Civil Engineering, B.S.E.

Within a few years of graduation, graduates of the Bachelor of Science in Engineering (B.S.E.) program in civil engineering are expected to:

- be productive and contributing members of the civil and environmental engineering profession as practitioners, entrepreneurs, researchers or teachers, and be engaged in learning, understanding, and applying new ideas as the field develops;
- pursue advanced studies if qualified and interested; and
- promote the safety, health, and welfare of the public and environmental through professional practice and civic leadership.

Requirements

The Bachelor of Science in Engineering requires a minimum of 131 s.h.

All engineering students complete the B.S.E. core requirements, which include RHET:1030 Rhetoric, ENGR:1100 Introduction to Engineering Problem Solving and ENGR:1300 Introduction to Engineering Computing; and courses in chemistry, engineering mathematics and fundamentals, and physics.

They also complete the curriculum designed for their major program, which covers four major stems: mathematics and basic sciences, engineering topics, an elective focus area, and the general education component. For information about the curriculum stems, see Bachelor of Science in Engineering in the Catalog.

Students must select elective focus area courses according to guidelines established by the Department of Civil and Environmental Engineering. See "Elective Focus Area" below.

Elective Focus Areas

Civil engineering students may choose from several standard elective focus areas developed by the department or create an individual focus area tailored to their interests.

Standard elective focus areas are offered in the broad field of civil and environmental engineering practice and in the four technical areas: environmental engineering; hydraulics and water resources; structures, mechanics, and materials; and transportation engineering. Other areas of focus include pre-architecture and urban and regional planning. For more detailed information about elective focus areas, see Bachelor of Science in Engineering in the Catalog. For a list of standard elective focus area options and guidelines for tailored elective focus areas in civil engineering, see Elective Focus Areas on the Department of Civil and Environmental Engineering website.

Joint B.S.E./M.S.

The College of Engineering offers a joint (fast-track) Bachelor of Science in Engineering/Master of Science for civil engineering undergraduate students who intend to earn an M.S. in civil and environmental engineering. B.S.E./M.S. students may attend the departmental graduate seminar and work on a master's thesis or research project while they are still undergraduates. They may count a limited amount of course work toward both degrees. Once students complete the requirements for the bachelor's degree, they are granted the B.S.E., and they normally complete the M.S. one year later.

To be admitted to the joint degree program, students must have completed at least 80 s.h. and have a cumulative g.p.a. of at least 3.25. They must submit an application form to the Department of Civil and Environmental Engineering, along with a letter stating their proposed area of specialization and the name of a department faculty member willing to be their primary M.S. advisor. Graduate Record Examination (GRE) General Test scores are not required for the joint degree program.

Applications are due by May 15.

Academic Plans

The following study plan includes the B.S.E. core requirements and the curriculum for the civil engineering major. Some courses in the curriculum are prerequisites for others. Students must complete a course's prerequisites before they may register for the course. Those who take courses in the order below satisfy the prerequisite requirements automatically.

Civil Subtrack

<table>
<thead>
<tr>
<th>Course First Year Fall</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM:1110</td>
<td>Principles of Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>ENGR:1000</td>
<td>Engineering Success for First-Year Students (credit does not count toward B.S.E. degree)</td>
<td>1</td>
</tr>
<tr>
<td>ENGR:1100</td>
<td>Introduction to Engineering Problem Solving</td>
<td>3</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>

<table>
<thead>
<tr>
<th>Course Spring</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 component course 3

<table>
<thead>
<tr>
<th>Course Second Year Fall</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE:1030</td>
<td>Introduction to Earth Science</td>
<td>3</td>
</tr>
<tr>
<td>ENGR:2110</td>
<td>Engineering Fundamentals I: Statics</td>
<td>2</td>
</tr>
<tr>
<td>ENGR:2120</td>
<td>Engineering Fundamentals II: Electrical Circuits</td>
<td>3</td>
</tr>
<tr>
<td>ENGR:2130</td>
<td>Engineering Fundamentals III: Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>MATH:2560</td>
<td>Engineering Mathematics IV: Differential Equations</td>
<td>3</td>
</tr>
</tbody>
</table>
PHYS:1612  Introductory Physics II  4

Spring
CEE:2010  Civil and Environmental Engineering Professional Practice and Ethics  1
CEE:3763  Principles of Transportation Engineering  3
ENGR:2710  Dynamics  3
ENGR:2750  Mechanics of Deformable Bodies  3
STAT:2020  Probability and Statistics for the Engineering and Physical Sciences  3
General education component course  3

