UNDERGRADUATE DEGREE OPTIONS

The Department of Earth Sciences offers a Bachelor of Science in the following options:

Geography

The geography option develops a unique understanding of the interaction and spatial relationships between people and their physical, cultural and socioeconomic environments. This option equips students for careers in hydrology, climatology, environmental analysis, resource and hazard assessment, cartography, remote sensing, marketing, policy analysis and geographic information analysis.

Geology

The geology option is designed for students who wish to apply the principles of field, laboratory and experimental geology to the study of the Earth. This background can be used in a variety of careers, including exploration for and development of Earth’s mineral and energy resources; environmental and engineering applications related to land use and development; and research into ground and surface-water hydrology, surficial processes and natural hazards, and climatic change.

GIS/Planning

The GIS (geographic information system)/planning option is designed to offer students a mix of technical skills and academic education that prepares them for careers in local, state and federal planning, as well as opportunities in private consulting firms that are involved in the planning process. The GIS/planning option recognizes the growing importance of GIS and science in our society, and how these analytic tools are applied in a wide variety of settings. Students are prepared as map makers (cartographers), spatial analysts and planners.

Paleontology

The paleontology option is designed for those students who have a strong interest in geology and biology, specifically vertebrate or invertebrate fossil organisms. The option builds on courses that form the core of the traditional geology option, while providing a strong background in paleontology. The paleontology option provides the background needed for those seeking employment with natural history museums (fossil collections and curation) or to prepare for graduate school.

Snow Science

The snow science option is based on a solid and broad-based foundation of course work from geography, mathematics, statistics, chemistry and physics. The program prepares students for work in a variety of snow-related areas including avalanche forecasting, water resource planning, snow-melt hydrology, land-use planning and snow engineering, as well as a strong technical undergraduate program for environmental scientists or lawyers.

For additional information, contact:
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EARTH SCIENCES
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GETTING YOUR HANDS DIRTY

By virtue of our outstanding location in the scenic and rugged mountains of southwest Montana, earth sciences students have many opportunities to participate in field trips that will facilitate the study of earth processes, earth resources, earth history and environments that people have modified. These field trips are an integral part of many courses, as well as extracurricular activities sponsored by the department. Field work is a very important component of our instructional programs at both the undergraduate and graduate levels.

HANDS-ON LEARNING

Because of the research conducted by faculty in the department, an undergraduate student may have the opportunity to work on active research projects. In particular, we offer the opportunity to do a senior thesis to our top students in each senior class. The senior thesis enables a student to work on an actual research project under the supervision of a faculty member, write a research report (a mini-thesis) and present the results at a professional conference. This is excellent preparation for graduate school and/or the workplace.

EARTH SCIENCES RESEARCH FACILITIES AND GROUPS

Geomicrobiology Lab: This lab investigates the role microbes and microbial processes play in geological and geochemical processes.

Image and Chemical Analysis Lab: This facility provides academic and public microanalytical and imaging facilities.

Museum of the Rockies: With a vast collection of dinosaur fossils, the museum houses some of the most famous dinosaur specimens in the world including Tyrannosaurus rex and Triceratops, and is a Smithsonian Affiliate and a Federal Repository for fossils.

Paleoecology Lab: The paleoecology research group focuses on fire and vegetation history of the Quaternary Period. Ecological history is reconstructed via pollen and charcoal analysis.

Slope and Basin Consortium: The consortium is a non-profit, proprietary research program dedicated to the study of deep-marine sedimentary rocks.

Snow and Avalanche Lab: This lab provides graduate research space for snow and avalanche research, focused primarily on snow as a hazard and as a resource.

Spatial Sciences Center: The center supports research that incorporates geographic information science, remote sensing, global positioning system and spatial analysis.

Structural Geology Lab: The structural geology and tectonics research laboratory provides high-end computing capabilities and field equipment that support surface and subsurface structural analysis and synthesis.

A degree in Earth Sciences also prepares students for graduate work in this discipline; graduate degrees are typically required for professional participation in the field.

Paleontology student Daniel Barta received a 2011 Goldwater Scholarship, the nation’s premier scholarship for undergraduates studying math, natural sciences and engineering.