineering, engineering mechanics, engineering physics, geological engineering, industrial engineering, materials science and engineering, mechanical engineering, and nuclear engineering, the following science requirements apply:
     - One course must be either CHEM 104 General Chemistry II or higher OR PHYSICS 201 General Physics/E M A 201 Statics or higher
     - One other science course, from the following:
       - Chemistry, all classes
       - E M A 201 Statics, E M A 202 Dynamics, M E 240 Dynamics
       - PHYSICS 201 General Physics and above
       - Calculus-based STAT 224 Introductory Statistics for Engineers and above
       - E P 271 Engineering Problem Solving I
       - COMP SCI 301 Introduction to Data Programming and above, excluding COMP SCI 304 WES-CS Group Meeting
       - Excludes special topics, independent study, seminar, pass/fail, and credit/no credit courses

3. **History of Mathematics**: MATH 228 WES Calculus Supplement

4. **Mathematics**: MATH 217 Calculus with Algebra and Trigonometry II or above

5. **Statistics**: MATH 217 Calculus with Algebra and Trigonometry II or above or additional courses from the science requirement in Regulation 3.E.2. can be taken to complete the four core course requirement. Excludes MATH 228 WES Calculus Supplement, MATH/HIST SCI 473 History of Mathematics, special topics, independent study, seminar, pass/fail, and credit/no credit courses.

6. **Calculus**: MATH 217 Calculus with Algebra and Trigonometry II or above

7. **Computing**: COMP SCI 301 Introduction to Data Programming and above, excluding COMP SCI 304 WES-CS Group Meeting

8. **Definitions**

   - **A.** Full-time student: One carrying a minimum credit load of 12 credits. All students are expected to be full-time unless they have the permission of the dean to be part-time. A student...
10. Student Responsibility for Scheduling
Each student is responsible for arranging a course list that will permit satisfactory progress towards degree requirements and a class schedule that (a) avoids class and final exam scheduling conflicts, (b) avoids an excessively demanding final exam schedule, and (c) verifies registration in chosen classes.

11. Access to Courses
Departments may specify courses as not open to students who need to complete progression requirements, or as open only to students in a specific degree program (major).

12. Transfer of Degree Applicable Credits
A course taken anywhere other than UW–Madison, or by independent study or resident extension, is transferable to the College of Engineering, in credits only, if it is transferable to the UW–Madison. The course counts toward graduation only if it satisfies a graduation requirement of the curriculum to which it is to be applied and only if it was passed with a grade of C (2.0 on a 4.0 scale) or better.

13. Transfer of Grades
Grades for courses taken anywhere other than UW–Madison are not transferable, even if the credits for those courses are transferable.

14. Adding Courses
Within other limits of these regulations a student may add full-semester courses only during the first two weeks of classes. (Regulation 19).

15. Dropping Courses
Within other limits of these regulations, a student may drop full-semester courses only during the first nine weeks of classes. Courses dropped after two days before the last day to add courses are noted on the transcript as DR. (Regulations 14, 19 and 22.G.).

16. Course Substitutions
A student may substitute courses that deviate from the requirements of a published curriculum of the College of Engineering upon the recommendation of the student's degree-granting department and with the approval of the college governance committee.

17. Pass/Fail and Credit/No Credit Courses
Pass/fail is a student-option alternative way of being graded in a regularly graded course. Credit/no credit describes courses approved for two-level grading and is not a student option.

A student may change the grading option of a full-semester course to or from pass/fail only during the first four weeks of classes. (Regulation 19). These courses must be free electives. Only students in good standing may elect the pass/fail privilege.

The pass/fail 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 credit/no credit will not be counted in determining the number of pass/fail courses the student may elect.

18. Audited Courses
A student may audit a course only if the instructor consents. Auditors are expected to attend with a reasonable regularity and to participate in the class, as determined by the instructor. Audited courses carry no degree credit, do not count in determining the minimum number of credits permitted in each term, and are not included in the calculation of the GPA. The only valid grade for audited courses is a grade of S (Satisfactory) or NR (No Report). A student may change to or from pass/fail only during the first four weeks of classes (Regulation 19).

19. Courses Scheduled for Fewer Than 15 Weeks
Deadlines for sessions and modular courses are listed on the Office of the Registrar’s website.

