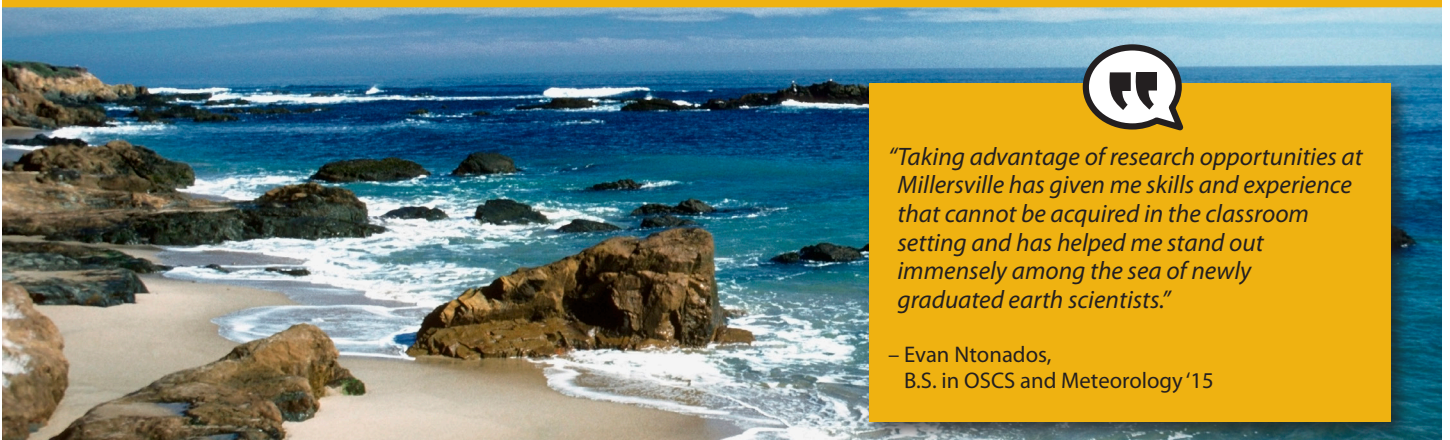


# OCEAN SCIENCES AND COASTAL STUDIES



*"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. in OSCS and Meteorology '15

**The Ocean Sciences and Coastal Studies program provides a comprehensive exposure to the ocean's physical dynamics and complex ecosystems, emphasizing the relationships between the ocean, atmosphere and land. The option in physical oceanography provides additional knowledge and skills in the physical aspects of the ocean, and is designed for efficient progress through a double major with meteorology.**

The Ocean Sciences and Coastal Studies (OSCS) program offers comprehensive and intensive training to prepare graduates for careers in the ocean sciences. Our students acquire a rigorous education in the fundamental theories, but also learn practical field and laboratory applications currently used by working oceanographers. Our classroom and field curricula are continuously evolving to meet the demands of the 21st-century ocean sciences workforce, and allow graduates to be competitive applicants to top graduate programs.

## DEGREES/CONCENTRATIONS

### B.S. OCEAN SCIENCES AND COASTAL STUDIES

Our B.S. OSCS degree program offers comprehensive classroom instruction and field training in the physical, chemical, geological and biological aspects of oceanography. Our major-required courses provide a solid understanding of ocean sciences fundamentals, supported by rigorous instruction in mathematics, chemistry, physics and biology. Additionally, 25 percent of the OSCS course load is satisfied through field-intensive courses taught during the summer months at the Chincoteague Bay Field Station (CBFS), in Wallops Island, Va.

### B.S. PHYSICAL OCEANOGRAPHY OPTION

This option is for students interested in examining the physical aspects of ocean currents, tides and the intimate relationship between the ocean and atmosphere, with significant emphasis on the ocean's role in climate change. Emphasis is on field-intensive courses taught at the Chincoteague Bay Field Station during the summer months.

### MINOR IN OCEANOGRAPHY

Popular option for other science majors. An additional 18 credits of OSCS coursework earns the minor degree.

