# Environmental Engineering

## Freshman Year

### Fall Semester
- Math 1371 Calculus I (placement into course or pre-req)
- Phys 1301W Intro Physics I (CSE, 1331, &Math 1371)
- Chem 1065 Chem Princ I Lab (if 1061)
- Chem 1061 Chem Princ I (placement into course or 1015, &1065)
- CSE 1001 1st Yr Experience
- Liberal Education course or Writ 1301

### Spring Semester
- Math 1372 Calculus II (1371)
- Phys 1302W Intro Physics II (1301, &Math 1372)
- Chem 1066 Chem Princ II Lab (1061/65, &1062)
- Chem 1062 Chem Princ II (1064/66, &1066)
- Liberal Education course or Writ 1301 (recommend Biol 1001 or 1009)

### Sophomore Year

### Fall Semester
- Math 2374 Multivariable Calc (1372)
- AEM 2101 Statics (CSE, Phys 1301, &Math 2374)
- Chem 2301 Organic Chem (1062/66)
- CEGE 3501 Environ Engrg (Chem 1062/66, Phys 1302)
- Liberal Education course

### Spring Semester
- Math 2373 Lin Alg/Diff Eq (1372)
- AEM 3031 Deform Body Mech (CSE, 2011, Math 2374, &Math 2373)
- Chem 4501 Intro to Thermo (1062/66, Phys 1302, &Math 2374)
- CEGE 3101 Comp App I (CSE, Phys 1301, Math 1372)
- Liberal Education course

### Junior Year

### Fall Semester
- CEGE 3541 Environ Eng Lab (3501)
- CEGE 3102 Uncert & Dec Analysis (Math 1372)
- CEGE 3502 Fluid Mechanics (CSE, 3101, AEM 3031, Math 2374)
- CEGE 4502 Water/Waste Trt (3501, or ChEn 2001)
- Earth Sciences course

### Spring Semester
- CEGE 3301 Soil Mech I (CSE, 3101, AEM 3031)
- CEGE 4501 Hydrologic Des (3102, 3502)
- CEGE 4101W Proj Mgmt & Engrg Econ+ (UD)
- CEGE 3103 Ethics & Prof Prac+ (UD)
- Liberal Education course

### Senior Year

### Fall Semester
- CEGE 3402W CE Materials (CSE, AEM 3031)
- Engrg Science & Design course
- Env Science & Policy course
- Technical Elective
- Liberal Education course

### Spring Semester
- CEGE 4103W Capstone Des (4101W, 4501, 4502, final semester)
- Engrg Science & Design course
- Technical Elective
- Technical Elective

## About This Plan
- This plan is not a contract. Curriculum can change. The APAS is the official method for tracking completion of University degree requirements. 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. Upper Division (UD) requires admission to the major prior to enrollment.
- Students can take either the CSE-only or University-wide versions of the math course (Math 1371/1271, 1372/1272, 2373/2243, 2374/2263).

## Applying to your Major

Students who have completed the required courses for admission to this major (indicated with double boxes on plan) 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.

## Total Credits Needed for Degree: 125

## Department Contact Information
- Website: http://z.umn.edu/cegeundergradhandbook
- Main Phone: 612-625-5522
- Main Office: 122 Civil Engineering Building
- Director of Undergraduate Studies: Professor Timothy LaPara
- Email: lapar001@umn.edu

## 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 (WI):
  - Two: 1xxx or 2xxx level
  - One: 3/4/5xxx level (in major)*
  - One: 3/4/5xxx level (any dept.)*

### Liberal Education

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*Not required for students admitted prior to Fall 2017, recommend as Tech Elective.
What can I do with a major in...
Environmental Engineering?

ACTIVITIES ENVIRONMENTAL ENGINEERING MAJORS DO:
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 the 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 careers in the private sector, government, and academia.

INDUSTRIES ENVIRONMENTAL ENGINEERING MAJORS WORK IN (SAMPLE LISTING):

| Hydrology and hydraulic engineering | Transportation | Public health agencies | State and local government |
| Pollution control                   | Environmental law | Urban planning and development | Chemical companies |
| Solid/hazardous waste management   | Industrial hygiene | Consulting | Research firms/labs |
| Sustainable development            | Public works | Community development | Water quality/treatment |
| Construction/building              | Mining and manufacturing | |

EMPLOYERS WHO HIRE ENVIRONMENTAL ENGINEERING MAJORS (SAMPLE LISTING):

Black & Veatch | U.S. Geological Survey | SRF Consulting | AECOM |
Howard R. Green | URS Corporation | MN Dept. of Transportation | AMEC |
Geosyntec | Barr Engineering | Metropolitan Counsel | 3M |
United Water Works Company | SEH Engineering | Environmental Protection Agency | TKDA |
St. Paul Regional Water Services | Brown and Caldwell | Arcadis | CH2M Hill |
Corollo Engineers | Koch Industries | WSB & Associates | Xcel Energy |

TYPES OF POSITIONS FOR ENVIRONMENTAL ENGINEERING MAJORS (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.
- **Attorney**: Uses knowledge of the law to advocate on behalf of a client. Engineering students are well-prepared to attend law school; environmental engineering students are particularly well-positioned for careers in environmental law.
- **Environmental engineering consultant**: Offers expert advice to local, state, and federal government agencies and private sector clients who need to adopt environmentally sound practices or clean up contaminated sites.
- **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 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.
- **Water resource engineer**: Determines areas prone to flooding, restores ecological function to streams and rivers, develops methods to handle and treat urban runoff, redirects water by constructing hydraulic structures to benefit residents and businesses in a community.
- **Hydrologist**: Studies the distribution, movement, and quality of underground and surface water. Hydrologists are involved in the design of irrigation systems, waste treatment plants, hydroelectric power plants, flood warning systems, and stream restoration.

**Some positions may require an advanced degree.**