

## Earth Science

College of Social & Behavioral Sciences  
Department of Geography  
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Web site: [www.mnsu.edu/dept/geog](http://www.mnsu.edu/dept/geog)  
[www.mnsu.edu/dept/geol](http://www.mnsu.edu/dept/geol)

Director: Donald Friend, Ph.D.

Earth Science studies the Earth's interrelated physical systems of atmosphere, biosphere, geosphere, hydrosphere, and outer space. Fundamental to Earth Science are the impacts of people and the interactions of chemical, physical, and biological processes at all spatial scales ranging from submicroscopic to planetary, and over time scales from the immediate to billions of years. Thus, courses in Astronomy, Biology, Chemistry, Geography, Geology, and Physics are required to fulfill degree requirements. Majors may choose to earn the BA or BS and there are options for teacher licensure in the "Science Teaching: Earth Science" program. An Earth Science minor is available.

Admission to Major is granted by the department. Minimum university admission requirements are:

- a minimum of 32 earned semester credit hours.
- a minimum cumulative GPA of 2.00 (C).

Contact the department for application procedures.

### EARTH SCIENCE BA, BS

Required for Major (Core, 43 credits):

AST	101	Introduction to Astronomy (3)
AST	102	Introduction to the Planets (3)
BIOL	100	Our Natural World (4)
CHEM	201	General Chemistry I (5)
GEOG	101	Introduction to Physical Geography (3)
GEOG	217	Weather (3)
GEOG	315	Geomorphology (3)
GEOG	410	Climatic Environments (3)
GEOL	121	Physical Geology (4)
GEOL	122	Earth History (4)
GEOL	201	Elements of Mineralogy (4)
PHYS	211	Principles of Physics I (4)

Required Electives for Major (6 credits):

Choose six credits from the following:

AST	125	Observational Astronomy (3)
BIOL	432	Lake Ecology (4)
GEOG	370	Cartographic Techniques (4)
GEOG	373	Introduction to Geographic Information Systems (4)
GEOG	412	Advanced Weather (4)
GEOG	420	Conservation of Natural Resources (3)
GEOG	440	Field Studies: Colorado
GEOG	440	Field Studies: Field Methods
GEOG	480	Seminar (1-4)
GEOL	270	Structural Geology (4)
GEOL	350	Environmental Geology (4)
GEOL	370	Geotectonics (2)
GEOL	450	Hydrogeology (3)

Required for Bachelor of Arts (BA) degree ONLY:

Language (8)

Minor Required: None.

### EARTH SCIENCE BS TEACHING (5-12)

Requirements for the Earth Science Teaching major can be found in the SCIENCE TEACHING section of this bulletin.

### EARTH SCIENCE MINOR

Required General Education for Minor (17 credits):

AST	101	Introduction to Astronomy (3)
PHYS	100	Cultural Physics (3)
CHEM	100	Chemistry in Society (4)
BIOL	100	Our Natural World (4)
GEOG	101	Introduction to Physical Geography (3)

Required for Minor (Core, 14 credits):

GEOL	121	Physical Geology (4)
GEOL	122	Earth History (4)
GEOG	217	Weather (3)
GEOG	315	Geomorphology (3)

Required Electives for Minor (3 credits):

Choose one from the following:

AST	102	Introduction to the Planets (3)
GEOG	410	Climatic Environments (3)
GEOG	420	Conservation of Natural Resources (3)

### POLICIES/INFORMATION

GPA Policy. A GPA of 2.0 or higher in a major or minor is required for graduation.

Refer to the College regarding required advising for students on academic probation.

P/N Grading Policy. All courses in earth science must be taken for a letter grade.