Environmental Engineering

**Freshman Year**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1371 Calculus I (placement into course or pre-req)</td>
<td>Math 1372 Calculus II (1371)</td>
</tr>
<tr>
<td>Phys 1301W Intro Physics I (&amp;Math 1371)</td>
<td>Phys 1302W Intro Physics II (1301, &amp;Math 1372)</td>
</tr>
<tr>
<td>Chem 1061/65 Chem Princ I (placement into course, or 1015)</td>
<td>Chem 1062/66 Chem Princ II (1061/65)</td>
</tr>
<tr>
<td>Liberal Education course or Writ 1301</td>
<td>Biol 1001 or 1009 (or Writ 1301)</td>
</tr>
<tr>
<td>CSE 1001: 1st Yr Experience</td>
<td>1</td>
</tr>
</tbody>
</table>

**Sophomore Year**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>AEM 2011 Statics (CSE, Phys 1301, &amp;Math 2374)</td>
<td>AEM 3031 Def Body Mech (CSE, 2011 or 2021, 2374, &amp;Math2373)</td>
</tr>
<tr>
<td>Chem 2301 Organic Chem (1062/66)</td>
<td>CEGE 3101 Comp App I (CSE, Phys 1301, Math 1372)</td>
</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course</td>
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**Junior Year**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>CEGE 3102 Uncert/Dec Analy (Math 1372)</td>
<td>CEGE 3301 Soil Mech I (CSE, 3101, AEM 3031)</td>
</tr>
<tr>
<td>CEGE 3541 Environ Eng Lab (3501)</td>
<td>CEGE 4501 Hydrologic Des (3102, 3502)</td>
</tr>
<tr>
<td>CEGE 3502 Fluid Mechanics (CSE, 3101, AEM 3031, Math 2373)</td>
<td>Selected Elective**</td>
</tr>
<tr>
<td>CEGE 4502 Water/Waste Trt (3501, or Chem 2001)</td>
<td>Selected Elective**</td>
</tr>
<tr>
<td>Earth Sciences course</td>
<td>Liberal Education course</td>
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</tbody>
</table>

**Senior Year**

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEGE 3402W CE Materials (CSE, AEM 3031, or BBE 3001)</td>
<td>CEGE 4102W Capstone Des (4501, 4502, final semester)</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>Technical Elective</td>
</tr>
<tr>
<td>Technical Elective</td>
<td>Technical Elective</td>
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<tr>
<td>Selected Elective**</td>
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<tr>
<td>Selected Elective**</td>
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</tr>
<tr>
<td>Liberal Education course</td>
<td>Liberal Education course</td>
</tr>
</tbody>
</table>

**About This Plan**

- This plan is not a contract. Curriculum can change.
- Prior to fall 2015, CEGE courses were listed with a CE designator.
- Shaded courses are only offered in the indicated semester.
- Course pre-requisites and co-requisites (designated by & are listed below the course number and title.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).
- AEM 2021 can substitute for AEM 2011
- Double boxed courses are required for application to this major.
- Chemical Principles labs (1065/1066) must be taken concurrently with the lectures (1061/1062).
- Liberal Education and Writing requirements with an (*) will be fulfilled by taking courses required for this major at UM-TC.
- Selected electives (**) must be chosen from an approved department list

**Applying to your Major**

Students who have completed the required courses for admission to this major and have a 3.2 UM-TC technical GPA at the end of the fall semester will be guaranteed admission. All other students who have completed the required courses will be considered for admission on a space-available basis. Admission following the spring semester is only based on space availability. The major application database is available at z.umn.edu/csemajorapp.

**University Degree Requirements**

All students must complete the following Writing & Liberal Education requirements, as noted on their APAS report. See link for full Core & Theme names: z.umn.edu/liberaleducation

**Writing Requirements:**
- University Writing: Writ 1301/1401 or equivalent
- Writing Intensive (W1):
  - Two: 1xxx or 2xxx level &
  - One: 3/4/5xxx level (in major)*
  - One: 3/4/5xxx level (any dept.)*

**Total Credits Needed for Degree:** 125
What can I do with a major in environmental engineering?

Environmental Engineers design and apply technologies to resolve issues of environmental concern. They design systems that produce safe drinking water, treat wastewater so that it can be reused and/or safely returned to the environment, accommodate municipal and hazardous waste, mitigate air pollution, and protect public health. They use engineering and ecological principles to protect and enhance our natural environment including: erosion and sediment control, pollution abatement, watershed management, impaired-waters diagnostics, and wetland and ecological restoration. Environmental engineers pursue a wide range of exciting careers in the private sector, government, and academia.

**Employers (sample listing)**
- Black and Veatch
- 3M
- SRF Consulting
- Howard R. Green
- URS Corporation
- MN Dept. of Transportation
- Geosyntec
- Barr Engineering
- Metropolitan Council
- United Water Works Company
- SHE Engineering
- Environmental Protection Agency
- Arcadis
- TKDA
- CH2M Hill
- AMEC
- Brown and Caldwell
- US Geological Survey
- St. Paul Regional Water Services
- Corollo Engineers
- AECOM

**Industries (sample listing)**
- Hydrology and Hydraulic Engineering
- Transportation
- Public Health Agencies
- State and Local Government Pollution Control
- Urban Planning and Development
- Chemical Companies
- Industrial Hygiene
- Solid/Hazardous Waste Management Consulting
- Research Firms/Labs
- Sustainable Development
- Public Works
- Community Development
- Water Quality/Treatment
- Construction/Building
- Mining and Manufacturing

**Positions (sample listing)**

**Air Quality Engineer:** Inspects, analyzes, and quantifies levels of pollution and their environmental impact. Designs and assesses the effectiveness of environmental regulatory programs to manage health risks to the environment.

**Environmental Analyst:** Collects, studies and analyzes data to propose actions and policies to create less harmful and cleaner interactions with the environment.

**Environmental Engineer:** Designs and supervises systems that prevent and control pollution.

**Environmental Health Research Scientist:** Conducts research for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or the health of the population.

**Energy Engineer:** Designs and evaluates projects and programs to reduce energy costs or improve energy efficiency during the design, building, or remodeling stages of construction.

**Hydraulic Engineer:** Designs and directs construction of power and other hydraulic engineering projects for control and use of water.

**Wastewater Engineer:** Improves both our environment and our economy by helping communities and businesses dispose of waste without polluting natural water sources.

*Some positions may require an advanced degree*