CIVIL ENGINEERING,
BACHELOR OF SCIENCE

The Department of Civil and Systems Engineering offers an undergraduate program that strives to educate intellectual leaders of the profession by instilling in them a fundamental understanding of the mathematical and physical principles that underlie civil engineering science, an appreciation for the challenges of creative engineering design, and a sense of responsibility for professional service. Civil Engineering is a broad field with many subdisciplines. The Civil Engineering curriculum exposes students to the fields of structural engineering, engineering mechanics, systems engineering, environmental engineering, water resources, and geotechnical engineering.

The program has the following as its objectives:

1. That within a few years of graduation, our graduates will attain:
   a. an advanced degree in engineering, or
   b. required experience toward professional licensure as an engineer, or
   c. an advanced degree in a field other than engineering, or
   d. a position within an organization that broadly supports the goals of civil engineering; and
2. a position or degree that values adaptability and innovation in their work.

Students graduating with a B.S. in Civil Engineering will have demonstrated:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The program has been accredited by the Engineering Accreditation Commission of ABET since 1936.

Financial Aid

Student Financial Services (https://finaid.jhu.edu/undergraduate-aid/financial-aid-at-hopkins/) will help to navigate the financial aid application process and explore the resources available to help your family pay for college now and throughout your time here. In addition, some undergraduate students are employed by departmental faculty to provide assistance on research projects.

Combined Bachelor’s/Master’s Programs

The Department of Civil and Systems Engineering offers combined bachelor’s/master’s degrees. One program combines a B.S. in Civil Engineering with a Master of Science in Engineering (M.S.E.) in Civil Engineering or Systems Engineering. For students who are admitted to this program, the two degrees typically require five years total to complete. The other option combines a B.S. in Civil Engineering with a Master of Science in Engineering Management (M.S.E.M.) (http://msem.engineering.jhu.edu/). Formal application through the M.S.E.M. Department (http://msem.engineering.jhu.edu/) is required. Students enrolled in a Combined B.S./M.S.E. program are awarded a Dean’s Master’s Fellowship, covering half their tuition, after they have completed eight semesters of undergraduate study. More information about these programs can be found at http://engineering.jhu.edu/academics/combined-bachelors-masters/. (http://engineering.jhu.edu/academics/combined-bachelors-masters/.html)

Program Requirements

Program Requirements

The B.S. degree in civil engineering requires 127 credits. A brief summary of the requirements is listed below. For more detailed information students should look at the Department of Civil and Systems Engineering (https://engineering.jhu.edu/case/undergraduate-studies/) website. Each student is assigned a faculty advisor who provides the guidance needed to meet these requirements.

Note that no required courses may be taken as Satisfactory/Unsatisfactory (S/U), and a maximum of 3 credits from the Humanities and Social Science (H/S) electives may be taken S/U. Technical electives may be taken S/U only with the approval of the advisor.

No more than two grades of D in the required engineering and technical electives may be counted.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.171.101 or AS.171.107</td>
<td>General Physics: Physical Science Major I</td>
<td>4</td>
</tr>
<tr>
<td>AS.173.111</td>
<td>General Physics Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>EN.560.112</td>
<td>Electromagnetism &amp; Sensors Lab</td>
<td>1</td>
</tr>
<tr>
<td>AS.030.101</td>
<td>Introductory Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>AS.030.105</td>
<td>Introductory Chemistry Laboratory I</td>
<td>1</td>
</tr>
<tr>
<td>AS.270.103</td>
<td>Introduction to Global Environmental Change</td>
<td>3</td>
</tr>
<tr>
<td>One additional Natural Science elective</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>AS.110.108</td>
<td>Calculus I (Physical Sciences &amp; Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.109</td>
<td>Calculus II (For Physical Sciences and Engineering)</td>
<td>4</td>
</tr>
<tr>
<td>AS.110.202 or AS.110.211</td>
<td>Calculus III or Honors Multivariable Calculus</td>
<td>4</td>
</tr>
<tr>
<td>EN.553.291</td>
<td>Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>HUMANITIES and SOCIAL SCIENCES</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Select 18 credits of H or S electives</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FREE ELECTIVES
Select 12 credits of free electives 12

**CaSE FUNDAMENTALS**
- EN.560.100 Civilization Engineered 3
- EN.500.113 Gateway Computing: Python 3
- EN.560.201 Statics & Mechanics of Materials 3
- EN.560.211 Statics and Mechanics of Materials Laboratory 1
- EN.560.240 Uncertainty, Reliability and Decision-making 3
- EN.560.250 (Intro to Mathematical Decision Making) 3
- EN.560.255 Dynamical Systems 3
- EN.560.301 Structural Systems I 3
- EN.560.302 Structural Systems II 3
- EN.560.305 Soil Mechanics 4
- EN.560.330 Foundation Design 3
- EN.560.362 (Engg Mech & Matls) 3
- EN.560.462 Failure Mechanisms in Str Matls 3
- EN.560.458 Natural Disaster Risk Modeling 3

**CaSE PROFESSIONAL PRACTICE** 2
- EN.661.110 Professional Writing and Communication 3
- EN.660.361 Engineering Management & Leadership 3
- EN.560.401 Design Theory & Pract. 3
- EN.560.402 (Integrated Design Project) 3

**CaSE EXPERIENCES**
- EN.560.191 CaSE Collaborative .5
- EN.560.192 CaSE Design .5
- EN.560.291 CaSE Coding .5
- EN.560.292 CaSE Research .5
- EN.560.391 CaSE Careers I .5
- EN.560.392 (CaSE Careers II) .5

**TECHNICAL ELECTIVES**
Technical electives are designed to provide students with opportunities to explore the field of civil engineering in greater depth. To that end, these courses must have E distribution and be at or above the 300-level. 300-level courses with N or Q distribution may be allowed with the faculty advisor’s permission. 9

Total Credits 127

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1 This Whiting School requirement recognizes that human-centered engineering design relies not only on strong technical skills, but on an understanding of the humanities and social sciences as well. Any six 3-credit H or S elective courses may be used to fulfill this requirement, but to support students’ written communication skills, one of these courses must be either AS.060.113 Expository Writing/AS.060.114 Expository Writing, or a 300-level, Writing-Intensive, H or S elective course. See the Distribution tab in the Requirements for a Bachelor's Degree (https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/requirements-bachelors-degree/) section for two exceptions to the rule that each H/S distribution course is at least 3 credits.

2 In preparation for CaSE-Professional Practice, students must also take the Fundamentals of Engineering (FE) exam in the spring of their senior year.

3 This course will be offered in the 2022-2023 Academic Year.