

Geology



College of Science, Engineering and Mathematics
Department of Geology and Geophysics
(907) 474-7565

www.uaf.edu/geology/

Degrees: B.S., M.S., Ph.D.

Minimum Requirements for Degrees: B.S.: 130 credits; M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduates in geology have broad backgrounds in the earth sciences and firm foundations in mathematics, physics and chemistry. There are many concentrations available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow students to pursue their own emphases in the junior and senior years.

The bachelor's degree prepares students for positions with industry or government or for graduate studies. The M.S. program is tailored to the special research and study interest of the student.

There are about 40 professional geoscientists in residence on campus and graduate students normally participate in the ongoing research of these professionals. Teaching and research assistantships are available to graduate students in many of these areas.

UNDERGRADUATE PROGRAM

MAJOR

Geology—B.S. Degree

1. Complete the general university requirements (page 28). (As part of the core curriculum requirements, complete MATH 200X, CHEM 105X and 106X.)
2. Complete the B.S. degree requirements (page 34). (As part of the B.S. degree, complete: STAT 200 or 300; PHYS 103X and 104X, or PHYS 211X and 212X.)
3. Complete the following program (major) requirements:*

GEOS 101X—The Dynamic Earth	4
GEOS 112X—The History of Earth and Life	4
GEOS 213 Mineralogy	4
GEOS 214 Petrology and Petrography	4
GEOS 225—Field and Computer Methods in Geology	2
GEOS 304—Geomorphology	3
GEOS 314—Structural Geology	4
GEOS 315W—Paleobiology and Paleontology	4
GEOS 322—Stratigraphy and Sedimentation	4
GEOS 351W—Field Geology**	6
GEOS 430—Statistics and Data Analysis in Geology	3
MATH 201X—Calculus	4
Electives	open
4. Complete 15 credits of upper division GEOS courses or upper division courses as approved by the undergraduate advisor.*

5. Minimum credits required 130

* Student must earn a C grade or better in each GEOS course and in all courses that fulfill requirement 4.

** GEOS 351 is offered at UAF when there is sufficient demand. In years when GEOS 351 is not offered (decision made early in fall semester), students are required to take a 6-credit field geology class at another institution. The Department of Geology and Geophysics will offer financial assistance to geology majors when GEOS 351 is not offered to attend an approved field camp at another institution. The geology and geophysics undergraduate advisor will assist students in placement in a field geology class and will inform the department head about students requiring financial aid.

Studies in geophysics: Students interested in pursuing a program in geophysics are encouraged to pursue a major in geology which includes GEOS 418 and 416 with a minor in physics. Students should consult with the geology department regarding constructing a plan of study.

MINOR

1. Complete the following:

GEOS 101X—The Dynamic Earth	4
Approved GEOS electives	12
2. Minimum credits required 16

GRADUATE PROGRAM

Geology—M.S. Degree

Concentrations: Economic Geology; General Geology; Petroleum Geology; Quaternary Geology; Remote Sensing; and Volcanology

1. Complete the following admission requirements:
 - a. Submit GRE scores.
 - b. Complete a background at least to the level of a B.S. concentration in geology, geophysics or earth science.
2. Complete the general university requirements (page 43).
3. Complete the master's degree requirements (page 46).
 - a. Complete 6-12 thesis credits.
 - b. Complete any deficiencies concurrently with this degree.
4. Submit a written thesis proposal; and pass a written or oral comprehensive examination.
5. Complete and submit a written thesis and pass an oral defense of thesis.
6. Complete 1 of the following concentrations:

Economic Geology

- a. Complete GEOS 675, 618 or equivalent; GEOS 418 or equivalent; 9 credits in applied geoscience; and at least 1 course in mineral economics or engineering management, as approved by the graduate advisory committee.
- b. Minimum credits required 30

General Geology

- a. Complete 12 credits at the 600-level as approved by the graduate advisory committee.
- b. Minimum credits required 30



University of Alaska Fairbanks

Admissions • P.O. Box 757480 • Fairbanks, AK 99775-7480 • admissions@uaf.edu • www.uaf.edu

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Petroleum Geology

- a. Complete 12 credits of coursework at the 600-level from courses in the following disciplines: structural geology, stratigraphy, sedimentology, geophysics, and/or petroleum engineering, as approved by the graduate advisory committee.
- b. Minimum credits required 30

Quaternary Geology

- a. Complete 9 credits in quaternary geology and at least 1 course in another area of quaternary studies, as approved by the graduate advisory committee.
- b. Minimum credits required 30

Remote Sensing

- a. Complete GEOS 623 and 10 credits in remote sensing-related courses, as approved by the graduate advisory committee.
- b. Minimum credits required 30

Volcanology

- a. Complete 10 credits in volcanology-related courses, as approved by the graduate advisory committee.
- b. Minimum credits required 30

Geology—Ph.D. Degree

1. Complete the following admission requirement:
 - a. Submit GRE scores.
2. Complete the general university requirements (page 43).
3. Complete the coursework requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 48).
5. As part of the Ph.D. degree requirements, complete the following:
 - a. Complete and pass a written and oral comprehensive examination.
 - b. Complete and submit a written thesis proposal for approval.
 - c. Complete a research program as arranged with the graduate advisory committee.
 - d. Complete 18 credits of thesis, write a thesis and pass an oral defense of thesis.
6. Minimum credits required 18

Note: In addition to courses listed under the geology and geophysics program, students should check the course listings under the School of Mineral Engineering and the marine science program.

Note: In addition to the facilities available directly through the instructional program, UAF has active research laboratories in the fields of seismology, volcanology, paleomagnetism, isotope geochronology, glaciology and ice physics in the Geophysical Institute (see Geophysical Institute under Research). These laboratories can frequently provide topics for M.S. and Ph.D. theses. Other laboratories are also available in other divisions on campus, as listed under Research.



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