

EARTH SCIENCE

College of Natural Science and Mathematics
Department of Geology and Geophysics
907-474-7565
www.uaf.edu/geology/

BA Degree

Minimum Requirements for Degree: 120 – 130 credits

This program provides broad training in various aspects of earth systems science. Three concentrations are available: earth systems science, geological hazards and mitigation, and secondary education. The concentrations allow students to focus on different interests and career paths during their junior and senior years but offer considerable flexibility during the freshman and sophomore years.

The earth science concentration offers students a sound background in a broad spectrum of geoscience disciplines, with an emphasis on the interaction between earth systems. The geological hazards and mitigation concentration is designed for students who wish to pursue careers in communicating science, hazards analysis or emergency management-related natural disasters. The secondary education concentration is designed for students who plan to teach earth science in secondary school in Alaska. Requirements for certified teachers have been built in to this concentration in consultation with the School of Education. Students choosing this concentration should consult with both the Department of Geology and Geophysics and the School of Education for advising.

Major — BA Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: NRM F303X*, CHEM F103X and CHEM F104X or CHEM F105X and CHEM F106X or PHYS F103X and PHYS F104X).
2. Complete the BA degree requirements. (See page 135. Note that social science (s) courses are included in each of the concentrations. These courses may also be applied to the BA degree requirements).
3. Complete the following foundation courses:*
GEOS F101X—The Dynamic Earth4
or GEOS F120X—Glaciers, Earthquakes and Volcanoes4
GEOS F112X—The History of Earth and Life4
or GEOS F106X—Life in the Age of Dinosaurs4
4. Complete one of the following concentrations:

Earth Systems Science

- a. Complete the following:*
GEOS F304—Geomorphology3
GEOS F315W—Paleobiology and Paleontology4
- b. Complete one course from each of the following areas:*
Earth Systems
GEOG F101—Expedition Earth: Introduction to Geography3
MSL F111X—The Oceans4
NRM F101—Natural Resource Conservation Policy3
PHYS F175X—Introduction to Astronomy4
Earth Materials
GEOS F213—Mineralogy4
GEOS F262—Rocks and Minerals3
Geospatial Sciences
GEOG F338—Introduction to Geographic Information Systems3
GEOS F222—Fundamentals of Geospatial Sciences3
GEOS F225—Field and Computer Methods in Geology (2)
and GEOS F408—Photogeology (2)4

- c. Complete one course from any two of the following areas:*

Weather and Climate

ATM F101X—Weather and Climate of Alaska.....	4
GEOG F307—Weather and Climate.....	3

Natural Resources

GEOG F302—Geography of Alaska.....	3
GEOG F402—Resources and Environment.....	3

Geoscience

GEOS F309—Tectonics.....	3
GEOS F322—Stratigraphy and Sedimentation.....	4

Geobiology

GEOS F485—Mass Extinctions, Neocatastrophism, and the History of Life.....	3
GEOS F486—Vertebrate Paleontology.....	3

- d. Complete 9 additional credits at the F300-level or above with an emphasis in geology, geography, biology, natural resources management or other earth science-related field as approved by the undergraduate advisor, including one W (writing-intensive) course and one O (oral-intensive) course.9
- e. Complete any UAF minor. Courses used to satisfy the upper-division emphasis may also be applied towards the requirements for a minor.
- f. Minimum credits required120

Geological Hazards and Mitigation

- a. As part of the core curriculum requirements, complete SOC F100X and COMM F300X.
- b. Complete the following:*
ED F486O/2—Media Literacy3
ENGL F314W,O/2—Technical Writing3
GEOS F304—Geomorphology3
GEOS F380—Geological Hazards3
GEOS F406—Volcanology3
HSEM F301—Principles of Emergency Management and
Homeland Security.....3
PHYS F175X—Introduction to Astronomy4
STAT F200X—Elementary Probability and Statistics.....3
- c. Complete one course from each of the following areas:*
Earth Materials
GEOS F213—Mineralogy.....4
GEOS F262—Rocks and Minerals3
Geospatial Sciences
GEOS F222—Fundamentals of Geospatial Sciences.....3
GEOS F225—Field and Computer Methods in Geology (2)
and GEOS F408—Photogeology (2)4
Weather and Climate
ATM F101X—Weather and Climate of Alaska.....4
GEOG F307—Weather and Climate.....3
- d. Complete a minimum of two courses from one of the following specialized areas:*
Mitigation
HSEM F412—Emergency Planning and Preparedness3
HSEM F423—Disaster Response Operations and Management.....3
HSEM F434—All Hazards Risk Analysis3
Communications
COMM F335O—Organizational Communications3
COMM F353—Conflict, Mediation, and Communication3
COMM F441—Persuasion3
- e. Complete any the requirements for a minor in geology, paleontology, geospatial sciences, geography, communications, journalism, sociology or other field related to communicating and mitigating natural hazards, as approved by the undergraduate advisor.
- f. Minimum credits required120

Secondary Education

- a. Complete the following:*
- GEOG F101—Expedition Earth: Elements of Physical Geography4
- GEOG F262—Rocks and Minerals3
- GEOG F315W—Paleobiology and Paleontology4
- GEOG F475—Presentation Techniques in the Geosciences2
- MSL F111X—The Oceans.....4
- PHYS F175X—Introduction to Astronomy4
- PSY F101—Introduction to Psychology3
- b. Complete one course from each of the following areas:*
- Landform Analysis**
- GEOG F111X—Earth and Environment: Elements of Physical Geography4
- GEOG F304—Geomorphology3
- Geospatial Sciences**
- GEOG F222—Fundamentals of Geospatial Sciences.....3
- GEOG F225—Field and Computer Methods in Geology.....2
- GEOG F338—Introduction to Geographic Information Systems3

Weather and Climate

- ATM F101X—Weather and Climate of Alaska.....4
- GEOG F307—Weather and Climate3

Natural Resources

- GEOG F302—Geography of Alaska3
- GEOG F402—Resources and Environment3

Evolutionary Processes

- GEOG F309—Tectonics.....3
- GEOG F485—Mass Extinctions, Neocatastrophism, and the History of Life3
- GEOG F486—Vertebrate Paleontology.....3

- c. Complete the requirements for a minor in secondary education (see page 48) 16
- d. Complete the additional requirements of the secondary education licensure program (see page 48)** 19
- e. Minimum credits required130

* Students must earn a C- grade or better in each course.

**Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the State of Alaska requirements for teacher licensure.



Baccalaureate Core Requirements

Communication 9 Credits

- ENGL F111X—Introduction to Academic Writing.....(3)
ENGL F190H may be substituted.

Complete one of the following:

- ENGL F211X—Academic Writing about Literature.....(3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences.....(3)

Complete one of the following:

- COMM F131X—Fundamentals of Oral Communication: Group Context.....(3)
- COMM F141X—Fundamentals of Oral Communication: Public Context.....(3)

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Perspectives on the Human Condition 18 Credits

Complete all of the following four courses:

- ANTH F100X/SOC F100X—Individual, Society and Culture.....(3)
- ECON F100X or PS F100X—Political Economy.....(3)
- HIST F100X—Modern World History.....(3)
- ENGL/FL F200X—World Literature.....(3)

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Complete one of the following three courses:

- ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music.....(3)
- HUM F201X—Unity in the Arts.....(3)
- ANS F202X—Aesthetic Appreciation of Alaskan Native Performance.....(3)

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Complete one of the following six courses:

- BA F323X—Business Ethics.....(3)
- COMM F300X—Communicating Ethics.....(3)
- JUST F300X—Ethics and Justice.....(3)
- NRM F303X—Environmental Ethics and Actions.....(3)
- PS F300X—Ethics and Society.....(3)
- PHIL F322X—Ethics.....(3)

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Or complete 12 credits from the above courses plus one of the following:

- Two semester-length courses in a single Alaska Native language or other non-English language
- Three semester-length courses (9 credits) in American Sign Language taken at the university level.

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Mathematics 3 Credits

Complete one of the following:

- MATH F103X—Concepts and Contemporary Applications of Mathematics.....(3)
 - MATH F107X—Functions for Calculus*.....(4)
 - MATH F161X—Algebra for Business and Economics**.....(3)
 - STAT F200X—Elementary Probability and Statistics.....(3)
- * No credit may be earned for more than one of MATH F107X or F161X.

Or complete one of the following*:

- MATH F200X—Calculus I**.....(4)
- MATH F201X—Calculus II.....(4)
- MATH F202X—Calculus III.....(4)
- MATH F262X—Calculus for Business and Economics.....(4)
- MATH F272X—Calculus for Life Sciences.....(4)

* Or any math course having one of these as a prerequisite

** No credit may be earned for more than one of Math F200X, F262X or F272.

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Natural Sciences 8 Credits

Complete any two (4-credit) courses.

- ATM F101X—Weather and Climate of Alaska.....(4)
- BIOL F100X—Human Biology.....(4)
- BIOL F101X—Biology of Sex.....(4)
- BIOL F103X—Biology and Society.....(4)
- BIOL F104X—Natural History.....(4)
- BIOL F115X—Fundamentals of Biology I.....(4)
- BIOL F116X—Fundamentals of Biology II.....(4)
- BIOL F120X—Introduction to Human Nutrition.....(4)
- BIOL F213X—Human Anatomy and Physiology I.....(4)
- BIOL F214X—Human Anatomy and Physiology II.....(4)
- CHEM F100X—Chemistry in Complex Systems.....(4)
- CHEM F103X—Basic General Chemistry.....(4)
- CHEM F104X—Beginnings in Biochemistry.....(4)
- CHEM F105X—General Chemistry.....(4)
- CHEM F106X—General Chemistry.....(4)
- GEOG F111X—Earth and Environment: Elements of Physical Geography.....(4)
- GEOS F100X—Introduction to Earth Science.....(4)
- GEOS F101X—The Dynamic Earth.....(4)
- GEOS F106X—Life and the Age of Dinosaurs.....(4)
- GEOS F112X—History of Earth and Life.....(4)
- GEOS F120X—Glaciers, Earthquakes and Volcanoes.....(4)
- GEOS F125X—Humans, Earth and Environment.....(4)
- MSL F111X—The Oceans.....(4)
- PHYS F102X—Energy and Society.....(4)
- PHYS F103X—College Physics.....(4)
- PHYS F104X—College Physics.....(4)
- PHYS F115X—Physical Science I.....(4)
- PHYS F175X—Astronomy.....(4)
- PHYS F211X—General Physics.....(4)
- PHYS F212X—General Physics.....(4)
- PHYS F213X—Elementary Modern Physics.....(4)

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Library and Information Research 0 – 1 Credit

- Successful completion of library skills competency test or LS F100X or LS F101X prior to junior standing

0 – 1

Upper-Division Writing and Oral Communication

Complete the following at the upper-division level:

- Two writing intensive courses designated (W) and one oral communication intensive course designated (O), or two oral communication intensive courses designated (O/2) (see degree and/or major requirements)

Total credits required 38 – 39

All degrees (e.g. B.A., B.S., etc.) require additional courses.

Refer to specific degree and program requirements.

Students must earn a C- grade or better in each course used toward the baccalaureate core.

