



## Earth & Environmental Sciences (formerly Geological Sciences)

### FROM STUDY TO SKILLS

The Earth and Environmental Sciences study the formation and evolution of the Earth, and how the heat deep inside the Earth continually reshapes our landscape. It studies how the Earth's climate and environment have changed in the past and will continue to change. As an earth scientist, you will use the physical and biological sciences to study the dynamics of the Earth and understand how we can use its resources and how we affect its environment.

This study is growing increasingly urgent. The rising human population makes it more difficult to improve standards of living for all people. The demand for resources — energy, metals, fresh water, and fertile soil — is growing sharply. Exploration for new energy

and mineral deposits depends on a workforce that understands the geological processes that form them. The extraction and utilization of these resources often can place the environment at risk, which jeopardizes human health and prosperity. At the same time, population growth and climate change affect the availability of fresh water, while natural disasters such as earthquakes, tsunamis, hurricanes, wildfires, droughts and floods have increasing impact.

The study of the Earth and its environment is highly interdisciplinary and draws heavily from **related fields** such as physics, chemistry, atmospheric science, oceanography, engineering, ecology, microbiology, botany, mathematics, statistics, and archeology.

### SKILLS AND ABILITIES

#### Research Skills

- Applying scientific method to real-life problems
- Understanding the interactions between the earth and its environment
- Collecting data in the field
- Studying the interplay of short and long term processes

#### Analytical/ Problem-Solving Skills

- Analyzing data
- Learning how to deal with uncertainty and ambiguity
- Computer modeling of scientific data
- Analyzing Internet information critically
- Synthesizing information and building conceptual explanations

#### Project Development Skills

- Integrating knowledge from multiple disciplines
- Applying classroom knowledge to field projects
- Finding solutions to complex problems
- Working as a member of a team

#### Communication Skills

- Presenting complex problems clearly
- Using scientific language and reporting methods
- Writing proposals and research reports
- Designing effective presentations
- Negotiating between conflicting viewpoints

### BUILDING YOUR SKILLS OUTSIDE THE CLASSROOM

Employers seek out individuals who can demonstrate excellent verbal and written communication skills, teamwork and interpersonal skills, initiative, and a strong work ethic. One way to develop such skills is through Geoclub, a student-run organization in the department, which coordinates K-12 outreach, student presentations of research, and recruitment events.

EES is strongly field based and offers several opportunities to develop field-based skills at our off-campus facility,

Camp Davis, near Jackson, Wyoming, as well as through field trips to international (e.g., Scotland, New Zealand, Iceland) and national (e.g., California, Texas, Florida, Hawaii) destinations. In addition, the department has a strong tradition of involving undergraduates in research projects with our faculty, which allows students to test out a career field and develop marketable skills.

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## FROM SKILLS TO CAREER

The Earth and Environmental Sciences concentration prepares our students for highly adaptable and versatile careers in the energy, mining, and environmental consulting industries, as well as for employment in academia and government. In addition, the degree

provides a fertile foundation for careers in education, law, and business.

Many of our concentrators go on to graduate or professional school. The list below is a sample of careers undertaken by our graduates.

### Research

Seismologist   
Volcanologist   
Oceanographer   
Mineralogist  
Paleontologist   
Astronaut   
Research scientist   
Petroleum geologist

### Analytical/Problem-Solving

Environmental consultant   
Geologist  
Soil scientist  
Environmental lawyer    
Professor   
Water exploration scientist  
Energy consultant   
Nuclear waste specialist  
Earthquake mitigation expert 

### Project Development

Environmental engineer    
Environmental planner   
Urban planner   
Curator   
Eco tour guide   
National park scientist   
Landscape architect  

### Communication

K-12 teacher  
Politician, federal, state, and local government  
Journalist/environmental writer  
National park ranger   
Nature center outreach coordinator 

 = Green Jobs

 = Further Study Required

For more career information, see O\*Net at [online.onetcenter.org](http://online.onetcenter.org)

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## CONCENTRATION REQUIREMENTS

The Department of Earth and Environmental Sciences offers a single, highly flexible concentration, with an Honors option. The degree requires two introductory-level earth science courses. One has an emphasis on the solid earth and the coupling between its interior and surface. The other has a focus on the interactions between the hydrosphere, atmosphere and biosphere. For the core curriculum, there is a set of eight courses from which at least four are selected. A field course at Camp Davis is also required. Three faculty members act as undergraduate advisors to help students make optimal use of the flexible nature of the concentration program.

The Department additionally offers minors in Earth Science, Environmental Geology, Oceanography and Paleontology. It also has a joint LSA-Engineering degree program in Earth System Science and a highly competitive fifth-year Master's program.

### Earth and Environmental Sciences

2534 C. C. Little Building  
1100 North University Avenue  
734-764-1435  
[lsa.umich.edu/earth](http://lsa.umich.edu/earth)

### Newnan Advising Center

1255 Angell Hall  
734-764-0332  
[lsa.umich.edu/advising](http://lsa.umich.edu/advising)

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## NEXT STEPS / RESOURCES

For more career information for Earth and Environmental Sciences students, see:

[lsa.umich.edu/earth/undergraduate/careeropportunities](http://lsa.umich.edu/earth/undergraduate/careeropportunities)

To identify additional internships or job opportunities, visit Career Center Connector:

[careercenter.umich.edu/article/c3](http://careercenter.umich.edu/article/c3)

To begin connecting to professionals in fields that interest you, create your own LinkedIn account:

[careercenter.umich.edu/article/getting-started-linkedin](http://careercenter.umich.edu/article/getting-started-linkedin)

The Career Guide series was developed by the University of Michigan Career Center, Division of Student Affairs, in cooperation with the College of Literature, Science, and the Arts. ©2011 Regents of the University of Michigan

On-campus jobs (work-study and non work-study jobs) are listed at:

[studentemployment.umich.edu/JobX\\_Home.aspx](http://studentemployment.umich.edu/JobX_Home.aspx)

Maize Pages list hundreds of organizations for students to get involved in: [maizepages.umich.edu](http://maizepages.umich.edu)

Connect to Community lists volunteer opportunities in local organizations: [connect2community.umich.edu](http://connect2community.umich.edu)

### The Career Center

3200 Student Activities Building  
734-764-7460  
[careercenter.umich.edu](http://careercenter.umich.edu)  
[facebook.com/careercenter.umich](https://facebook.com/careercenter.umich)  
[twitter.com/careercenter](https://twitter.com/careercenter)  
[linkedin.com/company/the-career-center-at-the-university-of-michigan](https://linkedin.com/company/the-career-center-at-the-university-of-michigan)