Bachelor of Science in Engineering, BSE

Requirements

The Bachelor of Science in Engineering (BSE) requires a minimum of 128 s.h. of credit. Students must be enrolled as a UI College of Engineering student for the last 30 s.h. of work toward the degree, or 45 of the last 60 s.h., or a total of 90 s.h. At the time of graduation, students must have a cumulative grade-point average of at least 2.00 in all college work used to complete degree requirements and in all UI coursework in order to be awarded the BSE.

Engineering students earn the BSE degree in one of eight undergraduate programs of study (majors): biomedical engineering, chemical engineering, civil engineering, computer science and engineering, electrical engineering, environmental engineering, industrial engineering, or mechanical engineering.

The collegiate curriculum requires all students to complete a minimum of 24 s.h. of mathematics and basic sciences; 7 s.h. of core engineering; and 19 s.h. of general education courses (including RHET:1030 Rhetoric and 15 s.h. of additional electives). Collegiate courses are typically completed early in a student’s undergraduate program, thereby allowing students to change programs during the first semesters without a loss in course credit.

These foundational courses serve as prerequisites or corequisites for more advanced coursework in the major. Each major has several focus areas consisting of required and elective courses that provide students the flexibility to tailor their studies to their career interests. Each major culminates in a capstone senior design project.

Collegiate Curriculum Requirements

All students in the College of Engineering are required to complete the following courses as part of their collegiate curriculum.

Mathematics and Basic Sciences

Students complete a minimum of 24 s.h. in mathematics and basic sciences. Courses with the option of a laboratory component must be taken with the lab. Students should refer to the individual departmental section in the catalog for information about fulfilling the statistics requirement.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I (with lab)</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1550</td>
<td>Engineering Mathematics I: Single Variable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1560</td>
<td>Engineering Mathematics II: Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH:2550</td>
<td>Engineering Mathematics III: Matrix Algebra</td>
<td>2</td>
</tr>
</tbody>
</table>

Engineering Core

The engineering core consists of two engineering courses and an engineering success seminar required by all undergraduate programs in the College of Engineering.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR:1000</td>
<td>Engineering Success for First-Year Students</td>
<td>1</td>
</tr>
<tr>
<td>ENGR:1100</td>
<td>Introduction to Engineering Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>ENGR:1300</td>
<td>Introduction to Engineering Computing</td>
<td>3</td>
</tr>
</tbody>
</table>

General Education

Students are required to complete 19 s.h. of general education courses; for more information, see General Education Component (p. 2) in this section of the catalog.

First- and Second-Semester Plan of Study

The majority of the collegiate curriculum can be completed in the first two semesters.

First Semester

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ENGR:1000</td>
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<td>3</td>
</tr>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH:1550</td>
<td>Engineering Mathematics I: Single Variable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>RHET:1030</td>
<td>Rhetoric</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Hours 16

Second Semester

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR:1300</td>
<td>Introduction to Engineering Computing</td>
<td>3</td>
</tr>
<tr>
<td>MATH:1560</td>
<td>Engineering Mathematics II: Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH:2550</td>
<td>Engineering Mathematics III: Matrix Algebra</td>
<td>2</td>
</tr>
<tr>
<td>PHYS:1611</td>
<td>Introductory Physics I</td>
<td>4</td>
</tr>
</tbody>
</table>

General education or major requirement course 3-4

Total Hours 16-17

Major Courses and Focus Areas

The curriculum for each BSE major is described in each of the departmental sections of the catalog. Each program has a number of focus areas that are designed to help students achieve exposure to and depth of study in an area that is complimentary to their major. The focus areas enable students to gain technical skills consistent with their career.
goals. Moreover, these electives may contribute to earning a minor and/or certificate.

**General Education Component**

The General Education Component promotes understanding of and appreciation for arts, community, culture, and learning through coursework.

Students who enter the College of Engineering with a BA or BS degree are considered to have satisfied the General Education Component.

Students who enroll in a combined degree program in the College of Engineering and with the College of Liberal Arts and Sciences or with the Tippie College of Business must complete all requirements for both degrees, including all general education requirements. Students are encouraged to complete a course for the Engineering Be Creative requirement that will satisfy a general education requirement for the second college; see Engineering Be Creative section below.

