

### **Duluth Campus**

## **Geological Sciences B.A.**

*D Earth & Environmental Sci*

### **Swenson College of Science and Engineering**

- Program Type: Baccalaureate
- Requirements for this program are current for Fall 2017
- Required credits to graduate with this degree: 120
- Required credits within the major: 61 to 64
- This program requires summer terms.
- Degree: Bachelor of Arts

Geological sciences is the scientific study of the origin, history, and structure of the Earth. The study of geology requires a broad base of knowledge in related sciences and mathematics.

The BA in geological sciences provides an appropriate educational background for work in areas related to environmental studies, land use planning, and other fields requiring sensitivity to Earth systems.

Honors Requirements: To attain departmental 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](#).

#### **Required prerequisites**

##### **Introductory Requirement (1 cr)**

Transfer students with 24 or more credits and current students who change from a BS degree or change colleges may request to be waived from this requirement. New first-year students with 24 or more PSEO credits may request to be waived from this requirement. [UST 1000](#) - Learning in Community (1.0 - 2.0 cr)

### **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

1. A minor or a second major in a different subject is required.
2. Math courses determined by Math ACT score.

### Geology Core Courses (38-39 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)  
[EES 4450](#) - Structural Geology (4.0 cr)  
[EES 4500](#) - Field Geology (6.0 cr)

Take 1 or more course(s) from the following:

- [EES 1110](#) - Geology and Earth Systems [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
- [EES 1130](#) - Introduction to Environmental Science [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)
- [EES 1610](#) - Oceanography [LE CAT, NAT SCI, SUSTAIN] (3.0 cr)
- [GEOG 1414](#) - The Physical Geography [LE CAT, NAT SCI, SUSTAIN] (4.0 cr)

### Advanced Electives (6 cr)

GEOL 4110 or 4180 cannot be used.

Take 6 or more credit(s) from the following:

- [EES 3202](#) - Energy Resources (3.0 cr)
- GEOL 3xxx
- GEOL 4xxx
- GEOL 5xxx
- [GIS 3563](#) - Geographic Information Science I: Theory and Analysis (4.0 cr)
- LIM 5xxx

### Chemistry requirement (10 cr)

Take one of the following course sequences:

#### Chemistry

[CHEM 1113](#) - Introduction to General, Organic, and Biological Chemistry I [LE CAT, NAT SCI] (5.0 cr)  
[CHEM 1114](#) - Introduction to General, Organic, and Biological Chemistry II (5.0 cr)

#### or Chemistry I and II with labs

[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)

### Mathematics Requirement (3-5 cr)

Take 1 or more course(s) from the following:

- [MATH 1250](#) - Precalculus Analysis [LE CAT2, LOGIC & QR] (4.0 cr)
- [MATH 1290](#) - Calculus for the Natural Sciences [LE CAT2, LOGIC & QR] (5.0 cr)
- [MATH 1296](#) - Calculus I [LE CAT, LOGIC & QR] (5.0 cr)
- [STAT 2411](#) - Statistical Methods [LE CAT, LOGIC & QR] (3.0 cr)

### Advanced Writing Requirement (3 cr)

[WRIT 3150](#) - Advanced Writing: Science (3.0 cr)