

# Bachelor of Science in Civil Engineering with Co-op

Learn more about the Bachelor of Science in Civil Engineering.

## 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.

## 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 by Design	3
ENGR 4296 or ENGR 4996	Senior Design Project II Honors Senior Design Project II	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 3041 or MATH 3941	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	

### Required General Education Courses

Select one of the following:		4
ENG 0802	Analytical Reading and Writing	
ENG 0812	Analytical Reading and Writing: ESL	
ENG 0902	Honors Literature/Reading/Writing	
IH 0851	Intellectual Heritage I: The Good Life	3
or IH 0951	Honors Intellectual Heritage I: The Good Life	
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 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 by Design	
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 4169	Engineering Seminar	1
ENGR 4175	Senior Design Project I for Civil Engineering	2
ENGR 4296	Senior Design Project II (WI)	3
or ENGR 4996	Honors Senior Design Project II	
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
Total Credit Hours		134-135

<sup>1</sup> 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 Cooperative Education Requirements for New Students starting in the 2020-2021 Academic Year

Year 1		
Fall		Credit Hours
ENGR 1101 or 1901	Introduction to Engineering & Engineering Technology	3
MATH 1041 or 1941	Calculus I	4
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or 1953	General Chemistry Laboratory I	1
ENG 0802, 0812, or 0902	Analytical Reading and Writing [GW]	4
Term Credit Hours		15
Spring		
MATH 1042 or 1942	Calculus II	4
PHYS 1061 or 1961	Elementary Classical Physics I	4
ENGR 1117	Engineering Graphics	2
ENGR 1102	Introduction to Engineering Problem Solving	3
CEE 1105	Surveying	2
Term Credit Hours		15
Year 2		
Fall		Credit Hours
MATH 2043 or 2943	Calculus III	4
PHYS 1062 or 1962	Elementary Classical Physics II	4
ENGR 2331 or 2931	Engineering Statics	3
ENGR 2196 or 2996	Technical Communication [WI]	3
IH 0851 or 0951	Intellectual Heritage I: The Good Life [GY]	3
Term Credit Hours		17
Spring		
ENGR 2332	Engineering Dynamics	3
ENGR 2333 or 2933	Mechanics of Solids	3
ENGR 3571	Classical and Statistical Thermodynamics	3
MATH 3041 or 3941	Differential Equations I	3
IH 0852 or 0952	Intellectual Heritage II: The Common Good [GZ]	3
CEE 2011	Civil Engineering Materials	2
Term Credit Hours		17
Year 3		
Fall		Credit Hours
ENGR 3553 or 3953	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
Term Credit Hours		17
Spring		
ENGR 4169	Engineering Seminar	1
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	
Term Credit Hours		15-16
<b>Year 4</b>		
<b>Fall</b>		
ENGR 2181	Co-Op Work Experience I	3
Term Credit Hours		3
<b>Spring</b>		
ENGR 3181	Co-Op Work Experience II	3
Term Credit Hours		3
<b>Year 5</b>		
<b>Fall</b>		
ENGR 4175	Senior Design Project I for Civil Engineering	2
Approved Civil Engineering Technical Elective		3
CEE 3711	Environmental Engineering	3
CEE 3311	Construction Engineering	3
GenEd Breadth Course		3
GenEd Breadth Course		3
Term Credit Hours		17
<b>Spring</b>		
ENGR 4296 or 4996	Senior Design Project II [WI]	3
Free Elective		3
Approved Civil Engineering Technical Elective		3
GenEd Breadth Course		3
GenEd Breadth Course		3
Term Credit Hours		15
Total Credit Hours:		134-135

### Approved Civil Engineering Technical Electives

Code	Title	Credit Hours
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