**General Education Areas**

Students are required to complete 19 sh. of the General Education Component as outlined below. Some focus areas in certain majors may recommend or require specific courses to fulfill the General Education Component. Credit may be earned by examination; consult the College of Engineering.

- Rhetoric [p. 2] (4 s.h.)
- Engineering Be Creative [p. 2] (3 s.h.)
- Diversity, Equity, and Inclusion [p. 3] (3 s.h.)
- Approved Course Subjects [p. 3] (9 s.h.)

**Rhetoric**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHET:1030</td>
<td>Rhetoric</td>
<td>4</td>
</tr>
</tbody>
</table>

Transfer students should refer to the Rhetoric section of the GE CLAS Core (College of Liberal Arts and Sciences) in the catalog for information about how transfer credit may affect the Rhetoric requirement.

**Engineering Be Creative**

Students must complete at least 3 s.h. selected from the courses listed below. Note that not all courses are offered every semester. Some courses will have sections designated for students with a major in the College of Engineering.

If a course has prerequisites listed, students wishing to take the course for the Engineering Be Creative requirement will need to request that prerequisites be waived by completing the "Request Prerequisite Special Permission" form on MyUI. This form should be completed several weeks prior to registration. Contact the College of Engineering for more information.

The following courses satisfy the Engineering Be Creative requirement.

<table>
<thead>
<tr>
<th>Course #</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANIM:2125</td>
<td>Introduction to Animation</td>
<td>3</td>
</tr>
<tr>
<td>ARTS:1060</td>
<td>Elements of Digital Photography</td>
<td>3</td>
</tr>
<tr>
<td>ARTS:1510</td>
<td>Basic Drawing</td>
<td>3</td>
</tr>
<tr>
<td>ARTS:1520</td>
<td>Design Fundamentals</td>
<td>3</td>
</tr>
<tr>
<td>CERM:2010</td>
<td>Ceramics I: Handbuilding</td>
<td>3</td>
</tr>
<tr>
<td>CINE:1100</td>
<td>The Art of Smartphone Filmmaking</td>
<td>3</td>
</tr>
<tr>
<td>CINE:1150</td>
<td>Introduction to Screenwriting for Nonmajors</td>
<td>3</td>
</tr>
<tr>
<td>CINE:1834/</td>
<td>Modes of Film and Video Production</td>
<td>4</td>
</tr>
<tr>
<td>THTR:1834</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CNW:1620</td>
<td>Introduction to Creative Nonfiction</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2680</td>
<td>The Art and Craft of Creative Nonfiction</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2700</td>
<td>The Art and Craft of Personal Writing</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2720</td>
<td>The Art and Craft of Writing About Culture</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2730</td>
<td>The Art and Craft of Science Writing</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2740</td>
<td>The Art and Craft of Writing about the Environment</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2770</td>
<td>The Art and Craft of Writing for New Media</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2780</td>
<td>The Art and Craft of Writing About Sports</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2790</td>
<td>The Art and Craft of Humor Writing</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2830</td>
<td>The Art and Craft of Immersion Journalism</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2840</td>
<td>The Art and Craft of Travel Writing</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2850</td>
<td>The Art and Craft of Writing About Politics</td>
<td>3</td>
</tr>
<tr>
<td>CNW:2910</td>
<td>Writing for Applications and Awards</td>
<td>3</td>
</tr>
<tr>
<td>CNW:3632/</td>
<td>Prose Style</td>
<td>3</td>
</tr>
<tr>
<td>WRIT:3632</td>
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<tr>
<td>CNW:3640</td>
<td>Writing for Business</td>
<td>3</td>
</tr>
<tr>
<td>CW:2100</td>
<td>Creative Writing</td>
<td>3</td>
</tr>
<tr>
<td>CW:2870</td>
<td>Fiction Writing</td>
<td>3</td>
</tr>
<tr>
<td>CW:2875</td>
<td>Poetry Writing</td>
<td>3</td>
</tr>
<tr>
<td>CW:3003</td>
<td>Writing and Reading Science Fiction</td>
<td>3</td>
</tr>
<tr>
<td>CW:3107/</td>
<td>Creative Writing for the Health Professions</td>
<td>3</td>
</tr>
<tr>
<td>INTD:3107</td>
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<td></td>
</tr>
<tr>
<td>CW:3215/</td>
<td>Creative Writing and Popular Culture</td>
<td>3</td>
</tr>
<tr>
<td>INTD:3300</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW:3218/</td>
<td>Creative Writing for New Media</td>
<td>3</td>
</tr>
<tr>
<td>INTD:3200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW:4745/</td>
<td>The Sentence: Strategies for Writing</td>
<td>3</td>
</tr>
<tr>
<td>WRIT:4745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CW:4751</td>
<td>Creative Writing for the Musician</td>
<td>3</td>
</tr>
<tr>
<td>CW:4760/</td>
<td>The Art of Revision: Rewriting Prose for Clarity and Impact</td>
<td>3</td>
</tr>
<tr>
<td>WRIT:4760</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DANC:1055</td>
<td>Creativity in Motion</td>
<td>3</td>
</tr>
<tr>
<td>DANC:1150</td>
<td>Brazilian Culture and Carnival</td>
<td>3</td>
</tr>
<tr>
<td>LAS:1150</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DANC:2060</td>
<td>Dance and Society in Global Contexts</td>
<td>3</td>
</tr>
<tr>
<td>DANC:2090</td>
<td>Lighting Design for Engineers and Dancers</td>
<td>3</td>
</tr>
</tbody>
</table>

