BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING (STEM)

GW's bachelor of science in civil engineering program teaches the fundamentals of environmental engineering, geotechnical engineering, structural engineering, water resources engineering, and transportation engineering. Students put their knowledge into action by working on contemporary, real-world projects, such as the clean-up of a dead zone in the Gulf of Mexico, design of civil infrastructure systems such as bridges, tunnels, and lifelines to withstand against natural hazards, and crash protection for children in car seats. Program students also take part in many activities and organizations, among them the steel bridge competition, the American Society of Engineers, and Engineers Without Borders. The program offers a number of ways for students to craft their academic programs to meet special career interests by developing the analytical, experimental, and design skills necessary for a career in engineering or in fields such as business, law, and public policy. Civil engineering program graduates leave GW prepared to plan, design, and construct buildings, bridges, roads, airports, and rapid transit systems or they go on to specialize in pollution control, hazardous waste cleanup, or water and wastewater treatment systems.

This is a STEM designated program.

Visit the program website (https://www.cee.seas.gwu.edu/undergraduate-programs/) for additional information.

ADMISSIONS

Visit the Office of Undergraduate Admissions website (https://undergraduate.admissions.gwu.edu/) for information about the admission process. Applications can be submitted via the Common Application (https://go.gwu.edu/commonapp/).

Supporting documents not submitted online should be mailed to:
Office of Undergraduate Admissions
The George Washington University
800 21st Street NW, Suite 100
Washington DC 20052

Contact for questions:
gwadm@gwu.edu or 202-994-6040

REQUIREMENTS

This Bulletin covers the degree requirements for students matriculating in the current academic year. Students who matriculated before the current year can find their requirements in the relevant archived Bulletin (http://archives/).

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities, social science, or non-technical elective **		
Second semester		
CSCI 1012	Introduction to Programming with Python	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
SUST 1001	Introduction to Sustainability **	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus	
PHYS 1022	University Physics II *	
One humanities, social science, or non-technical elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
APSC 3115	Engineering Analysis III	
CE 1020	Introduction to a Sustainable World	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
Fifth semester		
CE 3110W	Civil Engineering Materials	
CE 3111W	Civil Engineering Materials Lab	
CE 3250	Structural Analysis	

CE 3604	Physical Hydrology
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
One humanities, social science, or non-technical elective **	
Sixth semester	
CE 3310	Reinforced Concrete Structures
CE 3311	Reinforced Concrete Design Project
CE 3520	Environmental Engineering Design: Drinking Water Treatment
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics of Open Channel Flow
CE 3611	Hydraulics Laboratory
One humanities, social science, or non-technical elective **	
Seventh semester	
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4530	Wastewater Treatment Design and Reuse
One engineering elective selected from list below.	
Eighth semester	
CE 4721W	Traffic Engineering and Highway Safety
PHIL 2135	Ethics in Business and the Professions **
SUST 2002	The Sustainable City (or one of the following courses: EMSE 3820, EMSE 6410, PHIL 2281)

One civil engineering elective selected from the following list:

Code	Title	Credits
Civil engineering electives		
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6205	Theory of Structural Stability	
CE 6207	Theory of Elasticity I	
CE 6210	Introduction to Finite Element Analysis	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6320	Design of Metal Structures	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6401	Fundamentals of Soil Behavior	
CE 6403	Foundation Engineering	
CE 6501	Aquatic Chemistry	
CE 6502	Environmental Engineering Design: Drinking Water Treatment	
CE 6503	Principles of Environmental Engineering	
CE 6505	Environmental Impact Assessment	
CE 6506	Microbiology for Environmental Engineers	
CE 6507	Advanced Technologies in Environmental Engineering	
CE 6508	Industrial Waste Treatment	
CE 6509	Introduction to Hazardous Wastes	
CE 6602	Hydraulic Engineering	
CE 6604	Physical Hydrology	
CE 6609	Numerical Methods in Environmental and Water Resources	
CE 6611	Advanced Hydrology	
CE 6712	Data Science and Artificial Intelligence in Civil and Environmental Engineering	
CE 6721	Traffic Engineering and Highway Safety	
CE 6722	Intelligent Transportation Systems	
CE 6730	Sustainable Urban Planning	
CE 6731	Economics of Transportation Systems	
CE 6732	Automation and Sensing in Civil and Environmental Engineering	
CE 6733	Human Factors in Civil and Environmental Engineering	
CE 6800	Special Topics	

*Course satisfies the University general education requirement in math, science, and writing.

**Six humanities, social science, or non-technical electives are required. Two of these courses must be PHIL 2135 Ethics in Business and the Professions and SUST 1001 Introduction to Sustainability. At least one additional social and behavioral sciences course must be selected from the University General Education Requirement (https://bulletin.gwu.edu/university-regulations/general-education/#generaleducationtext) list of critical thinking in the social sciences courses; at least one humanities course must be selected from the University General Education list of critical thinking in the humanities courses. The remaining courses must be selected from the University General Education list or the SEAS approved list of non-technical elective courses (https://www.seas.gwu.edu/sites/g/files/zaxdzs5436/files/downloads/SEAS%20Non-Technical%20Course%20List_0.pdf).

COMBINED PROGRAMS

Combined programs

- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field of environmental engineering (https://bulletin.gwu.edu/engineering-applied-science/civil-environmental-engineering/combined-bs-ms-environmental-engineering/)
- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field of structural engineering (https://bulletin.gwu.edu/engineering-applied-science/civil-environmental-engineering/combined-bs-ms-structural-engineering/)
- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field of transportation engineering (https://bulletin.gwu.edu/engineering-applied-science/civil-environmental-engineering/combined-bs-ms-transportation-engineering/)