CIVIL ENGINEERING, B.S. (ENGINEERING)

Begin Campus: Any Penn State Campus
End Campus: University Park

Degree Requirements
For the Bachelor of Science degree in Civil Engineering, a minimum of 127 credits is required:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education</td>
<td>45</td>
</tr>
<tr>
<td>Requirements for the Major</td>
<td>109</td>
</tr>
</tbody>
</table>

27 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 9 credits of GN courses; 6 credits of GQ courses; 3 credits of GS courses; 9 credits of GWS courses.

General Education
Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (https://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program/) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)
- Quantification (GQ): 6 credits
- Writing and Speaking (GWS): 9 credits

Knowledge Domains
- Arts (GA): 6 credits
- Health and Wellness (GHW): 3 credits
- Humanities (GH): 6 credits
- Social and Behavioral Sciences (GS): 6 credits
- Natural Sciences (GN): 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)
- Inter-Domain or Approved Linked Courses: 6 credits

University Degree Requirements
First Year Engagement
All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement
6 credits are required and may satisfy other requirements
- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum
3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits
A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work
Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition
The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Requirements for the Major
To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111</td>
<td>Experimental Chemistry I</td>
<td>1</td>
</tr>
<tr>
<td>GEOSC 1</td>
<td>Physical Geology</td>
<td>3</td>
</tr>
<tr>
<td>MATH 220</td>
<td>Matrices</td>
<td>2</td>
</tr>
<tr>
<td>STAT 401</td>
<td>Experimental Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

Prescribed Courses: Require a grade of C or better

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 310</td>
<td>Surveying</td>
<td>3</td>
</tr>
<tr>
<td>CE 321</td>
<td>Highway Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CE 332</td>
<td>Professionalism, Economics &amp; Construction</td>
<td>3</td>
</tr>
<tr>
<td>CE 335</td>
<td>Engineering Mechanics of Soils</td>
<td>3</td>
</tr>
<tr>
<td>CE 336</td>
<td>Materials Science for Civil Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CE 340</td>
<td>Structural Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CE 360</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>CE 370</td>
<td>Introduction to Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
<td>Credits</td>
</tr>
<tr>
<td>------------</td>
<td>------------------------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>CHEM 110</td>
<td>Chemical Principles I</td>
<td>3</td>
</tr>
<tr>
<td>EDSGN 100</td>
<td>Cornerstone Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 211</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 212</td>
<td>Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>EMCH 213</td>
<td>Strength of Materials</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 202C</td>
<td>Effective Writing: Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 141</td>
<td>Calculus with Analytic Geometry II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 251</td>
<td>Ordinary and Partial Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>General Physics: Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>General Physics: Electricity and Magnetism</td>
<td>4</td>
</tr>
</tbody>
</table>

### Additional Courses

#### CE 337
Civil Engineering Materials Laboratory

or CE 475
Water Quality Chemistry

#### CHE 220
Introduction to Chemical Engineering Thermodynamics

or ME 201
Introduction to Thermal Science

#### CMPSC 200
Programming for Engineers with MATLAB

or CMPSC 201
Programming for Engineers with C++

Select one of the following:

- CE 100S  
  Topics and Contemporary Issues in Civil and Environmental Engineering: First-Year Seminar

  1 credit of First-Year Seminar or Elective

Select one of the following:

- ECON 14
  Principles of Economics

- ECON 102
  Introductory Microeconomic Analysis and Policy

- ECON 104
  Introductory Macroeconomic Analysis and Policy

Select 6 credits of the following:

- CE 341
  Design of Concrete Structures

- CE 342
  Design of Steel Structures

- CE 371
  Water and Wastewater Treatment

- CE 441
  Structural Design of Foundations

- CE 447
  Structural Analysis by Matrix Methods

- CE 461
  Water-resource Engineering

- CE 462
  Open Channel Hydraulics

- CE 475
  Water Quality Chemistry

- CE 476
  Solid and Hazardous Wastes

- CE 479
  Environmental Microbiology for Engineers

Select 3 credits of CE 400 level "W" courses

### Additional Courses: Require a grade of C or better

- CAS 100A
  Effective Speech

  or CAS 100B
  Effective Speech

- ENGL 15
  Rhetoric and Composition

  or ENGL 30H
  Honors Rhetoric and Composition

### Supporting Courses and Related Areas

Select 12 credits of technical elective from CE 300-level courses, CE 400-level courses, or department list

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1. If CE 475 is taken, one credit goes toward lab requirement and remaining three go towards CE or general technical electives.
2. Students may substitute 6 credits of ROTC for 3 credits of GHW courses and 3 credits of ME.