ENVIRONMENTAL ENGINEERING, B.S.

Seven Penn State campuses are scheduled for closure after Spring 2027: DuBois, Fayette, New Kensington, Mont Alto, Shenango, Wilkes-Barre, and York. New students are not being admitted at these campuses.

Begin Campus: Any Penn State Campus

End Campus: University Park

Degree Requirements

For the Bachelor of Science degree in Environmental Engineering, a minimum of 128 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	110

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. The remaining 18 General Education credits must be distinct from the Requirements for the Major.

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 (https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/).

Code	Title	Credits
Prescribed Courses		
CE 402	Computing Methods for Civil and Environmental Engineering	3
CE 472W	Environmental Engineering Capstone Design	3
CE 475	Water Quality Chemistry	4
EGEE 470	Air Pollutants from Combustion Sources	3
Prescribed Courses: Require a grade of C or better		
CE 310	Surveying	3
CE 332	Professionalism, Economics & Construction Project Delivery	3
CE 335	Engineering Mechanics of Soils	3
CE 370	Introduction to Environmental Engineering	3
CE 403	Energy Use, Climate Change, and Our Engineered Infrastructure	3
CE 461	Water-resource Engineering	3
CE 476	Solid and Hazardous Wastes	3
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
CHEM 112	Chemical Principles II	3
CHEM 113	Experimental Chemistry II	1
EDSGN 100	Cornerstone Engineering Design	3
EMCH 211	Statics	3
EMCH 212	Dynamics	3
ENGL 202C	Effective Writing: Technical Writing	3
GEOSC 1	Physical Geology	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
PHYS 211	General Physics: Mechanics	4
Additional Courses		
Select 1 credit of First-Year Seminar		1
Select 3 credits from the following:		3
CMPSC 121	Introduction to Programming Techniques	
CMPSC 131	Programming and Computation I: Fundamentals	
CMPSC 200	Programming for Engineers with MATLAB	
CMPSC 201	Programming for Engineers with C++	
CMPSC 204	Introduction to Computational Sciences Programming	
ESC 261M	Computational Methods in Engineering	
Select 3 credits from the following:		3
ECON 14	Principles of Economics	
ECON 102	Introductory Microeconomic Analysis and Policy	
ECON 104	Introductory Macroeconomic Analysis and Policy	
GEOG 160	Mapping Our Changing World	
GEOG 260	Geographic Information in a Changing World: Introduction to GIScience	
Select 3 credits from the following:		3
ENVSE 406	Sampling and Monitoring of the Geo-Environment	
IE 424	Process Quality Engineering	
STAT 401	Experimental Methods	
Additional Courses: Require a grade of C or better		
MATH 251	Ordinary and Partial Differential Equations	4
or MATH 250 & MATH 252	Ordinary Differential Equations and Partial Differential Equations	
CE 360	Fluid Mechanics	3
or EME 303	Fluid Mechanics in Energy and Mineral Engineering	
Select 3 credits from the following:		3
CAS 100A	Effective Speech	
CAS 100B	Effective Speech	
CAS/ENGL 138T	Rhetoric and Civic Life II	
EMSC 100S	Earth and Mineral Sciences First-Year Seminar	
Select 3 credits from the following:		3
ENGL 15	Rhetoric and Composition	
ENGL 15A	Rhetoric and Composition	
ENGL 15E	Rhetoric and Composition Enhanced	
ENGL 30T	Honors Freshman Composition First-Year Seminar	
ENGL 30H	Honors Rhetoric and Composition	
ENGL/CAS 137H	Rhetoric and Civic Life I	
ESL 15	ESL Composition for American Academic Communication II	
Select 3 credits from the following:		3
CHE 220	Introduction to Chemical Engineering Thermodynamics	
EME 301	Thermodynamics in Energy and Mineral Engineering	

ME 201	Introduction to Thermal Science	
ME 300	Engineering Thermodynamics I	
Supporting Courses and Related Areas		
Select at least 6 credits of ENVE Technical Electives from the following:		6
CE 371	Water and Wastewater Treatment	
CE 473	Ecological Design of Regenerative Aquatic Systems	
CE 479	Environmental Microbiology for Engineers	
ENVSE 404W	Surface and Interfacial Phenomena in Environmental Systems	
ENVSE 427	Pollution Control in the Process Industries	
Select at least 9 credits of Technical Electives within or outside of ENVE from the following:		9
ABSM 350	Introduction to Life Cycle Assessment	
BE 464	Bioenergy Systems Engineering	
BE 467	Design of Stormwater and Erosion Control Facilities	
BE 477	Land-Based Waste Disposal	
BE 487	Simulation Modeling for Water Resources Management	
CE 462	Open Channel Hydraulics	
CE 473	Ecological Design of Regenerative Aquatic Systems	
CE 479	Environmental Microbiology for Engineers	
CHE 445	Bioremediation/Green Chemistry	
EDSGN 452	Projects in Humanitarian Engineering	
EDSGN 453	Design for Developing Communities	
EGEE 420	Hydrogen and Fuel Cells	
EGEE 437	Design of Solar Energy Conversion Systems	
EGEE 438	Wind and Hydropower Energy Conversion	
EGEE 439	Alternative Fuels from Biomass Sources	
EME 460	Geo-resource Evaluation and Investment Analysis	
ENGR 407	Product Innovation Entrepreneurship	
ENGR 408	Leadership Principles	
ENGR 410	Coaching Skills and Practice for Engineering Leaders	
ENGR 425	New Venture Creation	
ENGR 451	Social Entrepreneurship	
ENVSE 400	Safety Engineering	
ENVSE 404W	Surface and Interfacial Phenomena in Environmental Systems	
ENVSE 412	Environmental Systems Engineering Laboratory	
ENVSE 427	Pollution Control in the Process Industries	
ENVST 428	Environmental Economics and Policy	
ERM 411	Legal Aspects of Resource Management	
ERM 429	The Chesapeake Bay Watershed: Issues and Careers in Complex Environmental Problem Solving	
ERM 430	Air Pollution Impacts to Terrestrial Ecosystems	
ERM 440	Chemistry of the Environment: Air, Water, and Soil	
ERM 448	Rural Road Ecology and Maintenance	
GEOG 363	Geographic Information Systems	
GEOSC 451	Natural Resources: Origins, Economics and Environmental Impact	
METEO 469	From Meteorology to Mitigation: Understanding Global Warming	

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 and Inter-Domain courses do not meet this requirement.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

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

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN,** may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher**:** 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 (https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/)). For more information, check the Suggested Academic Plan for your intended program.