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.
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.

<table>
<thead>
<tr>
<th>Research</th>
<th>Analytical/Problem-Solving</th>
<th>Project Development</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismologist</td>
<td>Environmental consultant</td>
<td>Environmental engineer</td>
<td>K-12 teacher</td>
</tr>
<tr>
<td>Volcanologist</td>
<td>Geologist</td>
<td>Environmental planner</td>
<td>Politician, federal, state, and local government</td>
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<tr>
<td>Oceanographer</td>
<td>Soil scientist</td>
<td>Urban planner</td>
<td>Journalist/environmental writer</td>
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<tr>
<td>Mineralogist</td>
<td>Environmental lawyer</td>
<td>Professor</td>
<td>National park ranger</td>
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<tr>
<td>Paleontologist</td>
<td>Professor</td>
<td>Eco tour guide</td>
<td>Nature center outreach coordinator</td>
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<tr>
<td>Astronaut</td>
<td>Water exploration scientist</td>
<td>National park scientist</td>
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<tr>
<td>Research scientist</td>
<td>Energy consultant</td>
<td>Landscape architect</td>
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<tr>
<td>Petroleum geologist</td>
<td>Nuclear waste specialist</td>
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= Green Jobs
= Further Study Required

For more career information, see O*Net at http://online.onetcenter.org/

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.

CONCENTRATION REQUIREMENTS

Earth and Environmental Sciences
2534 C. C. Little Building
1100 North University Avenue
734-764-1435
http://www.lsa.umich.edu/earth

Newman Advising Center
1255 Angell Hall
734-764-0332
www.lsa.umich.edu/advising

NEXT STEPS / RESOURCES

For more career information for Earth and Environmental Sciences students, see:
www.lsa.umich.edu/earth/undergraduate/careeropportunities

To identify additional internships or job opportunities, visit Career Center Connector:
www.careercenter.umich.edu/c3student/index.html

To begin connecting to professionals in fields that interest you, create your own LinkedIn account:
www.careercenter.umich.edu/students/networking/linkedin_intro.html

On-campus jobs (work-study and non work-study jobs) are listed at:
https://studentemployment.umich.edu/JobX_Home.aspx

Maize Pages list hundreds of organizations for students to get involved in: http://studentorgs.umich.edu/maize

Volunteer Connection lists volunteer opportunities in local organizations: http://volunteer-connection.umich.edu/

The Career Center
3200 Student Activities Building
734-764-7460
www.careercenter.umich.edu
www.facebook.com/careercenter.umich
http://twitter.com/careercenter