PERFORMANCE AND EVALUATION

20. Attendance
Each student is expected to attend all assigned classes during the regular meeting times, and take all of the examinations for those courses at the regularly scheduled times. In the case of course
or examination absences excused for a reason acceptable to the
course instructor, the student is expected to make up the work
within a reasonable time, and may do so without a grade penalty.

21. Grading System
Course grades are reported by letter only; plus and minus grades
are not authorized. The following grades are included in computing
grade point average (GPA) and point-credit ratio (PCR).

Grade: A
Grade Points: Excellent
Per Credit: 4.0
Grade: B
Grade Points: Good
Per Credit: 3.0
Grade: BC
Grade Points: Intermediate
Per Credit: 2.5
Grade: C
Grade Points: Fair
Per Credit: 2.0
Grade: D
Grade Points: Poor
Per Credit: 1.0
Grade: F
Grade Points: Failure
Per Credit: 0.0

22. Special-Purpose Grades
The following ways of reporting course grades are also used and,
except for NR, do not affect GPA or PCR

A. S (Satisfactory) or U (Unsatisfactory) — used to report
pass/fail courses (Regulation 17). S is also used in
audited courses (Regulation 18).
B. CR (Credit) or N (No Credit) — used to report credit/no
credit courses (Regulation 17).
C. NR (No Report) — signifying that no grade has been
reported to the Registrar's Office — a temporary grade
that must be replaced by an A-F grade; also used for a
permanent grade in audited courses (Regulation 18).
D. NW (No Work) — student enrolls in a course and then
never attends. This means that instructor has no evidence
that student ever attended.
E. I (Incomplete) — a temporary grade (Regulation 27); EI
is used for an extended incomplete (requires a dean's
action); IN is used to indicate an incomplete in a credit/
no credit course; PI is used for a permanent incomplete
(Regulation 28).
F. P (Progress) — a temporary grade used for courses
extending beyond one term. The final grade determines
the grade for each term and replaces P grades for the
course.
G. DR (Dropped) — indicates the course was dropped
after the initial drop deadline noted on the Office of the
Registrar's website.
H. W (Withdrawn) — indicates the student withdrew from the
university after the initial drop deadline noted on the Office
of the Registrar's website.

23. Course Grade Changes
The final course grade may be changed only by the professor in
charge of the course section, and then only to correct a clerical error
in the computation or reporting of the original grade.

24. Grade Point Average (GPA) and Point-Credit Ratio (PCR)
Grade point average (GPA) is computed by dividing the total number
of grade points earned at UW–Madison by the total number of
credits attempted (excluding pass/fail or credit/no credit courses)
at UW–Madison. The point-credit ratio (PCR) 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.

25. Dean's Honor List
At the end of each semester the names of all full-time students in
good standing with a 3.5 or higher semester GPA and cumulative
GPA of at least 3.0 will be included on the Dean's Honor List.
Students must have received no incompletes and no unreported
grades. A notation of "Dean's Honor List" and date will be entered
on the student's transcript.

26. Repeating Courses
Any course may be repeated at the student's option. In the case
of a required course in which the student earned a grade of D and
which is a prerequisite to another required course, the student is
encouraged (or may be required by departmental regulation) to
repeat the course. For courses taken more than once, all grades
count in the grade point computations, but only the last grade for
the course is applied to the student's point-credit ratio.

27. Incomplete
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).

28. Resolution of an Incomplete
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.

29. Final Exam Rescheduling
A student may be permitted to take an examination at other than the regularly scheduled time only with permission of the instructor. Permission will be granted only for illness or other unusual and substantiated cause beyond the student’s control. (Regulation 10).

30. Withdrawal
In order to withdraw from the University a student should consult an advisor and must obtain the dean’s signature for the official withdrawal. Grades of W will be recorded for courses in progress if the student withdraws after 2 days before the last day to add classes (Regulations 14, 19 and 22.H.).

A. After eight weeks of classes but prior to the last three weeks of scheduled classes, such withdrawal will be approved by the dean only for non-academic reasons or to transfer out of the College of Engineering.

B. No official withdrawal will be granted in the last three weeks of scheduled classes. Grades of Incomplete, if justified (Regulation 27), or F, N, or U (instead of W) will be recorded for students who leave the University during this time.

