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 through sustainable approaches that protect human health. For example, environmental engineers design and build drinking water treatment systems, municipal and industrial wastewater treatment plants, solid waste management facilities, air pollution control systems, 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.

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 505 Introduction to Sustainable Engineering, students learn tools to analyze life cycles and are exposed to global actions for sustainability. 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), they interact with engineers who talk about engineering consulting, environmental policy, and design practices applied to local and global 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.

Students choose elective courses from areas of Sustainability, Water Resources, Environmental Engineering Design, and other relevant topics. Design projects are performed in a minimum of two design electives. In the capstone design experience courses students work on a multi-disciplinary environmental engineering project and apply skills learned in other courses while working with real-world problems and clients.

The Environmental Engineering program (B Sci in Environmental Engineering) is accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Program Criteria for Environmental Engineering and Similarly Named Engineering Programs.

**Degree Requirements**

**Minimum Credit Requirement:** 130 credits

**Minimum Residency Requirement:** 32 credits must be taken at UNH

**Minimum GPA:** 2.0 required for conferral*

**Core Curriculum Required:** Discovery & Writing Program Requirements

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** Code | Title | Credits
--- | --- | ---
CEE 402 | 2D Computer Aided Design | 3
CEE 410 | Environmental Engineering Lectures I | 3
CEE 500 | Statics for Civil Engineers | 3
CEE 502 | Project Engineering | 3
CEE 505 | Introduction to Sustainable Engineering | 3
CEE 520 | Environmental Pollution and Protection: A Global Context | 4
CEE 620 | Fundamental Aspects of Environmental Engineering | 4
CEE 650 | Fluid Mechanics | 4
CEE 720 | Solid and Hazardous Waste Engineering | 3
CEE 721 | Environmental Sampling and Analysis | 4
CEE 723 | Environmental Water Chemistry | 4
CEE 724 | Environmental Engineering Microbiology | 4
CEE 731 | Advanced Water Treatment Processes | 4
CHEM 405 | Chemical Principles for Engineers | 4
or CHEM 403 & CHEM 404 | General Chemistry I and General Chemistry II | 4
ESCI 654 | Fate and Transport in the Environment | 4
MATH 405 | Calculus I | 4
MATH 406 | Calculus II | 4
MATH 527 | Differential Equations with Linear Algebra | 4
MATH 644 | Statistics for Engineers and Scientists | 4
PHYS 407 | General Physics I | 4

** Capstone Design Experience

CEE 797 | Introduction to Project Planning and Design | 2
CEE 798 | Project Planning and Design | 2

** Electives**

- Select four 700-level Design and Environmental/Civil Engineering Electives courses are required, two of which must be Design, with a minimum of 12 total credits.
- Select one Sustainability Elective, one Public Health Elective, and two Water Resources Electives are required.
- Each elective course can only be used to fulfill one category.
- Course lists are subject to change, check with advisor.

** Code | Title | Credits
--- | --- | ---
CEE 729 | Sources, Control, and Stewardship of Air Pollution | 4
CEE 730 | Public Health Engineering for Rural and Developing Communities | 3
CEE 732 | Solid and Hazardous Waste Design | 4
CEE 733 | Public Infrastructure Asset Management | 4
### Degree Plan

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

#### First Year

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CEE 755</td>
<td>Design of Pressurized Water Transmission Systems</td>
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<tr>
<td>CEE 758</td>
<td>Stormwater Management Designs</td>
<td>3</td>
</tr>
<tr>
<td>CEE 759</td>
<td>Stream Restoration</td>
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#### Second Year

<table>
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<tr>
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<tbody>
<tr>
<td>CEE 706</td>
<td>Environmental Life Cycle Assessment</td>
<td>3</td>
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<tr>
<td>CEE 722</td>
<td>Introduction to Marine Pollution and Control</td>
<td>4</td>
</tr>
<tr>
<td>CEE 729</td>
<td>Sources, Control, and Stewardship of Air Pollution</td>
<td>4</td>
</tr>
<tr>
<td>CEE 751</td>
<td>Open Channel Flow</td>
<td>3</td>
</tr>
<tr>
<td>CEE 754</td>
<td>Engineering Hydrology</td>
<td>3</td>
</tr>
<tr>
<td>CEE 768</td>
<td>Geo-Environmental Engineering</td>
<td>3</td>
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<tr>
<td>SAFS 632</td>
<td>Urban Agriculture</td>
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#### Third Year

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<tbody>
<tr>
<td>CEE 665</td>
<td>Soil Mechanics</td>
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<tr>
<td>CEE 721</td>
<td>Environmental Sampling and Analysis</td>
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#### Fourth Year

<table>
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<tbody>
<tr>
<td>CEE 721</td>
<td>Environmental Sampling and Analysis</td>
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</tr>
<tr>
<td>CEE 723</td>
<td>Environmental Water Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CEE 797</td>
<td>Introduction to Project Planning and Design</td>
<td>2</td>
</tr>
<tr>
<td>CEE Design Elective (1)</td>
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<td>3-4</td>
</tr>
<tr>
<td>CEE Elective (1)</td>
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<td>3-4</td>
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#### Spring

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<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CEE 420</td>
<td>GIS for Civil and Environmental Engineering</td>
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<tr>
<td>MATH 527</td>
<td>Differential Equations with Linear Algebra</td>
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</tr>
<tr>
<td>Discovery Elective 2</td>
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</tbody>
</table>

### Credits

- **First Year**: 19 credits
- **Second Year**: 15 credits
- **Third Year**: 18 credits
- **Fourth Year**: 16-18 credits
- **Total Credits**: 74-78 credits

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*See note below.*
CEE Design Elective (1) | 3-4
Water Resources Elective | 3-4

Credits | 15-18

Total Credits | 134-141

The EnvE program requires a minimum of 130 total credits for graduation.

*MATH 418 does not count toward this minimum number of credits.

1 Students who passed the ALEKS placement examination as determined by the Mathematics Department may enroll in MATH 425 Calculus I. Subsequent MATH courses (MATH 426 Calculus II, MATH 527 Differential Equations with Linear Algebra, Differential Equations with Linear Algebra, MATH 644 Statistics for Engineers and Scientists) will be taken one semester earlier 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 sustainability, water resources, design and Environmental/Civil electives are available from the EnvE undergraduate coordinator, Paula Mouser.

**Student Learning Outcomes**

By the time of graduation students have attained:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- an ability to communicate effectively with a range of audiences.
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.