

# GEOLOGICAL ENGINEERING

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

## MS Degree

Minimum Requirements for Degree: 30 – 33 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 graduate program prepares students for employment with industry, consulting companies and government agencies.

## MS Degree

1. Complete the following:
  - a. Complete one of the following admission requirements:
    - i. Complete a bachelor's degree in geological engineering;  
or
    - ii. Complete a bachelor's degree in engineering and complete the following courses: GEOS F262 and GEOS F332, or GEOS F322 and GEOS F314; GE F365 or MIN F370; GE F405, and GE F420; or
    - iii. Complete a bachelor's degree in geology and complete the following courses: ES F208, ES F331, ES F341; GE F365 or MIN F370; GE F405, GE F420, and MIN F408;  
or
    - iv. Complete a bachelor's degree in the natural sciences and complete the following: ES F208, ES F331, ES F341; GEOS F262 and GEOS F332 or GEOS F322 and GEOS F314; GE F365 or MIN F370; GE F405, GE F420, and MIN F408.
  - b. Submit GRE scores.
2. Complete the general university requirements (page 202).
3. Complete the master's degree requirements (page 206).

4. Complete the thesis or non-thesis requirements:

### Thesis

- a. Complete 12 credits from the following:

GE F430—Geomechanical Instrumentation .....	3
GE F440—Slope Stability .....	3
GE F610—Subsurface Hydrology .....	3
GE F620—Advanced Groundwater Hydrology .....	3
GE F622—Unsaturated Soil Geoengineering.....	3
GE F624—Stochastic Hydrology and Geohydrology .....	3
GE F626—Thermal Geotechniques.....	3
GE F635—Advanced Geostatistical Applications .....	3
GE F665—Advanced Geological Materials Engineering .....	3
GE F666—Advanced Engineering Geology .....	3
GE F668—Tunneling Geotechniques .....	3
MIN F621—Advanced Mineral Economics.....	3
MIN F673—Advanced Rock Mechanics.....	3
- b. Geological engineering courses and technical electives..... 11
- c. Complete the following:

GE F692—Graduate Seminar .....	1
GE F699—Thesis .....	6
- d. Minimum credits required .....

### Non-Thesis

- a. Complete 15 credits from the following:

GE F430—Geomechanical Instrumentation .....	3
GE F440—Slope Stability .....	3
GE F610—Subsurface Hydrology.....	3
GE F620—Advanced Groundwater Hydrology .....	3
GE F622—Unsaturated Soil Geoengineering.....	3
GE F624—Stochastic Hydrology and Geohydrology .....	3
GE F626—Thermal Geotechniques.....	3
GE F635—Advanced Geostatistical Applications .....	3
GE F665—Advanced Geological Materials Engineering .....	3
GE F666—Advanced Engineering Geology .....	3
GE F668—Tunneling Geotechniques .....	3
MIN F621—Advanced Mineral Economics.....	3
MIN F673—Advanced Rock Mechanics.....	3
- b. Geological engineering courses and technical electives..... 11
- c. Complete the following:

GE F692—Graduate Seminar .....	1
GE F698—Non-thesis Research/Project .....	6
- d. Minimum credits required .....