**Approved Course Subjects**

- Diversity, Equity, and Inclusion
- Rhetoric
- Engineering Be Creative
- Community and Culture
- Arts and Humanities
- Science and Technology
- Social Sciences
- Professional Development
- Leadership Skills
Bachelor of Science in Engineering, BSE

DSGN:2500 Graphic Design I 3
EDTL:4355/ CNW:4355 Approaches to Teaching Writing 3
MTLS:2910 Introduction to Jewelry and Metal Arts 3
MUS:1007 Garage Band: The Basics 2
MUS:1012 Creativity in Music 3
MUS:3285/ DIGA:3285 New Musical Instruments: From Design to Performance 3
PHTO:2600 Photography I 3
PNTG:2410 Painting I 3
PRNT:2610 Introduction to Printmaking 3
SCLP:2810 Undergraduate Sculpture I 3
SCLP:3840/ DIGA:3840 Robotic Art Studio 4
SCLP:4835/ DIGA:4835 Air, Actuators, and Motors 4
SCLP:4840/ DIGA:4840 Elements of Book Art 3
UICB:2320/ BKAT:2320 Introduction to Book Arts 3
UICB:3380/ BKAT:3380 Elements of Book Art 3
UICB:4100/ BKAT:4100 Elements of Book Art 3
UICB:4340/ ARTS:4340 Elements of Book Art 3
UICB:4415/ ARTS:4415 Introduction to Classical Calligraphy 3

Diversity, Equity, and Inclusion

Students complete at least 3 s.h. from the GE CLAS Core areas of Diversity and Inclusion or Values and Culture.

The College of Engineering will accept transfer credit for the Diversity, Equity, and Inclusion requirement. Students enrolled in other University of Iowa undergraduate degree programs should be aware that transfer credit may not be accepted for similar requirements in other colleges.

Approved Course Subjects

Students complete 9 s.h. of coursework from any of the course subjects below.

College of Law

Students may choose from University of Iowa Center for Human Rights courses (prefix HRTS); view the courses and descriptions in the corresponding College of Law section of the catalog.

