Learning Outcomes for Geoscience Majors
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The Geological Sciences major has four tracks, all of which result in a B.S. in Geological Sciences, but with different emphases. All of our majors receive an education in basic science; that is, some combination of physics, chemistry, math, and computer science, which complements their education in Geological Sciences. This aspect of our major tracks reflects the interdisciplinary nature of the Geoscience discipline. The department serves about 80 majors and graduates about 20 majors each year. Our majors go on to graduate school and a variety of jobs in industry, state and federal government agencies, and education.

Learning outcomes common to all tracks:

1. Students will be proficient with the measurement, mapping, analytical and/or modeling tools that are required to quantify and analyze important aspects of Earth materials, Earth processes and Earth history.

2. When confronted with the (real-world) problem of incomplete, inconsistent and noisy geological data sets, students will be able to develop and test hypotheses in a systematic way. Students will become comfortable qualifying their answers to problems by stating assumptions and caveats.

Specific to the Geology track: Students will use techniques from the traditional disciplines of mineralogy, petrology, geochemistry, structural geology, tectonics, stratigraphy, and field geology to solve complex problems across a diversity of scales through time and space that require consistent geological reasoning.

Specific to the Environmental Science track: Students will recognize and describe the key dynamic processes that operate on the Earth’s surface environments, including those that are dominated by the behavior of rivers, hill slopes, soils, ground water and oceans, as well as the interaction of humans with these environments.

Specific to the Paleontology track: Students will develop the tools and techniques necessary to recognize geological evidence and reconstruct geological history for specific stages in biological activity and adaptation related to the evolution of life, as preserved in fossils extracted from ancient rocks.

Specific to the Geophysics track: Students will develop a foundation in mathematics and physics that enables them to quantitatively describe key aspects of fundamental Earth processes such as earthquakes, mantle flow, plate movements, heat flow, and crustal deformation.