EARTH SCIENCES MAJOR (B.A.)

https://ceps.unh.edu/earth-sciences/program/ba/earth-sciences-major

Description

The bachelor of arts in Earth sciences is offered through the Department of Earth Sciences. This program provides students an opportunity to obtain a broad education and a general background in the Earth sciences with a greater degree of freedom in choosing electives than in the bachelor of science programs. Through careful choice of electives, students can prepare for business, industry, public service, the non-profit sector, graduate school or, in combination with a M.Ed. or M.A.T. certification program, a career teaching in secondary schools.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: Yes

All Major, Option and Elective Requirements as indicated.
**Major GPA requirements as indicated.*

Major Requirements

Code	Title	Credits
Complete (with a C- or better in each course) a minimum of eight courses in the department, including the following:		
ESCI 401	Dynamic Earth	4
or ESCI 409	Geology and the Environment	
ESCI 402	Earth History	4
ESCI 512	Principles of Mineralogy	4
CHEM 403	General Chemistry I	4
Five advanced-level courses, two of which must be 700-level or above		15-20
Math Requirements		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
or MATH 539	Introduction to Statistical Analysis	
or BIOL 528	Applied Biostatistics I	
Capstone		
Total Credits		**39-44**

[1] Note that ESCI 401 Dynamic Earth, ESCI 402 Earth History, ESCI 405 Global Environmental Change, ESCI 409 Geology and the Environment, ESCI 420 Our Solar System, ESCI 501 Introduction to Oceanography cannot be taken to fulfill Discovery Program requirements for majors in the Department of Earth Sciences.

It is strongly advised that students complete, as early as possible, a year each of college chemistry and physics.

Capstone Experience

A capstone experience is required of all undergraduate Earth sciences majors during their senior year. All capstone experiences at UNH must meet one or more of the following criteria:

1. The capstone synthesizes and applies disciplinary knowledge and skills.
2. The capstone fosters reflection on undergraduate learning and experience.
3. The capstone demonstrates emerging professional competencies.
4. The capstone applies, analyzes, and/or interprets research or data or artistic expression.
5. The capstone explores areas of interest based on the integration of prior learning.

Suggested ways of meeting the capstone requirement in the Department of Earth Sciences include approved INCO 790 Advanced Research Experience, ESCI 795 Topics/ESCI 796 Topics field courses, ESCI 799 Senior Thesis, URA/SURF/IROP projects, internships, environmental/geologic field camps, REU programs, or Earth Sciences education and outreach activities designed according to the above criteria. Capstone experiences must be equivalent to a minimum of 2 academic credits. Students should work closely with their faculty advisors to define the most appropriate capstone experience for their Earth Sciences degree program, although the capstone mentor can be someone other than their primary faculty advisor. All capstone experiences must be approved and certified by the faculty advisor and the capstone mentor. Presentation of projects or experiences developed for the capstone is encouraged at the annual UNH Undergraduate Research Conference or other appropriate venue.

Degree Plan

First Year		
Fall		**Credits**
ESCI 400	Freshman Field Seminar	1
ESCI 401	Dynamic Earth	4
MATH 425	Calculus I	4
CHEM 403	General Chemistry I	4
ENGL 401	First-Year Writing	4
	Credits	**17**
Spring		
ESCI 402	Earth History	4
MATH 426 or MATH 439 or BIOL 528	Calculus II or Statistical Discovery for Everyone or Applied Biostatistics I	4
CHEM 404	General Chemistry II (Recommended)	4
Inquiry Discovery Course [1]		4
	Credits	**16**
Second Year		
Fall		
ESCI 5/6__ (number > 512)		4
ESCI 530 or ESCI 534	Geological Field Methods or Techniques in Environmental Sciences	4
Discovery Course [1]		4

Foreign Language [2]		4
	Credits	**16**
Spring		
ESCI 512	Principles of Mineralogy	4
Discovery Course [1]		4
Foreign Language [2]		4
Discovery Course [1]		4
	Credits	**16**
Third Year		
Fall		
ESCI 5/6/7__ (number > 512)		4
PHYS 407 or BIOL 411	General Physics I (/PHYS 401) or Introductory Biology: Molecular and Cellular	4
Free Elective [3]		4
Discovery Course [1]		4
	Credits	**16**
Spring		
PHYS 408 or BIOL 412	General Physics II (/PHYS 402) or Introductory Biology: Evolution, Biodiversity and Ecology	4
ESCI 6__		4
Free Elective [3]		4
Discovery Course [1]		4
	Credits	**16**
Fourth Year		
Fall		
ESCI 7__		4
Free Elective [3]		4
Free Elective [3]		4
Discovery Course [1]		4
	Credits	**16**
Spring		
ESCI 7__		4
Free Elective [3]		4
Free Elective [3]		4
Senior Captone		4
	Credits	**16**
	Total Credits	**129**

1. One course must be taken in each of the remaining Disciplinary Groups of the University Discovery Program (Biological Sciences; Environment Technology & Society; Historical Perspectives; World Culture; Fine & Performing Arts; Social Science; Humanities).
2. The foreign language requirement may be fulfilled by a full year (8 UNH credits or equivalent) elementary course in any foreign language including American Sign Language, 1 semester (4 UNH credits or equivalent) of any foreign language beyond the elementary level, or by taking a College Board foreign language achievement test.
3. Students should consider additional courses in Earth Sciences and other science and math courses.

Student Learning Outcomes

Students will be able to:

- Recognize common Earth materials and structures.
- Describe how Earth scientists construct the geological time scale and apply geochronologic dating techniques.
- Describe the broad attributes of and interactions within the Earth System, as well as its geological history, how and why it is changing today, and how those changes impact society.
- Understand Earth processes and cycles.
- Perform simple calculations to process and evaluate quantitative Earth science data.
- Interpret a geologic map and cross section in terms of the sequence of geologic events and understand the processes that caused those events.
- Collect, interpret, and synthesize basic field observations and measurements to develop and test multiple working hypotheses to explain them.
- Become proficient in basic geological and Earth science laboratory skills.
- Describe the basic dynamics governing the evolution of the Earth's climate.
- Successfully apply basic calculus and chemistry to Earth science problems.
- Effectively communicate results of scientific inquiries orally, visually, and in writing.