Environmental Engineering - Master of Science (MS)

The Master of Science in Environmental Engineering program focuses on fundamental and applied understanding of the processes that govern our natural and engineered environmental systems. The program of 22 primary faculty, 11 affiliated faculty and about 70 graduate students covers topics ranging from drinking and wastewater treatment, water re-use, ecosystem processes, fate and transport of contaminants, alternative energy, air quality, sustainability and global engineering.

For more information, visit the Environmental Engineering Program (http://www.colorado.edu/even) website.

Requirements

General Requirements

The following course requirements are subject to change; for the most current information, visit the department's Curriculum and Courses (http://www.colorado.edu/even/prospective-students/graduate-studies/curriculum-and-courses) webpage.

Students must complete at least 30 credit hours.

For students who have undertaken prior graduate study, up to 9 hours of relevant graduate-level coursework may be transferred to meet the course requirements for the MS degree, following the rules established by the Graduate School for transfer credit.

Degree Plans

Requirements for the Master of Science in environmental engineering can be fulfilled in two ways.

Plan I: Thesis Option
In addition to 24 credit hours of coursework, candidates complete 4–6 credit hours of thesis credit with a sum of course and thesis credit of at least 30 hours. Additionally, the successful completion and defense of an MS thesis is required.

Plan II: Non-Thesis Option
In addition to 24 credit hours of coursework, candidates complete an additional 6 credit hours of elective courses or independent study.

Course Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Required Common Core</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>CVEN 5464</td>
<td>Environmental Engineering Processes</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 5404</td>
<td>Water Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>or CHEM 5151</td>
<td>Atmospheric Chemistry</td>
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</table>

Emphasis Area

See list below

Electives

Elective courses will be determined in consultation with the student's faculty advisor.

Environmental Engineering Graduate Seminar

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Two semesters of Environmental Engineering graduate seminar, a non-credit seminar requiring attendance at 2/3 of the seminars each semester for satisfactory completion.

Plan I: Thesis Option

Thesis Credits

Plan II: Non-Thesis Option

Additional elective or independent study credits

Requirements for Recommended Emphasis Areas

<table>
<thead>
<tr>
<th>Code</th>
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</table>

Emphasis in General Environmental Engineering

<table>
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<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 5484</td>
<td>Applied Microbiology and Toxicology</td>
<td>12</td>
</tr>
</tbody>
</table>

Select 3 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CVEN 5524</td>
<td>Drinking Water Treatment</td>
</tr>
<tr>
<td>CVEN 5534</td>
<td>Wastewater Treatment</td>
</tr>
<tr>
<td>CVEN 5474</td>
<td>Hazardous and Industrial Waste Management</td>
</tr>
</tbody>
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<tr>
<td>CVEN 5554</td>
<td>Fundamentals of Air Quality Management</td>
</tr>
<tr>
<td>MCEN 5131</td>
<td>Air Pollution Control Engineering</td>
</tr>
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<td>CVEN 5537</td>
<td>Numerical Methods in Civil Engineering</td>
</tr>
<tr>
<td>CVEN 5454</td>
<td>Statistical Methods for Natural and Engineered Systems</td>
</tr>
</tbody>
</table>

Emphasis in Drinking Water, Wastewater and Water Reuse Treatment

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</thead>
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<td>Applied Microbiology and Toxicology</td>
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Emphasis in Natural Waters

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<tbody>
<tr>
<td>CVEN 5424</td>
<td>Environmental Organic Chemistry</td>
<td>15</td>
</tr>
<tr>
<td>CVEN 5353</td>
<td>Groundwater Hydrology</td>
<td></td>
</tr>
<tr>
<td>CVEN 5333</td>
<td>Physical Hydrology</td>
<td></td>
</tr>
<tr>
<td>CVEN 5323</td>
<td>Applied Stream Ecology</td>
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Emphasis in Global Engineering

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<tbody>
<tr>
<td>CVEN 5484</td>
<td>Applied Microbiology and Toxicology</td>
<td>18</td>
</tr>
<tr>
<td>CVEN 5919</td>
<td>Sustainable Community Development 1</td>
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</tr>
<tr>
<td>CVEN 5939</td>
<td>Sustainable Community Development Field Practicum</td>
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</tr>
<tr>
<td>CVEN 5969</td>
<td>Water, Sanitation, and Hygiene</td>
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**Emphasis in Air Quality** 12

Select 3 credits from the following:
- MCEN 5131 Air Pollution Control Engineering
- CVEN 5554 Fundamentals of Air Quality Management

Select 3 credits from the following:
- MCEN 5021 Introduction to Fluid Dynamics
- CVEN 5313 Environmental Fluid Mechanics

Select 3 credits from the following:
- MCEN 5141 Indoor Air Pollution
- MCEN 5161 Aerosols
- CVEN 5484 Applied Microbiology and Toxicology

**Emphasis in Environmental Change Adaptation Engineering** 12

Select 3 credits from the following:
- CVEN 5565 Life-Cycle Engineering of Civil Infrastructure Systems
- CVEN 5484 Applied Microbiology and Toxicology
- CVEN 5323 Applied Stream Ecology

Select 3 credits from the following:
- CVEN 5353 Groundwater Hydrology
- CVEN 5333 Physical Hydrology
- GEOG 5321 Snow Hydrology

Select 3 credits from the following:
- CVEN 5373 Water Law, Policy, and Institutions
- ENVS 5000 Policy, Science, and the Environment
- MCEN 5228 Special Topics in Mechanical Engineering
- ATOC 5000 Critical Issues in Climate and the Environment

Find course options on the Mortenson Center (https://www.colorado.edu/center/mortenson/education/mortenson-center-courses) website.