Duluth Campus

Geological Sciences B.S.

D Earth & Environmental Sci

Swenson College of Science and Engineering

- Program Type: Baccalaureate
- Requirements for this program are current for Fall 2012
- Required credits to graduate with this degree: 120
- Required credits within the major: 79 to 103
- This program requires summer terms.
- Degree: Bachelor of Science

The study of geology provides ways of understanding and appreciating dynamic earth processes, our physical environment, and our place in the long and complex history of the planet and solar system. It is by nature interdisciplinary and attracts students with broad interest in earth science, archaeology, astronomy, biology, chemistry, engineering, environmental science, applied mathematics, oceanography, limnology and/or physics. The B.S. degree in geological sciences can lead to rewarding careers in industry, government, conservation, law, business, and academia.

Geology requires a solid base of knowledge in related sciences (chemistry and physics) and mathematics, as well as a solid core of geology courses. A summer course in field mapping is also required.

The B.S. degree with the exploration and mining track is designed for students interested in a career in the exploration and mining industries. The track includes a solid core of geoscience courses with a focus on courses related to exploration and mining geology. A summer course in field mapping is also required.

Honors Requirements: To attain department honors, students must undertake an independent research project and maintain a cumulative overall GPA of 3.00. The research can be part of a UROP, directed research, independent study, or an internship with a faculty member. Students must either make a brief oral presentation to the department summarizing their results and produce a research paper (minimum 10 pages) OR give an oral or poster presentation of their research results at a regional or national meeting (e.g., GSA, AGU, ILSG, or similar campus event).

Program Delivery

This program is available:

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

Admission Requirements

For information about University of Minnesota admission requirements, visit the Office of Admissions website.

General Requirements

The Board of Regents, on recommendation of the faculty, grants degrees from the University of Minnesota. Requirements for an undergraduate degree from University of Minnesota Duluth include the following:

1. Students must meet all course and credit requirements of the departments and colleges or schools in which they are enrolled including an advanced writing course. Students seeking two degrees must fulfill the requirements of both degrees. However, two degrees cannot be awarded for the same major.
2. Students must complete all requirements of the Liberal Education Program.
3. Students must complete a minimum of 120 semester credits.
4. At least 30 of the last 60 degree credits earned immediately before graduation must be awarded by UMD.
5. Students must complete at least half of their courses at the 3xxx-level and higher at UMD. Study-abroad credits earned through courses taught by UM faculty and at institutions with which UMD has international exchange programs may be used to fulfill this requirement.
6. If a minor is required, students must take at least three upper division credits in their minor field from UMD.
7. The minimum cumulative UM GPA required for graduation will be 2.00 and will include only University of Minnesota coursework. A minimum UM GPA of 2.00 is required in each UMD undergraduate major and minor. No academic unit may impose higher grade point standards to graduate.
8. Diploma, transcripts, and certification will be withheld until all financial obligations to the University have been met.

Program Requirements

Requirements for the B.S. in geological sciences include:

* Minor or double major.

Geology Core Courses (42-43 cr)

EES 2110 - Reconstructing Earth's Climate History (4.0 cr)
EES 2120 - The Earth's Dynamic Interior (3.0 cr)
EES 2311 - Mineralogy (4.0 cr)
EES 2312 - Petrology (4.0 cr)
EES 3210 *{Inactive}*(4.0 cr)
EES 3420 - Sedimentology and Stratigraphy (4.0 cr)
GEOL 3800 *{Inactive}*(4.0 cr)
EES 4450 - Structural Geology (4.0 cr)
EES 4500 - Field Geology (6.0 cr)
EES 1110 - Geology and Earth Systems [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
or EES 1130 - Introduction to Environmental Science [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
or EES 1610 - Oceanography [LE CAT, NAT SCI, SUSTAIN] (3.0 cr)
or GEOG 1414 - The Physical Geography [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)

Advanced Electives (4-9 cr)

With the exception of GEOL 4110, take 4-9 credits of electives as listed below. GEOG 3563 and 3564 (6 credit total) may be substituted for 4 credits of advanced electives. Six credits of limnology courses may be substituted for advanced electives.

Students pursuing the exploration and mining track are required to take 4 credits, all other students are required to take 9 credits.
Take 4 or more credit(s) from the following:
•AST 4110 - Observational Astronomy (3.0 cr)
•GEOL 3xxx
•GEOL 4xxx
•GEOL 5xxx

Courses Required From Other Programs (33 cr)

WRIT 3150 - Advanced Writing: Science (3.0 cr)
Math requirement
MATH 1290 - Calculus for the Natural Sciences [LE CAT2, LOGIC & QR] (5.0 cr)
or MATH 1296 - Calculus I [LE CAT, LOGIC & QR] (5.0 cr)
MATH 1297 - Calculus II [LOGIC & QR] (5.0 cr)
Physics requirement
PHYS 1001 - Introduction to Physics I [LE CAT, NAT SCI] (5.0 cr)
PHYS 1002 - Introduction to Physics II (5.0 cr)
or PHYS 2013 - General Physics I [LE CAT, NAT SCI] (4.0 cr)
PHYS 2014 - General Physics Lab I [NAT SCI] (1.0 cr)
PHYS 2015 - General Physics II (4.0 cr)
PHYS 2016 - General Physics Lab II (1.0 cr)
Chemistry requirement
CHEM 1153 - General Chemistry I [LE CAT, NAT SCI] (4.0 cr)
CHEM 1154 - General Chemistry Lab I [LE CAT, NAT SCI] (1.0 cr)
CHEM 1155 - General Chemistry II (4.0 cr)
CHEM 1156 - General Chemistry Lab II (1.0 cr)
or CHEM 1161 *{Inactive}*[LE CAT4, NAT SCI] (5.0 cr)
CHEM 1162 *{Inactive}*(5.0 cr)

Program Sub-plans

A sub-plan is not required for this program.

Exploration and Mining Geology

The exploration and mining geology track is designed for students interested in a career in the exploration and/or mining industries. The track includes a solid core of geoscience courses with a focus on courses related to exploration and mining geology. The track includes a course in field mapping.

Students completing the exploration and mining geology track are required to take the 43-44 credits of geology core courses required of all students. They are only required to take 4 credits of advanced electives along with 27-28 credits of courses required from other programs (listed above). They must also complete the requirements below.

Information current as of March 28, 2024

Core Courses (11 cr)
EES 3000 - Geologic Maps (3.0 cr)
EES 4355 - Economic Geology (4.0 cr)
EES 4360 *{Inactive}*(4.0 cr)
Courses from other programs (7 cr)
GIS 3563 - Geographic Information Science I: Theory and Analysis (4.0 cr)
STAT 3611 - Introduction to Probability and Statistics (4.0 cr)