

Geological Engineering

School of Mineral Engineering
 Department of Mining and Geological Engineering
 (907) 474-7388
www.uaf.edu/sme/GeolEng.html

B.S. Degree

Minimum Requirements for Degree: 134 credits

Geological engineering deals with the application of geology. Geological engineers work with the environment in the true sense of the word. Properties of earth materials exploration activities, geophysical and geochemical prospecting, site investigations and engineering geology are all phases of geological engineering.

The undergraduate and graduate programs prepare students for employment with industry, consulting companies and government agencies.

Major—B.S. Degree

1. Complete the general university requirements (page 106).
2. Complete the B.S. degree requirements (page 112).
3. Complete the following program (major) requirements:*

CHEM 105X—General Chemistry**	4
CHEM 106X—General Chemistry**	4
ES 201—Computer Techniques	3
ES 208—Mechanics	4
ES 331—Mechanics of Materials	3
ES 341—Fluid Mechanics	4
GE 101—Introduction to Geological Engineering	1
GE 261—General Geology for Engineers	3
GE 365—Geological Materials Engineering	3
GE 375—Principles of Engineering Geology and Terrain Analysis	3
GE 381W—Field Methods and Applied Design I	2
GE 382W—Field Methods and Applied Design II	4
GE 405—Exploration Geophysics	4
GE 420—Subsurface Hydrology	3
GE 471—Remote Sensing for Engineering	3
GE 480W—Senior Design	3
GEOS 213—Mineralogy	4
GEOS 214—Petrology and Petrography	4
GEOS 332—Ore Deposits and Structure	3
GEOS 421—Sedimentology	3
MATH 200X—Calculus**	4
MATH 201X—Calculus**	4
MATH 202X—Calculus**	4
MATH 302—Differential Equations	3
MIN 202—Mine Surveying	3
MIN 370—Rock Mechanics	3
MIN 408O—Mineral Valuation and Economics	3
PHYS 211X—General Physics**	4
PHYS 212X—General Physics**	4
STAT 200—Elementary Probability and Statistics	3
Technical electives***	6

4. Minimum credits required 134

* Student must earn a C grade or better in each ES, GE, GEOS, MIN and technical elective courses.

** Satisfies core or B.S. degree requirements but not both.

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

Note: Candidates for the B.S. degree in geological engineering are required to take a proficiency exam at the end of their sophomore year. They must also take a comprehensive exit exam in their general field before graduation (as well as the state of Alaska Fundamentals of Engineering examination). Fundamentals of Engineering examination is a first step toward registration as professional engineers.

Note: Students may initiate their geological engineering program in Anchorage and transfer to Fairbanks upon completion of the freshman and sophomore years. Students intending to transfer to UAF should communicate with a faculty member of the UAF mining and geological engineering department.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

General University Requirements

All degrees (e.g. B.A., B.S., etc.) require additional courses.
Refer to specific degree and program requirements.

COMMUNICATIONS (9)

Complete the following:

ENGL 111X.....	(3)	_____
ENGL 211X OR 213X.....	(3)	_____
COMM 131X OR 141X.....	(3)	_____

LIBRARY & INFORMATION SKILLS (0-1)

Complete the following:

LS 100X OR 101X.....	(0-1)	_____
----------------------	-------	-------

OR Successful completion of library skills competency test.

PERSPECTIVES ON THE HUMAN CONDITION (18)

Complete either the following six courses:

ANTH 100X OR SOC 100X.....	(3)	_____
ECON/PS 100X.....	(3)	_____
HIST 100X.....	(3)	_____
ART/MUS/THR 200X, HUM 201X OR ANS 202X.....	(3)	_____
ENGL/FL 200X.....	(3)	_____
PHIL 322X, NRM 303X, COMM 300X, PS 300X OR JUST 300X.....	(3)	_____

OR Complete 12 cr from the above list PLUS two semester-length courses in a single non-English or Alaska Native language at the university level OR three semester-length courses (9 cr) in American Sign Language.

MATHEMATICS (3-4)

Complete 3-4 credits from the following:

MATH 107X.....	(3)	_____
OR MATH 131X (except for BBA).....	(3)	_____
OR MATH 161X.....	(3)	_____
MATH 200X.....	(4)	_____
MATH 201X.....	(4)	_____
MATH 202X.....	(4)	_____
MATH 262X.....	(4)	_____
MATH 272X.....	(3)	_____

NOTE: Additional 3 cr of math needed for degree requirements.

NATURAL SCIENCES (8)

Complete 8 credits from the following:

ATM 101X.....	(4)	_____
BIOL 103X OR 104X.....	(4)	_____
BIOL 105X-106X.....	(8)	_____
BIOL 111X-112X.....	(8)	_____
CHEM 100X.....	(4)	_____
CHEM 103X-104X.....	(8)	_____
CHEM 105X-106X.....	(8)	_____
GEOG 205X.....	(4)	_____
GEOS 100X OR 120X OR 125X.....	(4)	_____
GEOS 101X-112X.....	(8)	_____
MSL 111X.....	(4)	_____
PHYS 102X OR 175X.....	(4)	_____
PHYS 103X-104X.....	(8)	_____
PHYS 211X-212X.....	(8)	_____
PHYS 211X-213X.....	(8)	_____
PHYS 212X-213X.....	(8)	_____