Geological Engineering
Master of Science

The Master of Science in Geological Engineering is designed to develop students into highly qualified engineers capable of conducting research and solving complex problems related to petroleum/geothermal energy, geo-environmental concerns and natural hazards. The program offers both thesis and non-thesis options. Students completing the non-thesis option will be highly qualified professionals capable of working in applied engineering fields. Students completing the thesis option will possess the necessary research skills to pursue a terminal degree, such as the Ph.D. in Engineering offered at UND.

The mission of the Master of Science in Geological Engineering is to develop the student into a highly qualified engineer capable of conducting research and solving complex problems related to petroleum and geothermal energy, mineral production, geo-environmental concerns, and natural hazards.

**Goal 1:** Program graduates shall have sufficient skills in geoscience, mathematics, computer modeling, and poromechanics to formulate and solve practical problems in geological engineering.

**Goal 2:** Program graduates shall have the ability to independently conduct research to advance the state of the knowledge; and/or to provide innovative solutions to technical problems in a timely manner in at least one of the areas of exploration and production of energy and mineral resources, geo-mechanics, hydrogeology, ground water remediation, or site investigation/characterization.

**Goal 3:** Program graduates shall be skilled in research methods, be able to access, critically analyze, and utilize available information from a variety of sources; and shall be able to communicate the results of a research or development project both orally and in writing.

**Admission Requirements**
The applicant must meet the School of Graduate Studies’ current minimum general admission requirements as published in the graduate catalog.

1. Bachelor of Science degree in Geological Engineering from an ABET accredited or equivalent program. A bachelor’s degree in another engineering discipline or in a science field, qualifies a student to be admitted to “qualified status” with an obligation to acquire background undergraduate engineering and geology knowledge.
2. Graduate Record Examination General Test for applicants from non-ABET accredited programs.
3. A cumulative Grade Point Average (GPA) of at least 3.0

Satisfy the School of Graduate Studies’ English Language Proficiency requirements as published in the graduate catalog.

**Degree Requirements**
Students seeking the Master of Science degree at the University of North Dakota must satisfy all general requirements set forth by the School of Graduate Studies’ as well as particular requirements set forth by the Geological Engineering Department.

**Thesis Option:**
1. A minimum of 30 semester credits in a major field, including the credits granted for the thesis and the research leading to the thesis.
Geology/Geological Engineering coursework 12  
Other Engineering and Science coursework 12  
Thesis 6  
**Total Credits 30**

2. At least one-half of the credits must be at or above the 500-level.  
3. A maximum of one-fourth of the credit hours required for the degree may be transferred from another institution.  
4. Completion of the thesis.

**Non-Thesis Option (Independent Study):**  
1. Thirty-four (34) credits including credits required for the major.  
   - Geology/Geological Engineering coursework 15  
   - Research Project/Independent Study 3  
   - Electives 16  
   **Total Credits 34**

2. At least one-half of the credits must be at or above the 500-level.  
3. A maximum of one-fourth of the credit hours required for the degree may be transferred from another institution.  
4. Preparation of a written independent study approved by the faculty advisor.  
5. Comprehensive final examination.

**Faculty and Areas of Expertise**

- I-Hsuan Ho, Ph.D., Slope Stability, Geo-hazards, Energy Foundations, Sustainable Geomaterials  
- Taufique Mahmood, Ph.D., Hydrology, Water Quality, Climate Change, Remote Sensing  
- Dongmei Wang, Ph.D., Enhanced Oil Recovery, Petrophysics  
- Nels Forsman, Ph.D., Sedimentary Petrology, Diagenesis, Planetary Geology  
- Philip Gerla, Ph.D., Hydrogeology, Environmental Geology, Wetlands, Geographic Information Systems  
- William D. Gosnold, Ph.D., Heat Flow, Tectonics, Global Change, Isostasy, Structural Geology  
- Joseph Hartman, Ph.D., Invertebrate Paleontology, Stratigraphy  
- Richard LeFever, Ph.D., Sedimentology, Stratigraphy, Basin Analysis  
- Ronald K. Matheney, Ph.D., Hydrogeochemistry, Isotope Geochemistry, Paleoclimatology  
- Stephan Nordeng, Ph.D., Petroleum geology, organic geochemistry  
- Dexter Perkins, Ph.D., Metamorphic Petrology, Mineralogy  
- Jaakko Putkonen, Ph.D., Geomorphology, Surface Processes, Quaternary Geology

**Contact Information**

Dr. Ronald K. Matheney, Graduate Program Director  
College of Engineering and Mines  
Harold Hamm School of Geology & Geological Engineering  
Leonard Hall Room 207  
81 Cornell Street, Stop 8358  
Grand Forks, ND 58202-8358  
P: 701-777-4569  
F: 701-777-4449  
E: ronald.matheney@engr.und.edu  
http://www.geology.und.edu

Apply ONLINE  
http://graduateschool.und.edu

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