Twin Cities Campus

Geoengineering M.S.

CSENG Civil, Envrn & Geo-Eng (CEGE)

College of Science and Engineering

Link to a list of faculty for this program.

Contact Information:
Department of Civil, Environmental, and Geo-Engineering, University of Minnesota, 122 Civil Engineering Building, 500 Pillsbury Drive S.E., Minneapolis, MN 55455 (612-625-5522; fax: 612-626-7750)
Email: cegesps@umn.edu
Website: http://www.cege.umn.edu

- Program Type: Master's
- Requirements for this program are current for Spring 2019
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Emphases are in fundamental aspects of geomechanics and its applications. Research focuses on the use and development of discrete and continuum theories such as elasticity, plasticity, fracture mechanics, and poroelasticity for solving engineering problems. Numerical methods are being developed for obtaining solutions; experimental methods and novel apparatus are being developed for gathering physical evidence. Applications include processes of communication, flow of granular materials, hydraulic fracturing, and nondestructive testing.

The master of science (MS) degree balances education in engineering fundamentals and design with research and development. It is designed for students wishing to pursue a career in industry or to continue toward a PhD.

Students interested in pursuing doctoral studies should see the PhD program in civil engineering.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

A bachelor's degree in engineering, basic science, or mathematics is preferred.

Other requirements to be completed before admission:
Admission depends primarily on the applicant's academic record and letters of recommendation. Applicants who lack geoengineering training are often required to complete at least one appropriate course from the undergraduate program. Graduate degree credit is not awarded for such preparatory work.

Special Application Requirements:
The application deadlines are December 3 for fall admission and August 31 for spring admission. All materials must be submitted to the online application. Additional information is available at http://www.cege.umn.edu/prospective/graduate/how-to-apply.html

Applicants must submit their test score(s) from the following:

- GRE

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 79
  - Internet Based - Writing Score: 21
  - Internet Based - Reading Score: 19
- IELTS

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- Total Score: 6.5
- MELAB
  - Final score: 80

Key to test abbreviations(GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan A: Plan A requires 20 major credits, up to null credits outside the major, and 10 thesis credits.The final exam is oral.

Plan B: Plan B requires 30 major credits and up to null credits outside the major.The final exam is oral.

Plan C: Plan C requires 30 major credits and up to null credits outside the major.The is no final exam.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

The MS requires at least 30 credits and is offered under three plans. Plan A emphasizes research and preparation of a thesis; Plan B emphasizes coursework and a project; Plan C is coursework only. The Plan A thesis is written on a research project carried out in consultation with a faculty advisor. Under Plan B, students complete one to three Plan B papers as determined by the faculty advisor. Plan B papers can include computer programs, annotated bibliographies, field investigations, and analysis/design of special engineering problems. A program typically takes 18 to 24 months to complete.

Required Courses

Any courses at the 5xxx and 8xxx level from the following programs may be used: AEM, AST, BBE, BMEN, CEGE, CHEM, CHEN, CSCI, EE, ESCI, IE, MATH, MATS, ME, PHYS, STAT. Use of 4xxx level courses must be approved by the director of graduate studies and a maximum of 9 credits may be included. The following 4xxx courses may not be used: CEGE 4121, 4311, 4501, and 4522. Six credits in a minor may be included in the course credit total.

Seminar

Students may include one seminar credit in the course credit total

CEGE 8300 - Seminar: Geomechanics (1.0 cr)

Plan A

Plan A requires a minimum of 20 course credits and 10 thesis credits.

CEGE 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

Plan B

Plan B requires a minimum of 30 credits, which includes at least 27 course credits and a maximum of 3 credits of CEGE 8094 for the Plan B project.

CEGE 8094 - Directed Research (1.0 - 4.0 cr)

Plan C

Plan C requires 30 course credits and must include at least two courses at the 8xxx level. Students must also complete 100 hours of project work, give an oral presentation of no less than 10 minutes, and complete two hours of ethics training.

Program Sub-plans

A sub-plan is not required for this program.
Students may not complete the program with more than one sub-plan.

Integrated B.GeoE./M.S. - Geoengineering

The department offers an integrated Bachelor of Geoengineering (B.GeoE.) and master of science (MS) in geoengineering. The integrated B.GeoE./MS program offers students the opportunity to earn the bachelors and masters degree in five years. These programs offer several benefits: streamlined admissions from the undergraduate to the graduate program (GRE not required); flexibility in fulfilling required courses for both degrees during the senior year (up to 16 credits can be transferred to the graduate program); and eligibility for teaching and research assistantships.

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Both the B.GeoE. and MS degrees must be completed in their entirety, with no courses shared between them. The graduate degree cannot be earned before the undergraduate requirements are satisfied. Admitted students who decide not to complete the MS degree are permitted to count credits originally planned for the graduate program toward their B.GeoE. technical electives.

Eligibility Requirements

Application to the combined program is open to geoengineering undergraduates who:

Are within 32 credits of completing the requirements for the bachelors degree;
Have a faculty advisor selected prior to admission; and
Hold a cumulative GPA of 3.3 or higher.

Integrated B.C.E./M.S. - Geoengineering

The department offers an integrated bachelor of civil engineering (B.C.E) and master of science (MS) in geoengineering. Benefits, eligibility requirements, and degree-completion requirements outlined for the B.GeoE./MS integrated program also apply to the B.C.E./MS.

Integrated B.Env.E./M.S. - Geoengineering

The department offers an integrated bachelor of environmental engineering (B.Env.E.) and master of science (MS) in geoengineering. Benefits, eligibility requirements, and degree-completion requirements outlined for the B.GeoE./MS integrated program also apply to the B.Env.E./MS.

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