31. Year Classification
The year classification of a student is determined by the number of credits passed and the number of grade points earned, applicable to the student’s degree, as indicated by the following tabulation:

<table>
<thead>
<tr>
<th>Class</th>
<th>Numerical Classification of Year</th>
<th>Minimum Credits Passed</th>
<th>Minimum Grade Points Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshman</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sophomore</td>
<td>2</td>
<td>24</td>
<td>48</td>
</tr>
<tr>
<td>Junior</td>
<td>3</td>
<td>54</td>
<td>108</td>
</tr>
<tr>
<td>Senior</td>
<td>4</td>
<td>86</td>
<td>172</td>
</tr>
</tbody>
</table>

For the purpose of year classification only, pass/fail and credit/no credit courses and courses transferred from another campus are assumed to have earned 2.0 grade points per credit.

32. Good Standing
A student is in good academic standing unless on academic probation or dropped.

33. Probation
A student is placed on academic probation when that student has, in the semester just completed,

A. Attained less than a 2.0 GPA; or
B. Passed fewer than 12 credits without part-time permission from the dean.

Once on probation, the student is continued on probation until either removed from probation or dropped (Regulations 8.A., 9.F., and 37).

34. Removal From Probation
All of the following requirements must be satisfied for the removal of a student from academic probation (Regulation 37):

A. A cumulative GPA of at least 2.0;
B. A GPA of at least 2.0 for the semester just completed;
C. At least 12 credits passed in the semester just completed;
D. A total of at least 24 degree credits passed in the two most recent semesters in residence.

35. Drop (Regulation 37)
A. A student on academic probation will be dropped at the end of any semester for which that student has attained a GPA of less than 2.0, or passed fewer than 12 credits without part-time permission from the dean, or passed less than 3/4 of the credits attempted as a part-time student.

B. A student not on academic probation will be dropped at the end of any semester for which that student has passed less than half of the credits attempted.

36. Readmission
A student who has been dropped for academic reasons may be readmitted by the dean only after the student has been out of the College of Engineering for at least one semester.

37. Session Actions
No academic actions (probation, drop, removed from probation) will be taken at the end of sessions (Regulation 8.D.).

38. Graduation
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 advisor to ensure that all the following graduation requirements have been met:

A. Have fulfilled the published graduation requirements of that curriculum, with all substitutions formally approved, and have achieved a minimum 2.0 GPA overall.
B. Have a PCR (Regulation 24) 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.
C. A departmental PCR of at least 2.0 for all courses taken in the degree-granting department that count toward graduation.
D. Have completed at least 30 credits in residence in the College of Engineering, including 15 credits of work in the degree-granting department.
39. Graduation with Distinction and Highest Distinction

Students who have earned at least 60 credits on the University of Wisconsin–Madison campus and whose total cumulative GPA is in the top 5 percent of the College graduating class will receive the designation "Graduated With Highest Distinction," or if in the next 15 percent, "Graduated with Distinction." The appropriate designation is entered as a permanent record on the student's transcript.

40. Appeal

The Dean of the College of Engineering has the authority to suspend or modify the operation of these regulations if their enforcement is judged to work an injustice to the student.

Policies

Accreditation

The following engineering undergraduate degree programs described in this catalog are accredited by the Engineering Accreditation Commission of ABET, www.abet.org (http://www.abet.org):

- Biological Systems Engineering (with College of Agricultural and Life Sciences)
- Biomedical Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Engineering Mechanics
- Geological Engineering
- Industrial Engineering
- Materials Science and Engineering
- Mechanical Engineering
- Nuclear Engineering

Second Bachelor's Degree

The College of Engineering does not accept second undergraduate degree applications. Second degree students (https://www.engr.wisc.edu/admissions/undergraduate-admissions/returning-adults-second-degree-students) might explore the Biological Systems Engineering program at UW–Madison, an undergraduate engineering degree elsewhere, or a graduate program in the College of Engineering.

Additional Major

Engineering students may earn an additional major in the College of Letters & Science and have the additional major noted on their transcript at the time of graduation. To qualify, the student must have approval in advance from both the department in the College of Letters & Science offering the major and the academic dean of the College of Engineering, and must satisfy all requirements for the Letters & Science major prior to or concurrently with the engineering degree. For further details, contact the College of Engineering Dean's Office, 2620 Engineering Hall.

Adding additional majors from colleges other than Letters & Science is not accepted. For example, majors such as art (School of Education) and forestry (College of Agricultural and Life Sciences) cannot be completed in conjunction with an engineering degree. Likewise, students cannot pursue more than one undergraduate engineering degree concurrently.

