

## **SOLID EARTH OPTION FOR EARTH SCIENCE (GYA/GYS) MAJORS**

The main goals of the Solid Earth option are to give you an understanding of how our lively planet works beneath its surface and of the scientific tools we use to unravel its complex history. Solid Earth science is the study of the materials, architecture, and processes of the dynamic solid Earth. It deals with rock-forming minerals and processes that form and modify the interior of the Earth, such as plate tectonics, earthquakes, magmatism, and the origin of mountain ranges. Its scope encompasses a vast diversity of geological environments, from those deep in the Earth to those near or at the Earth's surface, and at scales ranging from submicroscopic to global. Study of the solid Earth can be applied to a wide diversity of careers involving the following:

- Discovery and development of resources (such as oil, water, metals, industrial minerals) in ways that safeguard the environment
- Isolation of toxic wastes (such as radioactive wastes)
- Mitigating solid Earth hazards (such as earthquakes, volcanoes, radon)
- Engineering of human structures (such as roads, tunnels, foundations)
- Predicting future global climate patterns from knowledge of the Earth's past
- Fundamental research into how our planet operates

In MEAS, the solid Earth faculty incorporate their own experiences and research into the undergraduate curriculum. Here is a short list of some of the active research topics of interest to the solid Earth faculty:

- Volcanic eruptions in the deep ocean
- Seismicity and tectonics associated with the formation and destruction of ocean basins
- Architecture and evolution of the Appalachian mountain range

### **Courses in the Solid Earth that are open to undergraduates**

**MEA 140:** Natural Hazards and Global Change

**MEA 410:** Introduction to Earth Materials

**MEA 415:** Geology of Economic Mineral Deposits

**MEA 440:** Igneous and Metamorphic Petrology

**MEA 451:** Structural Geology

**MEA 465:** Geologic Field Camp

**MEA 470:** Introduction to Geophysics

**MEA 471:** Exploration and Engineering Geophysics

**MEA etc.** with 500 level courses open to undergrads