Earth Science

The study of Earth Science draws primarily on geology and meteorology with additional attention to the fields of oceanography and life history. The traditional background for Earth Science focuses on mathematics and the quantitative aspects of science. The contemporary study and practice of Earth Science includes the qualitative evaluation and understanding of earth processes.

Both the quantitative and qualitative factors are applied in decision-making processes that range from plans for worldwide concerns, such as global warming, and for natural disasters, such as earthquakes and floods, to evaluation of a building site for a home. Earth Science is also a companion field of study for hydrologists and environmental scientists and for related careers in government, business, and industry.

Programs

- Science Education, B.S. (Earth and Space Science Specialty (Teacher Licensure)) *major*
- Earth Science *minor*

Career Directions

Federal/State Agent
Industry/Business Consultant
Park Naturalist
Science Curriculum Coordinator
Also: Graduate Study

Preparation

Recommended High School Courses

Algebra

Biology

Chemistry

Physics

Trigonometry

Science Education, B.S. *major*
Earth and Space Science Specialty (Teacher Licensure)

This program is designed to meet the requirements for Science teacher licensure with a specialty in Earth and Space Science in the State of Minnesota. Students who complete this major will be eligible for teacher certification in Earth and Space Science in grades 9-12 and for teaching all sciences in grades 5-8. Students should consult their academic advisor in Earth Science prior to developing their program.

Students should complete the science core courses listed below prior to beginning the Earth and Space Science specialty. Consult with your academic adviser if you wish to have an alternative method of satisfying this requirement considered or wish to begin a specialty prior to completion of the science core courses.

Required Credits: 91
Required GPA: 2.50

Core Courses for Science Teaching in Grades 5-8

COMPLETE THE FOLLOWING COURSES:

- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- SCI 3100 Integrative Science for Teachers (4 credits)
- SCI 3450 Science Methods For Grades 5-8 (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- PHYS 1101 General Physics I (4 credits)
- PHYS 2101 Physics I (5 credits)

REQUIRED PROFESSIONAL EDUCATION COURSES

COMPLETE THE FOLLOWING COURSES:

- ED 3100 Introduction to the Foundations of Public School Education (3 credits)
- ED 3110 Educational Psychology (3 credits)
- ED 3140 Human Relations In Education (3 credits)
- ED 3350 Pedagogy: Planning for Instruction (3 credits)
- ED 3780 Adaptation and Management: Designing the Learning Environment (3 credits)
- ED 4737 Content Area Reading (3 credits)
- ED 4799 The Professional Teacher (1 credit)
- HLTH 3400 Health and Drugs in Society (2 credits)

Complete 12 credits of student teaching:

- ED 4830 Student Teaching - Secondary (1-12 credits)

EARTH AND SPACE SCIENCE SPECIALTY

COMPLETE THE FOLLOWING COURSES:

- ENVR 2000 Introduction to Environmental Science (3 credits)
- GEOL 2110 Mineralogy and Petrology (4 credits)
- GEOL 3500 Topics in Paleontology (3 credits)
- GEOL 3600 Stratigraphy and Sedimentation (3 credits)
- SCI 2100 Astronomy (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- GEOL 3211 Environmental Hydrology (3 credits)
- ENVR 4050 Geochemistry (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- GEOL 4970 Internship (3 credits)
- GEOL 4980 Research (3 credits)

SELECT 1 OF THE FOLLOWING COURSES NOT TAKEN IN THE CORE:

- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits)

Earth Science *minor*

The Earth Science minor is designed to support other fields such as geography, biology, and chemistry. The program will complement and enhance many majors, but does not in and by itself lead to a career choice.

Required Credits: 23
Required GPA: 2.00

I REQUIRED COURSES

COMPLETE THE FOLLOWING COURSES:

- BIOL 3630 Conservation Biology (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- SCI 2200 Meteorology (3 credits)

II REQUIRED ELECTIVES

SELECT 2 OF THE FOLLOWING COURSES:

- GEOL 2110 Mineralogy and Petrology (4 credits)
- GEOL 2730 Introduction to Planetary Science (4 credits)
- GEOL 3212 Hydrogeology (3 credits)
- GEOL 3400 Glacial and Pleistocene Geology (3 credits)
- GEOL 3500 Topics in Paleontology (3 credits)
- GEOL 3600 Stratigraphy and Sedimentation (3 credits)
- GEOL 3700 Environmental Geophysics (3 credits)
- GEOL 3120 Soils (4 credits)
  or BIOL 3120 Soils (4 credits)

Courses

All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY
1920, 2920, 3920, 4920 DIRECTED GROUP STUDY
1930, 2930, 3930, 4930 EXPERIMENTAL COURSE
1940, 2940, 3940, 4940 IN-SERVICE COURSE
1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR
1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION
1970, 2970, 3970, 4970 INTERNSHIP
1980, 2980, 3980, 4980 RESEARCH
1990, 2990, 3990, 4990 THESIS