

EARTH SCIENCES: GEOLOGY (M.S.)

<https://ceps.unh.edu/earth-sciences/program/ms/earth-sciences-geology>

Description

This option is for students with interests in petrology, mineralogy, structural geology, tectonics, geophysics, sedimentology, glacial geology, paleoclimate, glaciology, hydrogeology, stratigraphy, paleontology, low- or high-temperature geochemistry, and isotope geochemistry, both those seeking a broad background in geology and also for those wishing to study one area in depth.

Admission Requirements

An applicant to the M.S. program is expected to have demonstrated competency in the following college courses: one year each of calculus and chemistry and two semesters of physics and/or biology. In addition, the applicant is expected to have an undergraduate degree or equivalent in geology, chemistry, physics, mathematics, computer science, engineering, or the biological sciences. Students lacking some background in a particular area may be admitted provided they are prepared to complete courses, without graduate credit, in which they may be deficient. The program of study a student wishes to follow and the student's undergraduate major determine the level of preparation necessary. The preparation of each student is determined before the beginning of the first semester in residence in order to plan the course of study. Each entering student is assigned an academic adviser to assist in planning a program of study.

Requirements

Degree Requirements

Students in the thesis option must satisfactorily complete at least **30 graduate credits**, which include the credits accumulated in the core curriculum. Students in this option must complete a master's thesis (6 credits) and give an oral presentation of the results.

Students in the non-thesis option must satisfactorily complete at least **34 graduate credits**, which includes the core curriculum, a 2-credit directed research project (ESCI 898 Directed Research), and a written and oral presentation of that research.

Geology

The core curriculum for the option in geology normally includes:

Code	Title	Credits
Required Courses:		
ESCI 997	Seminar in Earth Sciences (first year)	1
ESCI 998	Proposal Development (first year)	1
Select at least three of the following courses:		11-12
ESCI 826	Igneous and Metamorphic Petrology	
ESCI 834	Geophysics	
ESCI 841	Geochemistry	
ESCI 845	Isotope Geochemistry	
ESCI 854	Sedimentology	
ESCI 856	Geotectonics	

ESCI 859	Geological Oceanography
ESCI 862	Glacial Geology
ESCI 866	Volcanology
Select Master's Thesis or Directed Research:	
ESCI 899	Master's Thesis (6 credits total)
ESCI 898	Directed Research (2 credits)
Elective Courses	

Additional electives are to be selected from graduate level courses in the department and/or from graduate level courses in related disciplines outside of the department (e.g., civil and environmental engineering, natural resources, chemistry, mathematics and statistics, and computer science). More detailed information is available from the department.

Degree Plan

First Year

Fall	Credits
Core Curriculum 1 Course	4
Elective 1 Course	3-4
ESCI 997 Seminar in Earth Sciences	1
Credits	8-9

Spring

Core Curriculum 2 Course	4
Elective 2 Course	3-4
ESCI 998 Proposal Development	1
Credits	8-9

Second Year

Fall	Credits
Core Curriculum 3 Course	3-4
ESCI 899 Master's Thesis (or Elective for Directed Research Option)	3-4
Credits	6-8

Spring

Elective 3 Course	3-4
ESCI 899 Master's Thesis or ESCI 898 or Directed Research	2 or 3
Credits	5-7
Total Credits	27-33

Accelerated Master's

This graduate program is approved to be taken on an accelerated basis in articulation with certain undergraduate degree programs.

General Accelerated Master's policy, note that some programs have additional requirements (e.g. higher grade expectations) compared to the policy.

Please see the Graduate School website and contact the department directly for more information.

Student Learning Outcomes

Students graduating with a MS in Earth Sciences: Geology should achieve the following learning outcomes:

Core Knowledge

- Demonstrate a foundation of knowledge in Geology that results in expertise in at least one of the following:
- Solid Earth Processes: An understanding of geology, geophysics, or petrology at a range of timescales, focused on, for example, the structure of the Earth, plate tectonic reconstructions, seismology and earthquake hazards, magmatic, volcanic, or metamorphic processes, or other studies that allow for the reconstruction of geologic, geophysical, or petrologic processes at a range of spatial and time scales.
- Earth Surface Processes: An understanding of surficial processes and their manifestations in the geologic record at a range of timescales, focused on, for example, sedimentology, glacial geology, paleontology, geomorphology and landscape evolution, limnology, and paleoclimatology.
- Demonstrate basic knowledge of how the processes within each of these fields interact with other related disciplines.
- Demonstrate specialized knowledge of a field within geology or geophysics sufficient to conduct substantive supervised research.

Research Methods and Analysis

- Identify and demonstrate knowledge of a range of qualitative and quantitative methodologies typically used in geological research.
- Discover and critically read published research in the Earth sciences and related fields of mathematics, statistics, physics, chemistry, and biology.
- Frame empirical research and/or theory guided by prior knowledge.
- Implement a rigorous study using appropriate methods, measures and techniques.
- Critically evaluate and systematically analyze data to reach appropriate findings and interpretations.

Scholarly Communication

- Structure a coherent argument that rigorously presents and evaluates evidence to support claims.
- Review and cogently synthesize relevant literature.
- Write at a level and in a style of English consistent with that found in leading academic journals.
- Understand and properly use styles of citing, referencing, and formatting found in leading academic journals.
- Clearly convey research findings through oral presentation supported by appropriate digital media.
- Cogently summarize research and its significance to non-specialist audiences.

Professionalism and Pedagogy

- Prepare manuscripts that meet the standards of academic and research journals and respond appropriately to recommendations for revision.
- Demonstrate collaboration, leadership and teamwork.
- Create a welcoming environment that is supportive, inclusive and equitable.
- Make effective contributions to university, community and professional service.
- Communicate effectively to groups in a lecture format.