

# Civil Engineering BSCE with Cooperative Education Program Concentration

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## Overview

The **Bachelor of Science in Civil Engineering** is offered by the Department of Civil and Environmental Engineering. The program prepares students for professional engineering careers in the design, construction and maintenance of the built environment.

Civil Engineering professionals plan, design, construct, and operate facilities which are essential to the quality of modern life. The Civil Engineering curriculum is based upon providing a fully-integrated design experience by beginning with introductory courses in the study of engineering history and economics, then progressing through a broad coverage of the primary areas of practice within Civil Engineering (surveying, structures, geotechnical engineering, construction engineering, water resources, transportation and environmental engineering), and finishing with a year-long capstone Civil Engineering senior design project. The goal of the Civil Engineering program is to prepare students to pursue graduate education in their specific areas of interest, pass the Fundamental of Engineering and Professional Engineer exams in the areas of practice within Civil Engineering, and become involved in design, project planning and research.

Civil Engineering students may complete one or more **optional concentrations** in

- Environmental Engineering
- Cooperative Education Program

## Cooperative Education Program

A **Cooperative Education** (Co-Op) is an optional program available at the College of Engineering where you have the opportunity to gain professional work experience before graduation. It is designed to give you the chance to apply the knowledge learned in the classroom to real life problems. You will be exposed to the latest technology and new ideas at a worksite helping you understand your field of work more extensively. During the Co-Op, you will make valuable connections with professionals in your field. A cooperative education can enhance and strengthen you academically, professionally and personally.

**Campus Location:** Main

**Program Code:** EN-CEE-BSCE

## Accreditation

The Civil Engineering (BS) program is accredited by the Engineering Accreditation Commission of ABET, <https://www.abet.org>, under the General Criteria and Program Criteria for Civil and Similarly Named Engineering Programs. ABET is a non-profit and non-governmental accrediting agency for academic programs in the disciplines of applied science, computing, engineering, and engineering technology recognized by the Council for Higher Education Accreditation (CHEA).

## +1 Bachelor to Master's Accelerated Degree Program

High-achieving undergraduates can earn both a bachelor's degree and a master's degree within five years. Students apply for this program in sophomore year, and four graduate-level courses are taken in place of undergraduate requirements during junior and senior years. After the bachelor's degree is earned, one graduate-level course is taken in the summer followed by full-time study in the subsequent Fall and Spring semesters to complete the master's degree study. The following accelerated program is available:

- Bachelor of Science in Civil Engineering and Master of Science in Civil Engineering

## Contact Information

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Learn more about the Bachelor of Science in Civil Engineering.

*These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 should refer to the Archives to view the requirements for their Bulletin year.*

## Summary of Requirements

### University Requirements

All new students are required to complete the university's General Education (GenEd) curriculum.

All Temple students must take a minimum of two writing-intensive courses for a total of at least six credits. The writing-intensive course credits are counted as part of the major; they are not General Education (GenEd) or elective credits. The writing-intensive courses must be completed at Temple University and students may not transfer in credits to satisfy this requirement. The specific writing-intensive courses required for this major are:

Code	Title	Credit Hours
ENGR 2196 or ENGR 2996	Technical Communication Honors Technical Communication	3
ENGR 4296 or ENGR 4996	Capstone Senior Design Project Honors Capstone Senior Design Project	3

### Department Requirements

Code	Title	Credit Hours
<b>Required Math &amp; Basic Science Courses</b>		
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4
MATH 1042 or MATH 1942	Calculus II Honors Calculus II	4
MATH 2043 or MATH 2943	Calculus III Honors Calculus III	4
MATH 2041 or MATH 2941 or MATH 3041 or MATH 3941	Differential Equations I Honors Differential Equations I Differential Equations I Honors Differential Equations I	3
CEE 3048	Probability, Statistics & Stochastic Methods	3
PHYS 1061 or PHYS 1961	Elementary Classical Physics I Honors Elementary Classical Physics I	4
PHYS 1062 or PHYS 1962	Elementary Classical Physics II Honors Elementary Classical Physics II	4
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or CHEM 1953	General Chemistry Laboratory I Honors Chemical Science Laboratory I	1
Select one of the following:		3-4
CEE 2711	Environmental Chemistry & Microbiology	
EES 1001	Introductory Geology	
EES 2001	Physical Geology	
<b>Required General Education Courses</b>		
Select one of the following:		4
ENG 0802	Analytical Reading and Writing	
ENG 0812	Analytical Reading and Writing: ESL	
ENG 0902	Honors Writing About Literature	
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life Honors Intellectual Heritage I: The Good Life	3

