This intercollege combined major is designed for students who would like to explore their interest in the health sciences while earning the benefit of a Bachelor of Science degree in environmental engineering. The combined major reflects the respective departmental thrusts in environmental health and sustainable resource engineering to create awareness about the complex relationship between the environment and human health, prepare professionals in this growing area capable of providing engineering solutions to current and emerging topics related to environmental engineering and health sciences, and maintain healthy environmental systems by applying and developing techniques to reduce exposure to health hazards. This program combines the content of two majors to allow students to learn the breadth and depth of the convergence between public health and environmental engineering.

**Program Requirements**
Complete all courses listed below unless otherwise indicated. Also complete any corequisite labs, recitations, clinicals, or tools courses where specified and complete any additional courses needed beyond specific college and major requirements to satisfy graduation credit requirements.

**University-Wide Requirements**
All undergraduate students are required to complete the University-Wide Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/university-wide-requirements).

**NUpath Requirements**
All undergraduate students are required to complete the NUpath Requirements (http://catalog.northeastern.edu/undergraduate/university-academics/nupath).

**Major GPA Requirement**
2.000 minimum required in major (CIVE) courses

**Engineering**
Complete 65 semester hours in engineering as indicated below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CIVE 2221 and CIVE 2222</td>
<td>Statics and Strength of Materials and Recitation for CIVE 2221</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 2260 and CIVE 2261</td>
<td>Civil Engineering Materials and Materials and Measurements Lab</td>
<td>5</td>
</tr>
<tr>
<td>CIVE 2331</td>
<td>Fluid Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 2334</td>
<td>Environmental Engineering 1</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 2335</td>
<td>Environmental Engineering Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 3430</td>
<td>Engineering Microbiology and Ecology</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 3435</td>
<td>Environmental Pollution Fate and Transport</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 4534 and CIVE 4535</td>
<td>Environmental Engineering 2 and Lab for CIVE 4534</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 4765</td>
<td>Senior Design Project—Environmental</td>
<td>5</td>
</tr>
<tr>
<td>CIVE 5300</td>
<td>Environmental Engineering Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>GE 3300</td>
<td>Energy Systems: Science, Technology, and Sustainability</td>
<td>4</td>
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</table>

**Environmental Engineering Technical Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CIVE 5250</td>
<td>Organic Pollutants in the Environment</td>
<td>12</td>
</tr>
<tr>
<td>CIVE 5260</td>
<td>Environmental Fluid Mechanics</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5271</td>
<td>Solid and Hazardous Waste Management</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5275</td>
<td>Life Cycle Assessment of Materials, Products, and Infrastructure</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5280</td>
<td>Remote Sensing of the Environment</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5536</td>
<td>Hydrologic Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5699</td>
<td>Special Topics in Civil Engineering (Groundwater and Contamination)</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5699</td>
<td>Special Topics in Civil Engineering (Coastal Dynamic and Design Practice)</td>
<td>4</td>
</tr>
<tr>
<td>CIVE 5699</td>
<td>Special Topics in Civil Engineering (Climate Science and Technology Adaptation and Policy)</td>
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</table>

**Supplemental Credit**
1 semester hour from the following course counts toward the engineering requirement:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIVE 3464</td>
<td>Probability and Engineering Economy for Civil Engineering</td>
<td>1</td>
</tr>
<tr>
<td>GE 1501</td>
<td>Cornerstone of Engineering 1</td>
<td>3</td>
</tr>
<tr>
<td>GE 1502</td>
<td>Cornerstone of Engineering 2</td>
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**Professional Development**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>GE 1000</td>
<td>Introduction to the Study of Engineering</td>
<td>1</td>
</tr>
<tr>
<td>CIVE 2000</td>
<td>Introduction to Engineering Co-op Education</td>
<td>1</td>
</tr>
<tr>
<td>CIVE 3000</td>
<td>Professional Issues in Engineering</td>
<td>1</td>
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</tbody>
</table>

**Additional Required Courses**
The remaining credit from the following course will apply to the professional development area:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GE 1501</td>
<td>Cornerstone of Engineering 1</td>
<td>1</td>
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</table>

**Supporting Courses: Mathematics/Science**
Complete 33 semester hours in mathematics and science as indicated below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1151</td>
<td>General Chemistry for Engineers</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1153 and Recitation for CHEM 1151</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 1341</td>
<td>Calculus 1 for Science and Engineering</td>
<td>4</td>
</tr>
<tr>
<td>MATH 1342</td>
<td>Calculus 2 for Science and Engineering</td>
<td>4</td>
</tr>
<tr>
<td>MATH 2321</td>
<td>Calculus 3 for Science and Engineering</td>
<td>4</td>
</tr>
<tr>
<td>MATH 2341</td>
<td>Differential Equations and Linear Algebra for Engineering</td>
<td>4</td>
</tr>
</tbody>
</table>
PHYS 1151  and PHYS 1152  and PHYS 1153

