CIVIL ENGINEERING - PROFESSIONAL MASTER OF SCIENCE (MSCVE)

The Department of Civil, Environmental and Architectural Engineering offers a professional master’s degree tailored toward working engineers who desire to develop a new skill set. The programs are coursework based and result in a Master of Science degree.

Areas of Emphasis
Water Engineering and Management Emphasis
CU Boulder’s professional Master of Science degree in civil engineering, with an emphasis in water engineering and management (WE&M), combines technical courses in environmental and civil engineering with highly-valued professional, non-technical skills in communication, leadership, management, utility finance and governance. The water engineering and management program provides students with leadership skills so they can effectively manage teams and initiatives typically faced in the water profession.

The water engineering and management professional master’s program (PMP), designed for working professionals, provides the tools you need to produce results and solve increasingly complex problems in the water profession. Courses are delivered on campus and live streamed/recorded options over the internet, allowing working professionals from around the world to earn a graduate MS degree while continuing to put the learning into practice in their work.

Students are young and mid-career professionals working for utilities, consulting firms, government and regulatory agencies, looking to advance their careers in the water industry. With faculty of senior water professionals from across the country, including those from utilities, consulting firms, and global professional organizations, students gain an opportunity to network and learn through real work case studies.

All of the graduate courses are available to distance and on campus students. All the students can come to class, watch the live classes over Zoom and/or the recorded Zoom classes.

The WE&M courses are available for a WE&M graduate certificate (https://www.colorado.edu/ceae/water-engineering-management-certificate/) or as a Professional MS degree (https://www.colorado.edu/ceae/water-engineering-management-professional-masters-program/).

Degree Options
The PMP program has three plans. Plan I includes a written thesis, with reduced course work. Plans Ila and Iib focus on coursework, with an option of including up to 2 semesters of independent study for a report. A vast majority of PMP students use plans Ila and Iib.

- **Plan I (Thesis Options):** This plan requires 24 hours of course credits and 6 hours of thesis credits. This is pursued under the direct supervision of a research advisor, and student must formally defend the thesis.
- **Plan Ila (Coursework Option):** This plan requires 30 credits. Thirty credits can be obtained with 10, 3 hour-credit courses. This plan has a wider variety of coursework.
- **Plan Iib (Report Option):** This plan requires 30 credits, but up to 6 hours of independent study may be included towards to 30-credit requirement. The independent study requires a report completed under the guidance of a faculty member.

For more information, visit the department's Water Engineering and Management (https://www.colorado.edu/ceae/research/interdisciplinary-programs/water-engineering-management/) webpage.

Global Engineering Emphasis
The Master of Science degree in civil engineering, with an emphasis in global engineering is a unique program offered by the Mortenson Center at CU Boulder. This degree is a professional track of the MS program in civil engineering. It is designed to offer students exposure to a breadth of knowledge in relevant areas such as global health, development economics and impact evaluation, while also building technical skills and providing the opportunity for further study in a specific area of interest within global engineering. In addition to classroom-based learning, students are required to complete a field practicum, embedded for six weeks to six months with a global development organization. These practicum placements have taken place in over 50 countries, partnering with over 80 organizations. Learn more about our practicum partnerships on the Mortenson Center (https://www.colorado.edu/center/mortenson/education/practicum-placements/) website.

Our graduates are able to provide technical expertise to development agencies or other firms by recognizing the many facets of community development that are critical to sustainable solutions. Students gain skills in data analysis, project management and systems thinking so they can help create and implement solutions to address worldwide needs.

For more information, visit the Mortenson Center in Global Engineering (https://www.colorado.edu/center/mortenson/) webpage.

Distance Education Option
Students can take individual courses toward a master’s degree or graduate certificate through distance education (online). For more information, connect with the individual graduate program directly.

Requirements
Course Requirements
The following course requirements are subject to change; for the most current information, visit the department’s Water Engineering & Management webpage or the Mortenson Center in Global Engineering (https://www.colorado.edu/center/mortenson/) webpage.

The professional master’s degree requires a total of 30 credit hours, at least 24 of which must be completed at the 5000 level or above. At least 18 credit hours must be from coursework in CVEN.

Time Limit
All degree requirements must be completed within four years of the date of commencing coursework.

Areas of Emphasis
Water Engineering & Management Emphasis
This emphasis requires at least 30 credit hours from the following categories.
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<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>CVEN 5484</td>
<td>Applied Microbiology and Toxicology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Choose one:</td>
<td></td>
</tr>
<tr>
<td>CVEN 5524</td>
<td>Drinking Water Treatment</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 5534</td>
<td>Wastewater Treatment</td>
<td></td>
</tr>
<tr>
<td>CVEN 5474</td>
<td>Hazardous and Industrial Waste Management</td>
<td></td>
</tr>
</tbody>
</table>

**Water Engineering & Management Core Courses**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 5564</td>
<td>Water Profession: Communication and Utility Finance</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 5574</td>
<td>Water Utility Management: Current Issues and Future Challenges</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 5584</td>
<td>Water Profession: Leadership and Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**Electives & Master's Report and Seminar Courses**

Choose from the following for a total of 9 credits:

- Civil engineering electives (3-9 credits)
- Public affairs electives at CU Denver (0-3 credits)
- Master's Report and Seminar (2 credits)
- Additional courses to fulfill 30-credit minimum, if necessary.

**Total Credit Hours**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 5919</td>
<td>Global Development for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 5939</td>
<td>Global Development Practicum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Global Engineering Series**

MCGE offers courses as series of 5-week modules, with each module worth one credit-hour. In the Professional Master's in Global Engineering, students are required to complete 12 credit-hours from the series:

- Principles
- Project Management
- Field Methods
- Water, Sanitation and Hygiene (WASH)
- Humanitarian Aid
- Household Energy

**Option Area**

Students work with their faculty advisor to determine which courses to take in order to fulfill the remaining 12 required credit-hours.

- Energy
- Environmental Health
- Construction

**Total Credit Hours**

- 30

1 Global Engineering Series course options can be found on the Mortenson Center (https://www.colorado.edu/center/mortenson/graduate-education/professional-masters-degrees/) website.