IH 0852	Intellectual Heritage II: The Common Good	3
or IH 0952	Honors Intellectual Heritage II: The Common Good	
GenEd 08xx or 09xx (U.S. Society)		3
GenEd 08xx or 09xx (Global/World Society)		3
GenEd 08xx or 09xx (Human Behavior)		3
GenEd 08xx or 09xx (The Arts)		3
GenEd 08xx or 09xx (Race and Diversity)		3
<b>Required Civil Engineering Courses</b>		
CEE 1105	Surveying	2
CEE 2011	Civil Engineering Materials	2
CEE 3211	Transportation Engineering	3
CEE 3311	Construction Engineering	3
CEE 3331	Soil Mechanics	3
CEE 3332	Soil Mechanics Laboratory	1
CEE 3411	Structural Analysis	3
CEE 3412	Structural Analysis Laboratory	1
CEE 3441	Steel & Concrete Design	4
CEE 3711	Environmental Engineering	3
CEE 4446	Senior Design Project I for Civil Engineering	3
CEE Approved Technical Electives		6
Free Electives		6
<b>Required Engineering Courses</b>		
ENGR 1101	Introduction to Engineering & Engineering Technology	3
or ENGR 1901	Honors Introduction to Engineering	
ENGR 1102	Introduction to Engineering Problem Solving	3
ENGR 1117	Engineering Graphics	2
ENGR 2196	Technical Communication (WI)	3
or ENGR 2996	Honors Technical Communication	
ENGR 2331	Engineering Statics <sup>1</sup>	3
or ENGR 2931	Honors Engineering Statics	
ENGR 2332	Engineering Dynamics <sup>1</sup>	3
ENGR 2333	Mechanics of Solids <sup>1</sup>	3
or ENGR 2933	Honors Mechanics of Solids	
ENGR 3553	Mechanics of Fluids	3
or ENGR 3953	Honors Mechanics of Fluids	
ENGR 3571	Classical and Statistical Thermodynamics	3
ENGR 4296	Capstone Senior Design Project (WI)	3
or ENGR 4996	Honors Capstone Senior Design Project	
MEE 3506	Fluid Mechanics Laboratory	1
<b>Required Cooperative Education Courses</b>		
ENGR 2181	Co-Op Work Experience I	3
ENGR 3181	Co-Op Work Experience II	3
<b>Total Credit Hours</b>		<b>134-135</b>

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Course must be passed with a C- or better.

## Suggested Academic Plan

Below is the five-year academic plan for the Co-Op program leading to the Bachelor of Science in Civil Engineering. The minimum requirement for graduation is 134 semester hours.

Please note that this is a **suggested** academic plan. Depending on your situation, your academic plan may look different.

## Bachelor of Science in Civil Engineering with Concentration in Cooperative Education Program

### Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1			
Fall			Credit Hours
ENGR 1101 or ENGR 1901	Introduction to Engineering & Engineering Technology or Honors Introduction to Engineering		3
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I		4
CHEM 1035	Chemistry for Engineers		3
CHEM 1033 or CHEM 1953	General Chemistry Laboratory I or Honors Chemical Science Laboratory I		1
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature		4
<b>Credit Hours</b>			<b>15</b>
Spring			
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II		4
PHYS 1061 or PHYS 1961	Elementary Classical Physics I or Honors Elementary Classical Physics I		4
ENGR 1117	Engineering Graphics		2
ENGR 1102	Introduction to Engineering Problem Solving		3
CEE 1105	Surveying		2
<b>Credit Hours</b>			<b>15</b>
Year 2			
Fall			
MATH 2043 or MATH 2943	Calculus III or Honors Calculus III		4
PHYS 1062 or PHYS 1962	Elementary Classical Physics II or Honors Elementary Classical Physics II		4
ENGR 2331 or ENGR 2931	Engineering Statics or Honors Engineering Statics		3
ENGR 2196 or ENGR 2996	Technical Communication or Honors Technical Communication		3
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life		3
<b>Credit Hours</b>			<b>17</b>
Spring			
MATH 2041 or MATH 2941 or MATH 3041 or MATH 3941	Differential Equations I or Honors Differential Equations I or Differential Equations I or Honors Differential Equations I		3
ENGR 2332	Engineering Dynamics		3
ENGR 2333 or ENGR 2933	Mechanics of Solids or Honors Mechanics of Solids		3
ENGR 3571	Classical and Statistical Thermodynamics		3
CEE 2011	Civil Engineering Materials		2
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good		3
<b>Credit Hours</b>			<b>17</b>