Hours  18

Third Year
Fall
CEE:2015  Civil Engineering Tools  2
CEE:3001  Leadership Skills for Engineers  1
CEE:3530  Geomechanics  4
CEE:3533  Principles of Structural Engineering  4
ENGR:2510  Fluid Mechanics  4
Elective focus area course  3

Hours  18

Spring
CEE:3002  Technical Communication in Civil and Environmental Engineering  1
CEE:3155  Principles of Environmental Engineering  4
CEE:3371  Principles of Hydraulics and Hydrology  3
CEE:3586  Civil Engineering Materials  3
Elective focus area course  3
General education component course  3

Hours  17

Fourth Year
Fall
CEE:3003  Project Management Skills  1
General education component course  3
Two elective focus area courses  6
Two of these, each from a different technical area:  6
CEE:3136  Design of Concrete Structures  4
CEE:4157  Environmental Engineering Design  3
CEE:4374  Water Resource Design  3
CEE:4535  Design of Steel Structures  3
CEE:4762  Design of Transportation Systems  3

Hours  16

Spring
CEE:3084  Project Design and Management in Civil Engineering  3
General education component course  3
Three elective focus area courses  9

Hours  15

Total Hours  132

Course  Title  Hours
CHEM:1110  Principles of Chemistry I  4
ENGR:1000  Engineering Success for First-Year Students (credit does not count toward B.S.E. degree)  1
ENGR:1100  Introduction to Engineering Problem Solving  3
MATH:1550  Engineering Mathematics I: Single Variable Calculus  4
RHET:1030  Rhetoric  4

Hours  16

Spring
CHEM:1120  Principles of Chemistry II  4
ENGR:1300  Introduction to Engineering Computing  3
MATH:1560  Engineering Mathematics II: Multivariable Calculus  4
MATH:2550  Engineering Mathematics III: Matrix Algebra  2
PHYS:1611  Introductory Physics I  4

Hours  17

Second Year
Fall
CEE:1030  Introduction to Earth Science  3-4
ENGR:2110  Engineering Fundamentals I: Statics  2
ENGR:2120  Engineering Fundamentals II: Electrical Circuits  3
ENGR:2130  Engineering Fundamentals III: Thermodynamics  3
MATH:2560  Engineering Mathematics IV: Differential Equations  3
General education component course  3

Hours  17-18

Spring
CEE:3155  Principles of Environmental Engineering  4
ENGR:2710  Dynamics  3
ENGR:2750  Mechanics of Deformable Bodies  3
STAT:2020  Probability and Statistics for the Engineering and Physical Sciences  3
Civil and environmental engineering practices and ethics course (CEE:2010)  3
General education component course  3

Hours  16

Third Year
Fall
CEE:2015  Civil Engineering Tools  2
CEE:3001  Leadership Skills for Engineers  1
CEE:3530  Geomechanics  4
CEE:3533  Principles of Structural Engineering  4
ENGR:2510  Fluid Mechanics  4
Elective Focus Area course  3

Hours  18
Civil Engineering, B.S.E.

Spring
CEE:3002  Technical Communication in Civil and Environmental Engineering  1
CEE:3371  Principles of Hydraulics and Hydrology  3
CEE:3586  Civil Engineering Materials  3
CEE:3763  Principles of Transportation Engineering  3
Elective focus area course  3
General education component course  3

Hours  16

Fourth Year
Fall
CEE:3003  Project Management Skills  1
General education component course  3
Two elective focus area courses  6
Two of these, each from a different technical area:  6
CEE:3136  Design of Concrete Structures  
CEE:4157  Environmental Engineering Design  
CEE:4374  Water Resource Design  
CEE:4535  Design of Steel Structures  
CEE:4762  Design of Transportation Systems  

Hours  16

Spring
CEE:3084  Project Design and Management in Civil Engineering  3
General education component course  3
Three elective focus area courses  9

Hours  15

Total Hours  131-132

Career Advancement

The engineering profession is a foundation for a variety of careers in industry, medicine, law, government, and consulting. Engineering majors hold eight of the top ten spots on the list of top-paid majors for bachelor's degree graduates, according to the National Association of Colleges and Employers (NACE). On average, 93-98 percent of graduates are employed in their field of study or pursuing advanced education within seven months of graduation.

Engineering Professional Development (EPD) develops and promotes experiential education and professional opportunities for students. 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 an engineering career fair and other career-development programming each semester.

EPD also offers individual advising and class presentations on résumé and cover letter preparation, job and internship search strategies, interviewing skills, and job offer evaluation.