Physics for Engineering 1 and Lab for PHYS 1151
and Interactive Learning Seminar for PHYS 1151

Science Elective (Earth)

Complete one of the following: 4-5

- ENVR 1110  Global Climate Change
- ENVR 1112  Environmental Geology
- ENVR 1120  Oceans and Coasts
- ENVR 1200  Dynamic Earth
- ENVR 1202  History of Earth and Life
- ENVR 2310  Earth Materials
- ENVR 3125  Global Oceanic Change

Supplemental Credit

3 semester hours from the following course count toward the mathematics/science requirement:

- CIVE 3464  Probability and Engineering Economy for Civil Engineering

1 semester hour from the following course counts toward the mathematics/science requirement:

- GE 1502  Cornerstone of Engineering 2

Writing Requirement and NUpath Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGW 1111</td>
<td>First-Year Writing</td>
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</tr>
<tr>
<td>ENGW 3302</td>
<td>Advanced Writing in the Technical Professions</td>
<td>4</td>
</tr>
<tr>
<td>or ENGW 3315</td>
<td>Interdisciplinary Advanced Writing in the Disciplines</td>
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</table>

NUpath Requirements through General Electives

NUpath requirements Interpreting Culture (IC), Societies and Institutions (SI), and Differences and Diversity (DD) are not explicitly satisfied by required engineering courses. Students are responsible for satisfying these requirements with general electives.

Health Sciences Major Requirement

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>HLTH 5450</td>
<td>Healthcare Research</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 4120</td>
<td>Global Perspectives on Discrimination and Health</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 5214</td>
<td>Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td>PHTH 1260</td>
<td>The American Healthcare System</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 2210</td>
<td>Foundations of Biostatistics</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 2350</td>
<td>Community and Public Health</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 2414</td>
<td>Environmental Health</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 2515</td>
<td>Healthcare Policy and Administration</td>
<td>4</td>
</tr>
<tr>
<td>PHTH 4540</td>
<td>Health Education and Program Planning</td>
<td>4</td>
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Integrative Course

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CIVE 4765</td>
<td>Senior Design Project—Environmental</td>
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</tbody>
</table>

Course Work That Does Not Count Toward the Engineering Degree

Students in engineering are allowed to count a maximum of two pass/fail courses toward their degree program. Only general electives outside the College of Engineering may be taken on a pass/fail grading basis. A maximum of one pass/fail course is allowed per semester.

Program Requirement

145 total semester hours required

Plan of Study

Year 1

<table>
<thead>
<tr>
<th>Semester</th>
<th>Fall Hours</th>
<th>Spring Hours</th>
<th>Summer 1 Hours</th>
<th>Summer 2 Hours</th>
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<tr>
<td>CHEM 1151</td>
<td>4</td>
<td>GE 1502</td>
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<tr>
<td>and CHEM 1153</td>
<td>4</td>
<td>MATH 2321</td>
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<td>4</td>
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<tr>
<td>GE 1501</td>
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<td>PHYS 1151</td>
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<tr>
<td>and PHYS 1152</td>
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<td>PHYS 1153</td>
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<td>4</td>
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<tr>
<td>GE 1000</td>
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<td>PHTH 2210</td>
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Year 2

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<tr>
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<th>Summer 2 Hours</th>
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<tbody>
<tr>
<td>CIVE 2334</td>
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<td>PHTH 2414</td>
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<td>and CIVE 2261</td>
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<td>1 MATH 2341</td>
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<tr>
<td>CIVE 2221</td>
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<td>CIVE 2331</td>
<td></td>
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<td>4</td>
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<tr>
<td>and CIVE 2222</td>
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<td>PHTH 2515</td>
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<td>CIVE 2335</td>
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<td>and CIVE 3430</td>
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Year 3

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<tr>
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<th>Summer 2 Hours</th>
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<tr>
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<tr>
<td>and Technical elective</td>
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<td>Science elective</td>
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<tr>
<td>PHTH 4540</td>
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<td>HLTH 5450</td>
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Year 4

<table>
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<tr>
<th>Semester</th>
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<th>Summer 2 Hours</th>
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<tr>
<td>CIVE 3000</td>
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<td>and Technical elective</td>
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<tr>
<td>CIVE 3464</td>
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<tr>
<td>and CIVE 4534</td>
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<td>4</td>
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<tr>
<td>and CIVE 4535</td>
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<td>Spring</td>
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Total Hours: 145