Student Grievances

In compliance with Title IX regulations, the College of Engineering has a grievance procedure to handle student complaints. Students should follow these steps until a resolution is achieved:

1. Attempt to resolve the grievance directly with the individual involved.
2. If that approach seems unsatisfactory, and the grievance involves a teaching assistant (TA), consult the professor in charge of the course.
3. If necessary, discuss the grievance with the appropriate department chair.
4. The next level involves the academic dean. Students should contact Manuela Romero in 2620 Engineering Hall or at mromero@wisc.edu.
5. All students have the right to appeal to the dean of the college, Ian Robertson, 608-262-3482, if they feel their case has not been justly handled by another dean.
6. Only a few grievances are really serious and difficult to resolve. In these instances, the dean seeks a solution that, as best as can be determined, is appropriate, just, legal and in the best interests of all concerned.

Authority Limits on Grades

There are areas in which the dean does not have authority to override an instructor, such as determination of a student's grade. However, it has happened that the department chair has intervened, for example, by having a grade determined by committee rather than by the course instructor.

It has also occurred, by agreement between deans, department chairs and faculty, that a misgraded course was dropped from the student's record and credit given for the controversial course by having the student pass the next higher course.

Grievance Examples

The following is a list of student grievances (in no particular order of frequency or importance) that have occurred:

- Discrimination based on sex, religion or political views
- Course or exam grade disputes
- Required class or examination attendance at other than regularly scheduled (timetable) times
- Changes in course content contrary to catalog description or division approval
- Difficulty in obtaining space in a critical course
- Personality conflicts between student and instructor
- Difficulty obtaining an appointment with instructor
- Unwillingness of instructor to estimate a grade before the course drop deadline date
• Teaching above the level of the class, which includes the assumption of an unlisted course prerequisite
• Intelligibility of instructors, especially those for whom English is a second language
• Excessive instructor class absences
• Rescheduled final exams by majority approval or apparent unanimity, to possible disadvantage of the minority
• Sexual harassment (Contact Manuela Romero, 608-262-3484; Jason Jankoski, 608-890-0921; or the Division of Student Life, 75 Bascom Hall, 608-263-5700)

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/#requirementsforundergraduate#text) section of the Guide.

Requirements Detail

General Education

• Breadth—Humanities/Literature/Arts: 6 credits
• Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
• Breadth—Social Studies: 3 credits
• Communication Part A & Part B *
• Ethnic Studies *
• Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

ENGINEERING CURRICULA

The graduation requirements for each of the engineering degrees are presented in the form of four-year programs of study. These four-year schedules are available, but rarely followed without deviation. Some students can proceed more rapidly; many must proceed more slowly and take nine or more semesters to complete the degree. Flexibility in course selection is also present though elective categories within curricula.

All engineering curricula are designed to meet all criteria for accreditation by the Engineering Accreditation Commission of ABET, www.abet.org (http://www.abet.org). Among other criteria, ABET requires that students complete:

• One year of a combination of college-level mathematics and basic sciences (some with experimental experience) appropriate to the discipline.

• One and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student’s field of study.

• A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.

• In addition, students must be prepared for engineering practice through the curriculum, culminating in a major design experience based on the knowledge and skills acquired in earlier coursework and incorporating appropriate engineering standards and multiple realistic constraints.

Engineering curricula continuously evolve. The requirements that apply to a particular student are determined by the date (catalog year) that a student enters a degree-granting program. At that point, the curriculum becomes fixed throughout the period it takes for a student to complete the degree, although new changes that benefit a student can be adopted by a particular student if he or she so chooses.

The curricular descriptions below do not address how these requirements are satisfied; students seldom need to be concerned with these details. However, if deviations from a curriculum are requested, they must not violate any of the accreditation requirements.

DEVIAION FROM PRESCRIBED CURRICULA

Circumstances deemed acceptable for deviating from the outlined engineering curricula are included in each departmental description. The choice of courses to fulfill elective credit requirements provide students with considerable flexibility in their programs. In addition, some departments permit the substitution of elective courses for required ones and also offer outstanding undergraduate students the opportunity to enroll in graduate courses. These options aid the student in tailoring a course of study to meet personal goals more closely.

DEFINITION OF ELECTIVES

There are general types of elective courses including technical electives, liberal studies and free electives.

