

ENVIRONMENTAL ENGINEERING MAJOR (B.S.)

<https://ceps.unh.edu/cee/environmental-engineering-bs>

Description

The Environmental Engineering program is accredited by the:

Engineering Accreditation Commission of ABET
111 Market Place
Suite 1050
Baltimore, MD 21202-4012,
(410) 347-7700
<http://www.abet.org>

Environmental engineers graduating with a B.S. EnvE degree will plan, design, and construct public and private facilities to minimize the impact of human activity on the environment and to protect human health. For example, environmental engineers design and build drinking water treatment systems, municipal and industrial wastewater treatment plants, solid waste management facilities, contaminated ground water remediation systems, and hazardous waste remediation facilities. These facilities must meet regulatory requirements, be cost effective to build and maintain, be safe to operate, and have minimal environmental impact. EnvE students can also focus on sustainable engineering with a required course (CEE 705 Introduction to Sustainable Engineering) in junior year and two or three senior year electives, including design electives.

In CEE 420 Environmental Engineering Lectures I, students are introduced to the full spectrum of environmental engineering projects that they will subsequently explore in design teams during their degree program. In (CEE 520 Environmental Pollution and Protection: A Global Context), students tour field sites and through junior and senior year classes and student organizations (ASCE, EWRI, EWB, SWB), they interact with engineers who talk about engineering consulting and design practices applied to local projects. As part of these projects, students:

1. analyze treatment alternatives;
2. recommend a system that meets regulatory operational needs, and is sustainable; and
3. prepare an implementation schedule and project budget.

Design projects are performed in CEE 731 Advanced Water Treatment Processes and a minimum of two design electives. CEE 797 Introduction to Project Planning and Design/ and CEE 798 Project Planning and Design/ serve as a capstone design experience where students work on a multi-disciplinary environmental engineering project and apply skills learned in other courses while working with real-world problems/ clients. EnvE students do not have to take a course in the Discovery Biological Science category since they satisfy this category with CEE 724 Environmental Engineering Microbiology.

At the end of the sophomore year, students are required to have a minimum overall grade-point average of 2.00 and a minimum grade-point average of 2.00 in the following to be permitted to enroll in junior-level courses:

Code	Title	Credits
CEE 420	Environmental Engineering Lectures I	3
MATH 425	Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4

To qualify for graduation, an ENE major must: have satisfied the previously specified course requirements, have satisfied the University's Academic Requirements, have a minimum cumulative grade-point average of 2.00, and have a minimum grade-point average of 2.00 in engineering courses.

Requirements

These are the required major courses. For a full listing of the requirements within the four years of study please refer to the degree plan tab.

Code	Title	Credits
CEE 420	Environmental Engineering Lectures I	3
MATH 425	Calculus I	4
CHEM 405	Chemical Principles for Engineers	4
ENGL 401	First-Year Writing	4
PHYS 407	General Physics I	4
MATH 426	Calculus II	4
ENGL 502	Professional and Technical Writing	4
CEE 500	Statics for Civil Engineers	3
CEE 520	Environmental Pollution and Protection: A Global Context	4
MATH 527	Differential Equations with Linear Algebra	4
TECH 564	Fundamentals of CAD	3
CEE 502	Project Engineering	3
MATH 644	Statistics for Engineers and Scientists	4
CEE 650	Fluid Mechanics	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
CEE 705	Introduction to Sustainable Engineering	3
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 724	Environmental Engineering Microbiology	4
CEE 797	Introduction to Project Planning and Design	1
CEE 723	Environmental Water Chemistry	4
CEE 721	Environmental Sampling and Analysis	4
CEE 798	Project Planning and Design	3
CEE 731	Advanced Water Treatment Processes	4

Degree Plan

The following schedule is a sample of a planned program for environmental engineering students completing the major.

Course	Title	Credits
First Year		
Fall		
CEE 420	Environmental Engineering Lectures I	3
ENGL 401	First-Year Writing	4
MATH 425	Calculus I ¹	4
CHEM 405	Chemical Principles for Engineers	4
Discovery Electives ²		4
Credits		19
Spring		
ENGL 502	Professional and Technical Writing	4
MATH 426	Calculus II ¹	4
PHYS 407	General Physics I	4
Discovery Electives ²		4
Credits		16
Second Year		
Fall		
CEE 520	Environmental Pollution and Protection: A Global Context	4
CEE 500	Statics for Civil Engineers	3
MATH 527	Differential Equations with Linear Algebra	4
TECH 564	Fundamentals of CAD	3
Discovery Elective		4
Credits		18
Spring		
MATH 644	Statistics for Engineers and Scientists	4
CEE 502	Project Engineering	3
Discovery Elective		4
Public Health Elective		4
Discovery or Geospatial Course		4
Credits		19
Third Year		
Fall		
CEE 705	Introduction to Sustainable Engineering	3
CEE 650	Fluid Mechanics	4
CEE 720	Solid and Hazardous Waste Engineering	3
ESCI 654	Fate and Transport in the Environment	4
Credits		14
Spring		
CEE 620	Fundamental Aspects of Environmental Engineering	4
CEE 724	Environmental Engineering Microbiology	4
Hydrology Elective ⁴		3-4
Discovery		4
Credits		15-16
Fourth Year		
Fall		
CEE 721	Environmental Sampling and Analysis	4
CEE 723	Environmental Water Chemistry	4
CEE 797	Introduction to Project Planning and Design	1
CEE Design Electives (2)		6-8

		Credits
		15-17
Spring		
CEE 731	Advanced Water Treatment Processes	4
CEE 798	Project Planning and Design	3
CEE Electives (2)		6-8
Hydraulics Elective		3-4
Credits		16-19
Total Credits		132-138

¹ Students who are required to take MATH 418 Analysis and Applications of Functions because they did not pass the placement examination as determined by the Mathematics Department prior to the fall semester, will enroll in MATH 425 Calculus I during the spring semester. Subsequent MATH courses (MATH 426 Calculus II, MATH 527 Differential Equations with Linear Algebra, MATH 644 Statistics for Engineers and Scientists) will be taken one semester later than shown here.

² See Discovery Program requirements. The Discovery requirements for Writing, Quantitative Reasoning, and Physical Science are fulfilled by ENGL 401 First-Year Writing, MATH 425 Calculus I, and PHYS 407 General Physics I, respectively. CEE 520 Environmental Pollution and Protection: A Global Context fulfills the Environmental, Technology, and Society requirement. CEE 797 Introduction to Project Planning and Design and CEE 798 Project Planning and Design fulfill the Senior Capstone requirement. Environmental Engineering Microbiology fulfills the Biological Science requirement. Courses in the EnvE curriculum designated Discovery Electives can be selected from the University's approved Discovery Program courses in Fine and Performing Arts, Humanities, Historical Perspectives, World Cultures, and Social Science. One of these electives must have an Inquiry attribute.

³ Approved lists of technical, hydrology, hydraulics, and design and non-design electives are available from the EnvE undergraduate coordinator, Nancy Kinner. Students must take a minimum of four 700-level CEE electives totaling at least 10 credits. A minimum of two CEE elective courses must be from the design category.

The EnvE program requires a minimum of 132 total credits for graduation.