



Duluth Campus

Geological Sciences M.S.

D Earth & Environmental Sci

Swenson College of Science and Engineering

Link to a [list of faculty](#) for this program.

Contact Information:

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- Program Type: Master's
- Requirements for this program are current for Spring 2018
- Length of program in credits: 31
- 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.

The master of science program in geological sciences includes areas of economic geology, geophysics, glacial geology and geomorphology, hydrogeology, igneous and metamorphic petrology, isotope and aqueous geochemistry, limnogeology, paleoclimatology, planetary geology, sedimentology and stratigraphy, surface processes, and structure-tectonics. Several of these areas are strengthened by collaboration with the Large Lakes Observatory, the Natural Resources Research Institute, and the Precambrian Research Center.

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 four-year BS degree in geology or a related field in engineering, basic science, or mathematics is required.

Other requirements to be completed before admission:

Most candidates will have completed a bachelor's degree in geology, geophysics, or a related field. However, students with degrees in fields such as chemistry, physics, or biology are encouraged to apply. At least one year of study in calculus, chemistry, and physics is required. Field camp and/or undergraduate research experience is recommended.

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
 - Paper Based - Total Score: 550
- IELTS
 - Total Score: 6.5
- MELAB
 - Final score: 80

The preferred English language test is Test of English as Foreign Language

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 15 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 31 major credits and up to null credits outside the major. The final exam is written.

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.

At least 1 semesters must be completed before filing a Degree Program Form.

The master of science degree is offered under Plan A (thesis) and Plan B (non-thesis). Courses are selected with approval of the student's advisor and the director of graduate studies. All courses must be at the 4xxx, 5xxx, or 8xxx level, however no more than 9 credits at the 4xxx level may apply.

For Plan A, a candidacy exam that involves the oral defense of a written thesis research proposal during the second semester of residency is required.

For Plan B, a written candidacy exam during the second semester is required. Plan B including three Plan B papers.

Plan A or Plan B

Plan A

[EES 8200](#) - Professional Issues in Earth and Environmental Science (1.0 cr)

[EES 8777](#) - Thesis Credit: Master's (1.0 - 10.0 cr)

Required GEOL coursework

No more than 9 credits of 4xxx level courses may be accepted.

Take 14 or more credit(s) from the following:

- [EES 4355](#) - Economic Geology (4.0 cr)
- [EES 4360](#) *{Inactive}* (4.0 cr)
- [EES 4400](#) - Astrogeology (3.0 cr)
- [EES 4450](#) - Structural Geology (4.0 cr)
- [EES 4500](#) - Field Geology (6.0 cr)
- [EES 4710](#) - Geochemistry (4.0 cr)
- [EES 4839](#) - Coral Reef Geology [GLOBAL PER] (3.0 cr)
- [EES 5091](#) - Independent Study in Earth & Environmental Science (1.0 - 2.0 cr)
- [EES 5095](#) - Earth & Environmental Special Topics (Various Titles to be Assigned) (1.0 - 3.0 cr)
- [EES 5100](#) - Seminar (1.0 - 2.0 cr)
- [EES 5103](#) - Geological Paleolimnology (3.0 cr)
- [EES 5210](#) - Glacial and Quaternary Geology (4.0 cr)
- [EES 5220](#) *{Inactive}* (3.0 cr)
- [GEOL 5240](#) *{Inactive}* (4.0 cr)
- [EES 5250](#) - Hydrogeology (4.0 cr)
- [EES 5251](#) - Well Hydraulics (3.0 cr)
- [EES 5260](#) - Fluvial Geomorphology (3.0 cr)
- [EES 5310](#) - Advanced Petrology (3.0 cr)
- [GEOL 5320](#) *{Inactive}* (3.0 cr)
- [EES 5321](#) - Theory, Practice of Scanning Electron Microscopy and X-Ray Microanalysis in Lectures (3.0 cr)
- [GEOL 5330](#) *{Inactive}* (3.0 cr)
- [EES 5355](#) - Economic Geology (4.0 cr)
- [EES 5360](#) *{Inactive}* (4.0 cr)
- [GEOL 5450](#) *{Inactive}* (3.0 cr)
- [EES 5460](#) - Tectonics (3.0 cr)
- [EES 5601](#) - Introduction to Stream Restoration (3.0 cr)
- [EES 5730](#) - Geochronology (3.0 cr)
- [EES 5815](#) *{Inactive}* (4.0 cr)
- [EES 5820](#) - Global Geophysics (3.0 cr)
- [EES 8094](#) - Research in Earth & Environmental Science (1.0 - 6.0 cr)
- [GEOL 8100](#) *{Inactive}* (1.0 - 2.0 cr)
- [EES 8200](#) - Professional Issues in Earth and Environmental Science (1.0 cr)
- [EES 8602](#) - Stream Restoration Practice (2.0 cr)



Related Field

In order to reach the minimum 31 credits, course(s) may be from GEOL coursework or another related field.

or Plan B

No more than 9 credits of 4xxx level courses may be accepted.

Required GEOL Coursework

Take 31 or more credit(s) from the following:

- EES 4355 - Economic Geology (4.0 cr)
- EES 4360 *{Inactive}*(4.0 cr)
- EES 4400 - Astrogeology (3.0 cr)
- EES 4450 - Structural Geology (4.0 cr)
- EES 4500 - Field Geology (6.0 cr)
- EES 4710 - Geochemistry (4.0 cr)
- EES 4839 - Coral Reef Geology [GLOBAL PER] (3.0 cr)
- EES 5091 - Independent Study in Earth & Environmental Science (1.0 - 2.0 cr)
- EES 5095 - Earth & Environmental Special Topics (Various Titles to be Assigned) (1.0 - 3.0 cr)
- EES 5100 - Seminar (1.0 - 2.0 cr)
- EES 5103 - Geological Paleolimnology (3.0 cr)
- EES 5210 - Glacial and Quaternary Geology (4.0 cr)
- EES 5220 *{Inactive}*(3.0 cr)
- GEOL 5240 *{Inactive}*(4.0 cr)
- EES 5250 - Hydrogeology (4.0 cr)
- EES 5251 - Well Hydraulics (3.0 cr)
- EES 5260 - Fluvial Geomorphology (3.0 cr)
- EES 5310 - Advanced Petrology (3.0 cr)
- GEOL 5320 *{Inactive}*(3.0 cr)
- EES 5321 - Theory, Practice of Scanning Electron Microscopy and X-Ray Microanalysis in Lectures (3.0 cr)
- GEOL 5330 *{Inactive}*(3.0 cr)
- EES 5355 - Economic Geology (4.0 cr)
- EES 5360 *{Inactive}*(4.0 cr)
- GEOL 5450 *{Inactive}*(3.0 cr)
- EES 5460 - Tectonics (3.0 cr)
- EES 5601 - Introduction to Stream Restoration (3.0 cr)
- EES 5730 - Geochronology (3.0 cr)
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- EES 8200 - Professional Issues in Earth and Environmental Science (1.0 cr)
- EES 8602 - Stream Restoration Practice (2.0 cr)