

Department of Geology

The Department of Geology consists of six faculty members deeply committed to undergraduate teaching yet actively engaged in fundamental geological research. We teach courses at two levels. First, we offer several introductory courses aimed primarily at students who are interested in learning about the earth and/or about pressing environmental issues but have no previous course work in geology. These courses draw students from all divisions. Second, we offer intermediate and advanced courses for students who wish to pursue earth and environmental science in greater depth. We offer a strong and flexible major in geology based on a broadly based curriculum in general geology rather than classes concentrated in a few narrow specialties. We typically have about thirty declared majors at any one time and graduate about ten geology majors each year. Most graduating classes have approximately equal numbers of men and women. With our low student/faculty ratio, students can count on significant personal attention.

The format of instruction varies from course to course, but we encourage a hands-on approach to learning whenever possible. Many of our introductory courses and all of our upper-level courses have weekly labs. Many courses take field trips to sites in Ohio and beyond. We also run an annual field trip to a more distant locale as a Winter Term group project. Within the past decade, students have traveled to the U. S. Virgin Islands to study reefs and related environments, southern California to study the San Andreas fault and other features of this tectonically active area, and the islands of Java and Japan to study the hazards and resources associated with active subduction zones.

We encourage upper-class majors to undertake independent research whenever course loads and interests permit. Faculty interests span a range of topics that include the dynamics of coastal environments, volcanology, evolution, fossil preservation, coral reefs, the faulting or folding of rocks, the evolution of orogenic belts, and collisions between Earth and extraterrestrial bodies such as asteroids and comets. Students work one-on-one with individual

faculty members in private readings, research tutorials, Winter Term projects, year-long Honors projects, or paid research assistantships. Some research students also accompany their faculty supervisors in field areas ranging from California and the Virgin Islands to Australia and South Africa. Many student research projects result in new advances, and every year geology majors and faculty supervisors collaborate on presentations at regional or national scientific meetings and/or papers published in professional journals such as Australian Journal of Earth Sciences, Geology, Journal of Structural Geology, or PALAIOS. In addition, the department is a member of the Keck Geology Consortium, through which seventeen strong undergraduate geology programs pool resources to offer students summer research experience with faculty from the member institutions. As a consortium member, Oberlin is guaranteed places for at least two students on Keck summer research projects.

The Department of Geology is located in the Carnegie Building. The department has extensive teaching collections of rock and mineral samples, fossils, and maps. Faculty and students use our scanning electron microscope, cathodoluminescope, and petrographic microscopes (all housed in Carnegie) to observe and analyze samples of rocks, minerals, or fossils. We have a preparation laboratory staffed by a departmental technician. Faculty and students use our global positioning system (GPS) base station and rover, numerous handheld GPS units, or a robotic total station to locate sampling stations or map geologic features on Earth's surface. We analyze these digital position data using standard geographic information system (GIS) software packages in a microcomputer laboratory in Carnegie. We recently instituted a course in GIS methods, and now students or faculty can combine survey data with data derived from aerial photographs or satellite images to create and analyze maps. We use this approach to examine surface water flow into local streams or rivers, changes in beach profiles along the Lake Erie shore, or data obtained from instrumental probes in water wells drilled on the nearby,

college-owned Clark Farm. Students and faculty also routinely use standard software packages to create or manipulate digital images as part of class work or research. Our Science Library has a growing catalog of material in electronic formats available over the internet in addition to extensive traditional 'hard-copy' holdings of geological literature.

Students majoring in geology receive a strong preparation in earth sciences, as demonstrated by the performance of our alumni. Many of our graduates enter the work force directly after graduation, working for geological consulting firms, for research-oriented organizations like the Paleontological Research Institution, for environmental organizations, as secondary school science teachers, or as volunteers for the Peace Corps or Teach for America. Many jobs in earth sciences require advanced degrees, so a large percentage of our alumni eventually enter graduate school. Within five years of graduation, approximately half of our majors enroll in graduate school in the earth sciences to obtain Masters or Ph.D. degrees before continuing their careers. Oberlin geology majors have been very successful in gaining admission to top graduate programs across the nation, including geology programs at Harvard, Stanford, the University of California at Berkeley, the University of Wisconsin, the University of Rochester, and the University of Washington; paleoclimatology programs at Brown University and the Lamont Doherty Earth Observatory of Columbia University; hydrology programs at the University of Arizona; and marine sciences programs at Scripps Oceanographic Institution and the University of Washington.

