

ENVIRONMENTAL EARTH AND OCEAN SCIENCES



Students on an MU Geology Club trip at one of the Seven Sisters glaciers near College Fjord, Alaska.

Located in the Appalachian Mountain belt, Millersville Environmental Earth and Ocean Sciences (EEOS) explores the Earth's diverse systems. By studying everything from coastal ocean systems to large-scale plate tectonics, our EEOS majors leave Millersville University well-versed in the environmental sciences and confident that they have the skills necessary for the future.

DEGREES/CONCENTRATIONS

BACHELOR OF SCIENCE (B.S.)

The EEOS program offers small class sizes, hands-on learning opportunities, field study and research experiences. Students choose one of the concentrations listed below.

Environmental Geology – Students learn the foundations of modern geoscience using the tools and technology critical to solve environmental problems. Extensive field experience allows students to apply their skills and gain experience. This concentration meets all academic requirements for licensure as a professional geologist.

Environmental Ocean Sciences – Students gain a solid understanding of ocean science fundamentals and a practical working knowledge of sampling the marine environment. Field-intensive courses taught during the summer months at the Chincoteague Bay Field Station (CBFS) provide the graduate with practical experience in making environmental measurements in real-world conditions.

Environmental Earth Sciences – Multidisciplinary in design, this program provides a broad base in the earth and its resources. Students use this foundation as a starting point to work with their academic advisor to design a sequence of courses focused on their specific environmental interests.

WHY BE AN ENVIRONMENTAL SCIENTIST?

The increased need for energy, environmental protection, and responsible land and water resource management is projected to spur demand for geoscientists (Bureau of Labor Statistics, 2020). Employment of geoscientists is projected to grow 11% from 2016 to 2026, faster than the average for all occupations (Wilson, 2019). According to the U.S. Department of Labor, the median annual salary for geoscientists is slightly over \$90,000, and job growth through the next decade is projected to be faster than average. www.bls.gov/ooh/life-physical-and-social-science/geoscientists.htm

INTERNSHIPS AND RESEARCH

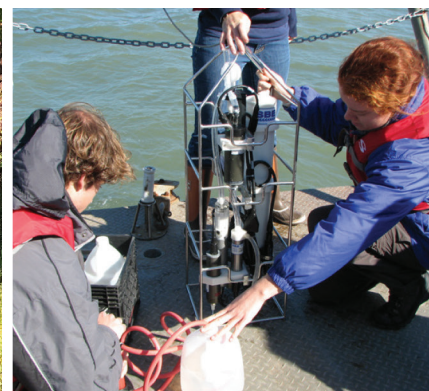
We encourage every student majoring in EEOS to pursue an internship experience outside the department. In recent years, students have had paid internships with both regional and national geologic engineering and environmental geoscience firms. Our students have also secured paid internships with the PA Department of Environmental Protection and the PA Department of Conservation and Natural Resources. In addition, many students undertake significant scientific research projects, working closely with faculty advisors to solve real-world problems in environmental earth and ocean sciences.

FACULTY AND CLASS SIZE

All EEOS classes and labs are taught by faculty with Ph.Ds. Classes for EEOS majors have a maximum size of 24, and most are smaller. Instead of sitting in a large lecture hall with hundreds of other students and having labs taught by teaching assistants, Millersville Environmental Earth and Ocean Sciences students get personalized attention from faculty.



Students deploy a fishing net from the stern of the research vessel (R.V.) Mollusk in Chincoteague Bay, Virginia, during a CBFS summer course.



Left: Student working on field-site descriptions for senior research in the Baltimore Mafic Complex. Middle: Taking a break during field work. Right: Students deploying a conductivity/temperature/depth probe off the R.V. Parker at the Chincoteague Bay Field Station.

FACILITIES AND EQUIPMENT

Student Study Room – Equipped with computers, chalkboards, reference books and textbooks, the student study room is a place for our students to work collaboratively on assignments and projects.

Software – In addition to GIS and statistical software, the earth sciences department has licenses for GMS-MODFLOW groundwater modeling software, Rockworks (a suite of geologic utilities) and PETRA core-logging software. The department's remote sensing lab is equipped with ENVI/IDL software, as well as multiple LIDAR hardware/software systems, including Terrasolid, LP360, Global Mapper and LasTools.

Equipment – The department's equipment includes a 20-foot wave tank; a rotating tank; conductivity/temperature/depth (CTD) profilers with oxygen, fluorescence, backscatter and light sensors; an acoustic current meter; and a meteorological station with shortwave, longwave and temperature sensors. The department also hosts a microscope lab, a research-grade petrographic microscope, a rock saw, a streamflow current meter and a magnetometer.

CLUBS AND ACTIVITIES

The Geology Club provides opportunities for students to become better acquainted, to promote interest in geology and the earth sciences, and to provide opportunities to explore geology beyond the classroom. Highlights of the club include mineral and fossil digging, trips to regional natural history museums and the annual club trip to one of our national parks. Students have visited such geologically rich locations as Grand Canyon, Glacier and Yellowstone national parks.

The Ocean Science Club members enjoy a casual and inspiring learning atmosphere where students explore career opportunities, learn to scuba dive and visit marine research stations.



Students at the Northeast Regional meeting of the Geological Society of America in Bretton Woods, New Hampshire.



"Taking advantage of research opportunities at Millersville has given me skills and experience that cannot be acquired in the classroom setting and has helped me stand out immensely among the sea of newly graduated earth scientists."

– Evan Ntonados, B.S. Ocean Sciences and B.S. Meteorology, 2015

ROCK-SOLID PREPARATION

Millersville University geology graduates passed the most recent Fundamentals of Geology Examination for professional licensure at a rate of 80%, well above the national average of 58%. In nearly all content domains of the exam, MU geology alums exceeded the national average, in some cases by over 10 percentage points.

ABOUT OUR GRADUATES

EEOS majors leave Millersville University with a broad range of skills that open many job opportunities, including hydrology, petroleum and mineral exploration, and environmental consulting/remediation. Students also have the skills necessary to immediately enter graduate school. EEOS majors who continue on to graduate school find themselves able to hit the ground running. One Millersville alum who recently completed a master's program at Temple University said, "I was very happy with how Millersville prepared me for graduate school." Feedback from alums who go into industry has been similar—they feel that they have better preparation in skills needed for their jobs than graduates of other programs.

ALUMNI SPOTLIGHT



Mark Sutcliffe, Exploration Geologist

Mark received his B.S. from Millersville in 2007, with a double major in geology and economics. His experiences attending Geological Society of America meetings while attending Millersville encouraged him to pursue geology. He went on to earn an M.S. in structural geology/metamorphic petrology from the University of Missouri-Columbia. He currently works to discover new energy resources for Newfield Exploration, a major international energy company.

Millersville University

Department of Earth Sciences • 717-871-4359 • www.millersville.edu/esci