GEological ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
http://cem.uaf.edu/mingeo/

BS Degree
Minimum Requirements for Degree: 133 credits

The mission of the geological engineering program is to advance and disseminate knowledge related to mineral and energy exploration, evaluation, development and production; engineering site selection, construction and construction material production; and groundwater and geo-environmental engineering including geologic hazards assessment, through creative teaching, research and public service with an emphasis on Alaska, the North and its diverse peoples.

Geological engineering deals with the application of geology in the environment. Properties of earth materials exploration activities, geophysical and geochemical prospection, site investigations and engineering geology are all phases of geological engineering.

The program prepares students for employment with industry, consulting companies and government agencies.

The educational objectives of the geological engineering program are to produce:

1. Graduates who are employed in one of the following professional areas: mineral and energy exploration and development; geotechnical engineering; groundwater engineering; or geo-environmental engineering.

2. Graduates will possess technical knowledge required to meet the unique challenges of geological engineering problems germane to cold regions, especially Alaska.

3. Graduates will pursue life-long learning through continuing education opportunities, professional registration/certification, and/or graduate studies.

For more information about the geological engineering program mission, goals and educational objectives, visit http://cem.uaf.edu/mingeo/abecet/.

Major — BS Degree
1. Complete the general university requirements (page 129). As part of the core curriculum requirements, complete: MATH F200X*, CHEM F105X* and CHEM F106X*.

2. Complete the BS degree requirements (page 134). As part of the BS degree requirements, complete: MATH F201X*, PHYS F211X* and PHYS F212X*.

3. Complete the following program (major) requirements:

** Technical elective credits must contain engineering design and be selected by the student from the list of approved technical electives from the geological engineering program in conference with his or her advisor and approved by the department.

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Note: Candidates for the BS degree in geological engineering are required to take the State of Alaska Fundamentals of Engineering examination, which is a first step toward registration as professional engineers.
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)

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)

Complete one of the following three courses:
• ART/MUS/TRH F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music ......................................................(3)
• HUM F201X—Unity in the Arts ....................................................(3)
• ANS F202X—Aesthetic Appreciation of Alaska Native Performance ...(3)

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)

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.

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.

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—Biological Sex ........................................................(4)
• BIOL F103X—Biological Society ..................................................(4)
• BIOL F104X—Natural History .......................................................(4)
• BIOL F115X—Fundamentals of Biology I .....................................(4)
• BIOL F116X—Fundamentals of Biology II ....................................(4)
• BIOL F210X—Introduction to Human Nutrition ............................(4)
• BIOL F211X—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)

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.