Technical electives are limited to courses in engineering and closely related fields.

Liberal studies electives are those courses that are classified as either humanities, literature, social studies or as foreign language.

Free electives are courses completely free of any restrictions or requirements other than the course prerequisites.

Other specific elective requirements are established and described in department curricula.

To assist the student in gaining a better understanding of individuals and societies, and to reduce problems of transferring from one curriculum to another, engineering curricula require adherence to the Liberal Studies Guidelines (see below). Some require slight variations from those guidelines.

INDEPENDENT STUDY

Students who have high grade point averages may satisfy some elective credits by independent study of subjects or problems suitable for analytical investigative work. The student must identify a professor who is willing to supervise study of interest to the student. Together they must agree upon the work to be done, the credits earned (usually 1-3), and the course number (199, 299, 399, 499, 599, or 699) for which the student is
to enroll before the beginning of a semester. Weekly meetings with the professor to discuss questions and report progress are customary.

**LIBERAL STUDIES GUIDELINES**

The College of Engineering requires one semester’s worth of liberal elective courses in humanities, literature and social science for graduation. The college specifies that students should obtain both breadth (i.e., both social science and literature or humanities), and depth (i.e., more than one course in the same department).

The college has established general liberal elective guidelines that have been adopted by all departments, some of which have additional stipulations (see below).

**FOR ALL ENGINEERING STUDENTS**

As a graduation requirement, and to fulfill campus general education guidelines, all engineering undergraduate students must take 15 or 16 credits of liberal electives. These credits must fulfill the following subrequirements.

1. A minimum of two courses from the same department or program. At least one of these two courses must be above the elementary level. (i.e., must have I, A, or D level designator), as indicated in Course Guide.
2. A minimum of 6 credits designated as humanities or literature, and an additional minimum of 3 credits designated as social science. Foreign language courses count as humanities credits.  
3. At least one course of at least 3 credits designated as ethnic studies (lower case “e” in the Course Guide). These credits may help satisfy subrequirements 1 or 2 as well, but they count only once toward the total required credits.

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**ADDITIONAL RESTRICTIONS/SUBREQUIREMENTS FOR SPECIFIC DEPARTMENTS**

**Civil and Environmental Engineering:** An economics course (from an approved list) and an environmental studies course (with approved characteristics) are required.

**Industrial Engineering:** ECON 101 Principles of Microeconomics or ECON 111 Principles of Economics-Accelerated Treatment is required.

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**RESOURCES**

The solutions to challenges great and small lie not in the hands of one person, but emerge from the diverse ideas, perspectives and backgrounds of many people working together. Whether a prospective or current faculty member, staff member, or student, members of the College of Engineering create a welcoming community where they can be themselves and strive to become whatever they want to be. Here are some of the services and organizations that students can utilize along the way.

**ENGINEERING SCHOLARSHIPS**

The College of Engineering and its departments award several hundred thousand dollars of scholarships to students every year. Because engineering attracts many of the best students on campus, scholarships are quite competitive.

High school students applying for admission to UW–Madison in engineering are eligible to compete for merit-based scholarships set aside for new freshmen. Applications for these Engineering Freshman Academic Achievement Awards are available through My UW–Madison once students apply for admission to the university. Visit Scholarships@UW-Madison (http://scholarships.wisc.edu/Scholarships) for details.

Note that the application deadline indicated on the form is strictly enforced. Students should therefore not wait for notification that they have been admitted to UW–Madison before they apply for a freshman scholarship.

Once students enter an engineering department, they are typically eligible to apply for a variety of departmental merit-based scholarships. Since deadlines vary and new opportunities are continually announced, students should contact their department office for current information at least once a semester. A very few college-wide scholarships and awards are made each year. For the most part, these do not require an application. Those that do are widely advertised by e-mail and by posters displayed on bulletin boards throughout engineering buildings.

**ACADEMIC ADVISING**

Each College of Engineering program has academic advisors (https://www.engr.wisc.edu/academics/student-services/academic-advising) dedicated to serving its students. Program advisors can help current College of Engineering students with questions about accessing courses, navigating degree requirements, resolving academic issues and more. Students can find their assigned advisor in their student center.

**UNDERGRADUATE LEARNING CENTER**

The Undergraduate Learning Center (https://www.engr.wisc.edu/academics/student-services/ulc) (ULC) in the College of Engineering provides tutoring and academic support programs for engineering undergraduates wanting to excel in their courses. The ULC is a place where students study, form study groups, and discuss engineering concepts and problem solving strategies with their peers and with the tutors and facilitators.