**Year 3****Fall**

ENGR 3553 or ENGR 3953	Mechanics of Fluids or Honors Mechanics of Fluids	3
CEE 3331	Soil Mechanics	3
CEE 3332	Soil Mechanics Laboratory	1
CEE 3411	Structural Analysis	3
CEE 3412	Structural Analysis Laboratory	1
GenEd Breadth Course		3
Free Elective		3
<b>Credit Hours</b>		<b>17</b>

**Spring**

CEE 3048	Probability, Statistics & Stochastic Methods	3
CEE 3211	Transportation Engineering	3
CEE 3441	Steel & Concrete Design	4
MEE 3506	Fluid Mechanics Laboratory	1
Select one of the following:		3-4
CEE 2711	Environmental Chemistry & Microbiology	
EES 1001	Introductory Geology	
EES 2001	Physical Geology	
<b>Credit Hours</b>		<b>14-15</b>

**Year 4****Fall**

ENGR 2181	Co-Op Work Experience I	3
<b>Credit Hours</b>		<b>3</b>

**Spring**

ENGR 3181	Co-Op Work Experience II	3
<b>Credit Hours</b>		<b>3</b>

**Year 5****Fall**

CEE 3311	Construction Engineering	3
CEE 3711	Environmental Engineering	3
CEE 4446	Senior Design Project I for Civil Engineering	3
Approved Civil Engineering Technical Elective		3
GenEd Breadth Course		3
GenEd Breadth Course		3
<b>Credit Hours</b>		<b>18</b>

**Spring**

ENGR 4296 or ENGR 4996	Capstone Senior Design Project or Honors Capstone Senior Design Project	3
Approved Civil Engineering Technical Elective		3
GenEd Breadth Course		3
GenEd Breadth Course		3
Free Elective		3
<b>Credit Hours</b>		<b>15</b>

**Total Credit Hours****134-135****Approved Civil Engineering Technical Electives**

<b>Code</b>	<b>Title</b>	<b>Credit Hours</b>
CEE 3334	Structural Design of Pavements	3
CEE 3611	Hydraulic Engineering	3

CEE 4201	Transportation Systems Management	3
CEE 4211	Bridge Engineering	3
CEE 4221	Intelligent Transportation Systems	3
CEE 4231	Airport Engineering	3
CEE 4244	Introduction to Geosynthetics	3
CEE 4301	Construction Administration	3
CEE 4302	Engineering Project Management	3
CEE 4303	Construction Financial Management	3
CEE 4312	Construction Equipment Management	3
CEE 4321	Geotechnical Engineering	3
CEE 4421	Structural Dynamics	3
CEE 4431	Behavior and Design of Steel Structures	3
CEE 4432	Behavior and Design of Reinforced Concrete Structures	3
CEE 4433	Behavior and Design of Masonry Structures	3
CEE 4445	Earthquake Engineering and Seismic Design	3
CEE 4531	Life Cycle Assessment and Carbon Footprinting	3
CEE 4622	Fate Pollutants in Subsurface Environments	3
CEE 4623	Contaminant Dynamics in Urban Streams	3
CEE 4631	Environmental Hydrology	3
CEE 4641	Urban Streams and Stormwater Management	3
CEE 4711	Air Pollution Control System	3
CEE 4721	Water and Wastewater Systems Design	3
CEE 4731	Solid & Hazardous Waste Management	3
CEE 4811	Advanced Soil Mechanics	3
CEE 4821	Foundation Engineering	3
CEE 4822	Earth Retaining Systems	3
CEE 4823	Geotechnical Earthquake Engineering	3
ENGR 3001	Engineering Economics	3