Over the longer haul, Oberlin geology alumni have achieved distinction in earth sciences and garnered prestigious awards from scientific societies. Dr. David Walker (OC '68) of Columbia University received the Arthur L. Day Medal of the Geological Society of America for applying physics and chemistry to the solution of geologic problems. Dr. Gary Lane (OC '52) of Indiana University received the Raymond C. Moore Medal of the Society for Sedimentary Geology for

excellence in paleontology. Dr. Peter T. Flawn (OC '46) received the Ian Campbell Medal of the American Geological Institute for his "singular contributions to the profession of geology as a researcher, educational leader, administrator, and public servant." Dr. Flawn, who was president of the University of Texas at Austin from 1979 to 1985, also received an honorary doctorate from Oberlin College at the Commencement ceremonies in 1995. More recently, Dr. Basil Tikoff (OC '87) of the University of Wisconsin received the Young Scientist Award/Donath Medal of the Geological Society of America and Dr. Suzanne O'Connell (OC '73) of Wesleyan University's Earth and Environmental Sciences Department received the Outstanding Education Award of the Association for Women Geo-Scientists.

If you have further questions, please contact Steven Wojtal, the current chair of the department. If you visit the Oberlin campus, you are welcome to drop by our offices in the Carnegie Building, which are located directly above the Admissions Office. Any member of the department will be glad to show you our facilities and introduce you to some of our geology majors if they are available during your visit. For additional information on specific course offerings and the requirements for the geology major, please consult the Oberlin College Catalog or visit our website at <http://www.oberlin.edu/Geopage/>.

Department of Geology Faculty

Holli M. Frey

Visiting Assistant Professor (B.S., Franklin & Marshall College, 1999; Ph.D., University of Michigan, 2005). Teaches Earth's Environments, Mineralogy, Igneous and Metamorphic Petrology, and Volcan to Volcano: An Introduction to Volcanology. Present research interests: origin of the continental crust, quantifying rates of volcanic eruptions, magma chamber processes, and the role of water in magmatic systems.

Dennis K. Hubbard

Associate Professor (B.A., University of Massachusetts, 1971; M.S., University of South Carolina, 1974; Ph.D., University of South Carolina, 1977). Teaches Earth's Environments, Coral Reefs, and Beaches and Coasts. Present research interests: coastal processes and sedimentology, human impacts on coastal and marine systems, Quaternary coral-reef development, paleoclimatology as preserved in coral skeletons.

Karla M. Parsons-Hubbard

Associate Professor (B.A., Beloit College, 1983; M.S., University of Rochester, 1987; Ph.D., University of Rochester, 1994). Teaches Earth's Environments, Marine Science, Evolution of the Earth, and Paleontology. Present research interests: fossil preservation (taphonomy) and its paleoenvironmental significance, fossil reef/modern reef comparisons, modern and ancient encrusting communities.

Laura J. Moore

Assistant Professor (B.A., Colgate University, 1993; Ph.D., University of California Santa Cruz, 1998). Teaches Surface Processes, Geologic/Geographic Mapping, and Earth's Environments. Research interests: geomorphology, coastal geology, and linkages between coastal processes and climate variability.

Bruce M. Simonson

Professor (B.A., Wesleyan University, 1972; Ph.D., Johns Hopkins University, 1982). Teaches Meteorite Impacts in Space and Time, Groundwater Hydrogeology, and Sedimentary Geology. Present research interests: surface environments in early earth history, Precambrian iron formations, and ejecta from large meteorite impacts.

Steven F. Wojtal

Professor and Chair (Sc.B., Brown University, 1974; M.A., Johns Hopkins University, 1976; Ph.D., Johns Hopkins University, 1982). Teaches Marine Science, Geologic/Geographic Mapping, Glaciology Ice Ages and Climate Change, and Structural Geology. Present research interests: geodetic and geologic strain accumulation near faults, fault slip mechanisms, and the evolution of fault rocks, deformation in mountain fold belts, mechanics of rock deformation.

Revised 9/2006