

# Geological Engineering

College of Engineering and Mines  
 Department of Mining and Geological Engineering  
 907-474-7388  
[www.uaf.edu/cem/ge/](http://www.uaf.edu/cem/ge/)

## M.S. 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.

### Graduate Program — M.S. Degree

1. Complete a comprehensive entrance exam.
2. Complete the general university requirements (page 201).
3. Complete the master's degree requirements (page 205).
4. Complete the thesis or non-thesis requirements:

#### Thesis

- a. Complete 12 credits from the following with a maximum of 6 credits from the selected research focus group:
  - Geotechnical Engineering Focus Area:**
  - GE F440—Slope Stability .....3
  - GE F665—Advanced Geological Materials Engineering .....3
  - GE F666—Advanced Engineering Geology .....3
  - GE F668—Tunneling Geotechniques .....3
  - GE F671—Engineering Application of Digital Image Processing .....3
  - Geoenvironmental Engineering Focus Area:**
  - GE F610—Subsurface Hydrology .....3
  - GE F620—Advanced Groundwater Hydrology .....3
  - GE F622—Unsaturated Soil Geoengineering .....3
  - GE F649—Hazardous and Toxic Waste Management .....3
  - Georesource Engineering Focus Area**
  - GE F631—Electron Microprobe Methods .....3
  - GE F630—Advanced Applied Mining Geology .....3
  - GE F633—Fluid Inclusion Methods in Mineral and Petroleum Exploration .....3
  - GE F635—Advanced Geostatistical Applications .....3
  - MIN F621—Advanced Mineral Economics .....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 .....30

\* NOTE: Geological engineering courses may be taken from any focus group that is approved by the graduate advisory committee.

### Non-Thesis

- a. Complete 12 credits from the following with a maximum of 6 credits from the selected research focus group:
  - Geotechnical Engineering Focus Area:**
  - GE F440—Slope Stability .....3
  - GE F665—Advanced Geological Materials Engineering .....3
  - GE F666—Advanced Engineering Geology .....3
  - GE F668—Tunneling Geotechniques .....3
  - GE F671—Engineering Application of Digital Image Processing .....3
  - Geoenvironmental Engineering Focus Area:**
  - GE F610—Subsurface Hydrology .....3
  - GE F620—Advanced Groundwater Hydrology .....3
  - GE F622—Unsaturated Soil Geoengineering .....3
  - GE F649—Hazardous and Toxic Waste Management .....3
  - Georesource Engineering Focus Area**
  - GE F631—Electron Microprobe Methods .....3
  - GE F630—Advanced Applied Mining Geology .....3
  - GE F633—Fluid Inclusion Methods in Mineral and Petroleum Exploration .....3
  - GE F635—Advanced Geostatistical Applications .....3
  - MIN F621—Advanced Mineral Economics .....3
- b. Geological engineering courses\* and technical electives 14 GE F692—Graduate Seminar .....1
- GE F698—Research/Project .....6
- c. Minimum credits required .....33

\* NOTE: Geological engineering courses may be taken from any focus group that is approved by the graduate advisory committee.