**Drop-In-Tutoring Sessions**

Sessions are offered for over 50 courses in mathematics, chemistry, physics, statistics, and engineering. The sessions provide help with homework problems and exam preparation. Drop-in tutoring sessions are offered each evening from Sunday to Thursday, resulting in approximately 10,000 student visits last year.

**PrEPS (Practicing Engineering Problem Solving) Labs**

Labs were developed to help students succeed in core courses that have traditionally proved challenging for students. The courses targeted are early in the engineering curricula and contain dense material content delivered at a fast pace. The labs reinforce concepts through practicing problem solving skills.
commit to meeting twice every week for 60–75 minutes per meeting.

**PrEPS Study Tables**
Study tables support the same courses as the PrEPS Labs but with a less structured approach. PrEPS Study Tables allow small groups of students who are interested in extra study time to meet regularly to discuss homework and concepts from the course.

**Tutoring by Request**
Based on the Tutorial Services Room model developed at MIT, the College of Engineering offers Tutoring by Request (TBR) for students in critical need. Assistance is offered in a variety of courses, ranging from gateway courses, such as chemistry, math, physics courses, and other intermediate-level engineering courses.

**Special Courses and Workshops**
Special courses are targeted toward helping students learn topics that span multiple courses such as math concepts common to a variety of introductory engineering courses. Workshops are offered in topics such as MATLAB and vector review to help students be successful in their engineering courses.

**INTERNATIONAL ENGINEERING STUDIES & PROGRAMS**
In today's global marketplace, there is an increasing need for broadly educated engineering graduates with cross-cultural skills, international understanding and proficiency in more than one language. The College of Engineering is committed to providing and expanding international opportunities that will assist engineering students in obtaining these important skills.

International Engineering Studies and Programs (http://international.engr.wisc.edu) (IESP) runs semester, year-long and summer study abroad programs at leading engineering schools in many countries around the world. These programs, selected specifically for engineering students, help ensure students have a meaningful experience abroad and continue to make progress toward degree requirements.

The college also offers a certificate in international engineering. Courses in language and culture taken abroad and in Madison can count toward this certificate, which demonstrates the student's knowledge of a specific country or region. This credential appears on the student's transcript, strengthens the resume, and testifies to their preparation for an international career.

For more information, contact the International Engineering Studies & Programs Office at international@engr.wisc.edu or 608-263-2191.

**ENGINEERING CAREER SERVICES WITH COOPERATIVE EDUCATION**
Engineering Career Services (ECS) assists students in identifying pre-professional work-based learning experiences such as co-ops and summer internships, considering and applying to graduate or professional school, and finding full-time professional employment during their graduation year.

ECS offers two major career fairs per year, assists with resume writing and interviewing skills, hosts workshops on the job search, and meets one-on-one with students to discuss offer negotiations.

Students are encouraged to utilize the ECS office early in their academic careers. For comprehensive information on ECS programs and workshops, see the ECS website (https://www.engr.wisc.edu/academics/student-services/career-services) or call 608-262-3471.

**DIVERSITY AFFAIRS OFFICE**
The mission of the Diversity Affairs Office (https://www.engr.wisc.edu/academics/student-services/diversity-programs) is to recruit, retain and graduate underrepresented students of color, women, low-income students, and students who are educationally disadvantaged. The office has program initiatives in four primary areas:

- **Pre-college engagement in science and engineering fields, and recruiting qualified students to engineering**
  The DAO provides qualified students with scholarships through the Leaders in Engineering Excellence and Diversity (LEED) Scholars program. A minimum cumulative GPA of 2.8 is required for annual scholarship continuation.

- **Academic and social support**
  The DAO provides adjunct academic advising, study groups for challenging first-year courses, office study and gathering spaces, and referral services to promote student connections and academic excellence. Once a month, the DAO hosts a LEED Scholars meeting designed to promote community within the College of Engineering. LEED Scholars events are generally open to any student interested in a diverse learning community.

  The DAO also supports the efforts of the following Registered Student Organizations: National Society of Black Engineers (NSBE-WBESS), Society of Hispanic Professional Engineers (SHPE), and Society of Women Engineers.