College of Liberal Arts and Sciences

Students may choose from courses in the following areas:

- African American studies (prefix AFAM)
- aging and longevity studies (prefix ASP)
- American Sign Language (prefix ASL or ASLE)
- American studies (prefix AMST)
- anthropology (prefix ANTH)
- Arabic (prefix ARAB)
- art and art history (prefix ANIM, ARTE, ARTH, ARTS, BKAT, DSGN, DRAW, INTM, MTLS, PHTO, PNTG, PRNT, SCLP, or TDSN) with the exception of ceramics
- Asian and Slavic languages and literatures (prefix ASIA, CHIN, JPNS, KORE, or RUSS) with the exception of South Asian studies
- cinematic arts (prefix CINE)
- classics (prefix CLSA, CLSG, or CLSL)
- communication sciences and disorders (prefix CSD)
- communication studies (prefix COMM)
- creative nonfiction writing (prefix CNW)
- creative writing (prefix CW)
- criminology, law and justice (prefix CRIM)
- critical cultural competence (prefix CCC)
- dance (prefix DANC)
- digital arts (prefix DIGA)
- disability studies (prefix DST)
- English (prefix ENGL)
- event planning (prefix EVNT)
- French (prefix FREN)
- gender, women's, and sexuality studies (prefix GWSS)
- geography (prefix GEOG)
- German (prefix GRMN)
- global health studies (prefix GHS)
history (prefix HIST); international studies (prefix IS);
Italian (prefix ITAL); journalism and mass communication (prefix JMC);
Latin American studies (prefix LAS); Latina/o/x studies (prefix LATS);
linguistics (prefix LING);
museums studies (prefix MUSM); music (prefix MUS);
Native American and Indigenous studies (prefix NAIMS); philosophy (prefix PHIL);
political science (prefix POLI); Portuguese (prefix PORT);
psychology (prefix PSY); religious studies (prefix RELS);
rhetoric (prefix RHET) numbered 2000 or above;
social justice (prefix SJUS); social work (prefix SSW);
sociology (prefix SOC); Spanish (prefix SPAN);
sport and recreation management (prefix SRM); sport studies (prefix SPST);
Swahili (prefix SWAH);
teatre arts (prefix THTR); therapeutic recreation (prefix TR);
world languages, literatures and cultures (prefix CL or WLLC); and
writing (prefix WRIT).
View the courses and descriptions in the corresponding College of Liberal Arts and Sciences section of the catalog.

Graduate College
Students may choose from courses in urban and regional planning (prefix URP) in the School of Planning and Public Affairs; view the courses and descriptions in the corresponding Graduate College section of the catalog.

Tippie College of Business
Students may choose from courses in economics (prefix ECON), entrepreneurship (prefix ENTR), management and entrepreneurship (prefix MGMT), and marketing (prefix MKTG); view the courses and descriptions in the corresponding Tippie College of Business section of the catalog.

University College
Students may choose from courses in aerospace studies (prefix AERO), leadership studies (prefix LS), and military science (prefix MILS); view the courses and descriptions in the corresponding University College section of the catalog.

Combined and Dual Degrees

BSE and Undergraduate Degrees

BSE/BBA
The College of Engineering and the Tippie College of Business offer a combined degree program in which students earn two University of Iowa bachelor’s degrees: a Bachelor of Business Administration (BBA) from the Tippie College of Business and a Bachelor of Science in Engineering (BSE) from the College of Engineering.

Students in the combined program must complete all requirements for both degrees, including all general education requirements. They must enroll in appropriate mathematics and engineering courses early in their course of study in order to complete the program in a timely way. Because courses in natural sciences, mathematics, humanities, and social sciences count toward the BBA and the BSE, students may count a single course toward both degrees.

Students usually meet the degree requirements of both colleges in about five years; the time required depends on a student’s choice of major study areas. Students should consult their advisors about whether the second-grade-only option is available to them. They are assigned two advisors, one in the Tippie College of Business Undergraduate Program Office and the other in their College of Engineering major department.

To enter the combined degree program, students must have approval from both colleges and must be admitted to both colleges. Interested students should contact the Student Development Center. For information about the BBA, including requirements for the degree, see the Bachelor of Business Administration, BBA (Tippie College of Business) in the catalog.

BSE/Liberal Arts and Sciences Degree
Students may earn two University of Iowa bachelor’s degrees in a combined program in the College of Engineering and the College of Liberal Arts and Sciences. Successful candidates are awarded a BSE (Bachelor of Science in Engineering) by the College of Engineering and a BA (Bachelor of Arts), BS (Bachelor of Science), BFA (Bachelor of Fine Arts), or BM (Bachelor of Music) by the College of Liberal Arts and Sciences.