- **Diversity and inclusion**
  In cooperation with other offices and departments, the DAO develops programs and provides services designed to promote a welcoming climate that celebrates diversity for everyone in the College of Engineering. The variety of events and projects include: Women in Engineering events, a biannual college climate survey, Diversity Discussions, Teaching Assistant Training, and student data analysis aimed at broadening participation in engineering.

**COMPUTER-AIDED ENGINEERING CENTER**
The Computer-Aided Engineering Center (CAE) (http://www.cae.wisc.edu) provides computing resources, facilities and services for students, faculty, and staff in the college. The broad range of services and resources include:

- Windows and Linux computer classrooms;
- open labs which have Windows and Linux workstations;
- industry-standard engineering software;
- software and services available on students' personal computers;
- reliable file storage for coursework;
- customer consulting and help-desk services.

The CAE walk-in help desk is located at 1410 Engineering Drive; helpdesk@cae.wisc.edu; (helpdesk@cae.wisc.edu) 608-262-5349. For more information, see the CAE website (http://www.cae.wisc.edu).

**COUNSELING SERVICES**
Confidential counseling services are available through University Health Services (https://www.uhs.wisc.edu) at no cost to engineering students. It is easier to concentrate on studies if one can deal effectively with
personal, academic, and career concerns. Talking with someone who is objective and empathetic can help students sort through such concerns. Appointments can be made by phone or in person.

University Health Services
333 East Campus Mall
Madison, WI 53715-1384
608-265-5600

REGISTERED STUDENT ORGANIZATIONS
The College of Engineering offers so much more than just a first-class engineering education. Students have access to a wide variety of groups, opportunities, organizations and services that will help make their time on campus memorable and unique. There are more than 50 engineering affiliated student organizations (https://www.engr.wisc.edu/academics/beyond-the-classroom/student-organizations) on campus. Students can get involved in organizations that range from competitive—such as teams that build and race vehicles or concrete canoes—to service-oriented, honors societies, and student government. The College of Engineering also offers many discipline-related student chapters of professional organizations that will connect students with their peers and also help them make professional contacts.

HONORS
In general, the concept of academic honors programs in higher education focuses resources on especially able students who are interested in challenging themselves at unusually high levels. This concept does not translate to the College of Engineering programs. All engineering classes are challenging, focused, and require high academic ability in math and science. Further, in engineering, resources must be used to make sure all engineering graduates—not just a few—excel in every respect. Nonetheless, honors opportunities are available on a limited basis in the College of Engineering.

ENGINEERING HONORS IN RESEARCH
Select students in degree-granting departments may pursue the Honors in Research distinction in certain departments. It requires completion of a certain number of semesters of faculty-guided independent study work and completion of a written thesis. Honors in Research programs have been developed for majors in biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, engineering mechanics, geological engineering, industrial engineering, materials science and engineering, mechanical engineering, and nuclear engineering. Interested students should contact their department for more information.

ENGINEERING HONORS IN THE LIBERAL ARTS (EHLA)
EHLA allows for a small group of highly motivated students who have special, broad interests in liberal arts to take challenging background courses in physical science, natural science, humanities, foreign language, and social science to supplement their engineering program. The EHLA program will allow students access to honors sections in these College of Letters & Science courses. Honors courses in physical and natural science are available to invited engineering freshmen whether or not they are selected for EHLA. Conversely, no engineering courses are available as honors courses. Admission to EHLA is based on applications from high school students submitted before May 31 of their last year in high school. Fewer than 30 students are admitted each year. Interested students should contact Dr. Andrew Greenberg at greenberg2@wisc.edu for an application.

The EHLA designation will be awarded to those admitted to the EHLA program who meet the following requirements when they graduate with an engineering degree:

- A cumulative grade point average of at least 3.3 in all honors courses through the semester in which all criteria for EHLA are met;
- Completion of at least 24 credits in Honors courses with grades of B or better;
- Completion of at least 6 credits in Honors courses in the humanities, 6 credits in social sciences, and 6 credits in natural sciences;
- Completion of at least 15 Honors credits in courses with the designation "H" or "I" (honors sections).

Because the classes for which Honors designation is available are taken mainly in the first year, students do not apply to the EHLA program once they begin in the College of Engineering. Students can, however, transfer from the College of Letters & Science Honors in Liberal Arts program into the EHLA program provided they transfer into an engineering program in their first two years.