Students in combined degree programs must complete all requirements for both degrees, including the College of Liberal Arts and Sciences GE CLAS Core and the College of Engineering General Education Component. Students are encouraged to complete a course for the Engineering Be Creative requirement that also will satisfy a GE CLAS Core requirement. See General Education Component [p. 2] in this section of the catalog.

Students in the combined program usually are able to meet the degree requirements of both colleges in about five academic years. The exact length of time necessary to complete the program is determined by the major areas of study selected in each college. Students who enter the combined degree program are assigned two faculty advisors, one in their major department in the College of Engineering and the other in their major department in the College of Liberal Arts and Sciences.

To enter the combined degree program, students must be admitted to both the College of Engineering and the College of Liberal Arts and Sciences and must have College of Engineering approval to enter the combined degree program. Combined degree program applicants must meet the high school course or unit requirements for admission to each of the two colleges.

It is crucial that students enroll in the proper mathematics and engineering courses early in their course of study to expedite the completion of the program. The specific engineering courses taken by each student vary according to one’s engineering major. Since courses in natural sciences, mathematics, humanities, and social sciences are accepted for credit by both colleges, students may be able to count a particular course toward both degrees.

Contact the Student Development Center for information about specific requirements. To learn about liberal arts and
The combined program permits students to count a limited amount of credit toward the requirements of both degrees, enabling them to begin the study of public health before they complete the bachelor's degree. See the MS in occupational and environmental health Undergraduate to Graduate (U2G) information on the Department of Occupational and Environmental Health (College of Public Health) website.

### BSE in Civil Engineering/MS in Urban and Regional Planning

The College of Engineering and the School of Planning and Public Affairs offer the combined Bachelor of Science in Engineering in civil engineering/Master of Science in urban and regional planning. The program, which is completed in five years, is designed for students who wish to pursue a public or private sector career in planning, a field that encompasses the development of alternatives to improve the quality of life in cities and regions.

For additional information on the BSE in civil engineering, see that section of the catalog. For more information about the graduate degree, see the MS in urban and regional planning (Graduate College) in the catalog. Contact Engineering Student Services for information about applying to the combined program.

### BSE in Computer Science and Engineering/MCS

The College of Engineering and the Department of Computer Science (College of Liberal Arts and Sciences) offer a combined BSE in computer science and engineering/Master of Computer Science for computer science and engineering undergraduate students.

The combined degree program allows students to count a limited amount of credit toward both degrees. For more information, see the Master of Computer Science, MCS in the catalog.

#### Honors

### Honors in Engineering

Outstanding undergraduate students who demonstrate exceptional accomplishment through research, directed independent study, teaching internships, or other approved nondegree enrichment activities may graduate with honors in engineering. They must maintain a University of Iowa grade-point average of at least 3.33, complete an honors project with a faculty member, and participate in a college-wide honors seminar with faculty members and other honors students. Successful completion of the honors requirements leads to a BSE with honors, which is noted on the student's transcript. See Engineering Honors Program on the College of Engineering website for details.

### University of Iowa Honors Program

In addition to honors in engineering, undergraduate students have opportunities for honors study and activities through membership in the University of Iowa Honors Program. Visit Honors at Iowa to learn about the university’s honors program.

#### Career Advancement

Engineering is a well-respected profession that is used as a foundation for a variety of careers in industry, medicine, law,
government, and consulting. Engineering majors consistently
rank among the top-paid majors for bachelor's degree
graduates, according to the National Association of Colleges
and Employers (NACE). On average, 93–98% of graduates
are employed in their field of study or pursuing advanced
education within seven months of graduation.

Engineering Career Services develops and promotes
experiential education and professional opportunities for
students in the College of Engineering. Professional staff
coordinate the college's co-op and internship program,
engage in employer outreach, and provide opportunities for
students to network with employers, including engineering
career fairs and other programming related to career
development.

Engineering Career Services offers individual advising and
class presentations on résumé and cover letter preparation,
job and internship search strategies, interviewing skills, job
offer evaluation, and much more. Engineering Career Services
partners with the Pomerantz Career Center to facilitate on-
campus interviewing, postgraduation outcome collection, and
the university's online recruiting system, Handshake.