## CLUBS AND ACTIVITIES

**Ocean Science Club** – Club members enjoy a casual and inspiring learning atmosphere. This student-run club actively and responsibly provides educational experiences, informational lectures and career exploration opportunities for its members.

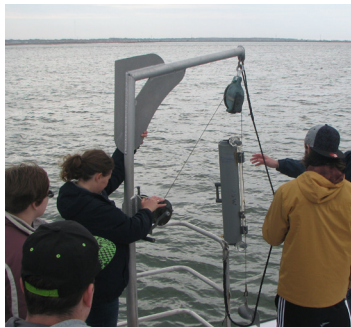
**Submersible Research Team** – Through our OSCS and Applied Engineering, Safety & Technology programs, club members are exposed to autonomous underwater vehicle and SONAR systems used for underwater profiling, sediment transport studies and the examination of marine plant and animal life.



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



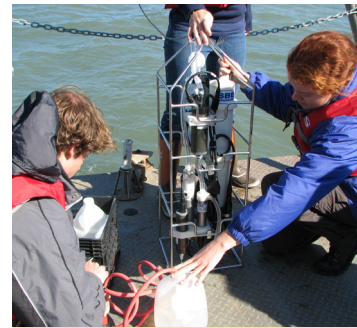
An oceanography student takes a seawater sample from a Niskin bottle sampler aboard the RV Knorr, North Atlantic Ocean, spring 2014.



Students deploy a Niskin water sample bottle from the deck of the RV Mollusk, Chincoteague Bay, Virginia, during a summer CBFS oceanography course.



A giant manta ray glides alongside the RV Knorr in the North Atlantic Ocean, spring 2014.



Students deploy the CTD from the deck of the RV Parker, Chincoteague Bay, Virginia, during a field trip to the CBFS.

## FACILITIES

Our facilities include a 20-foot wave tank; a rotating tank in collaboration with MIT; Conductivity-Temperature-Depth (CTD) profilers with oxygen, fluorescence, backscatter and light sensors; an acoustic current meter; a meteorological station with shortwave, longwave and temperature sensors; and a number of other oceanographic laboratory and field instruments.

We are also a senior (and founding) member of the Chincoteague Bay Field Station. Located on the beautiful Virginia coast, the CBFS boasts direct boat access to the Atlantic Ocean and adjacent waters of Chincoteague and Assateague islands. The OSCS program includes weekend and summer study and research at the CBFS, providing Millersville University students with valuable hands-on experience with modern research tools and techniques (see the CBFS website: [www.cbfieldstation.org](http://www.cbfieldstation.org)).

## FACULTY

The OSCS professors are both experienced researchers and teachers, have extensive field experience on ocean research expeditions and are actively collaborating with NASA, NOAA, U.S. Fish & Wildlife, U.S. Park Service, and The Nature Conservancy.

## INTERNSHIP OPPORTUNITIES

Our students have interned at NASA and have received various national and local scholarships. Consult with faculty, the CBFS or the Millersville University Office of Experiential Learning for further information.

## OUR GRADUATES

Our OSCS students graduate with a thorough understanding of the fundamental theories and concepts underpinning the discipline of modern oceanography, and demonstrate an understanding of the scientific process used to address the challenges of the 21st century. They possess high-level quantitative skills using data collected from a variety of contemporary oceanographic sampling platforms, such as earth-orbiting satellites and aircraft, autonomous underwater and moored sensors, and research vessels. They also demonstrate proficiency in the application of current field and laboratory technologies through intensive field-oriented summer courses at our marine station. And lastly, graduates are proficient in the accurate dissemination of scientific information and knowledge by demonstrating effective oral and written communication skills.



## STUDENT SPOTLIGHT

OSCS students **Jeremiah Stone** and **Evan Ntonados** participated in the West Atlantic Climate Study (WACS II) aboard the RV Knorr during summer 2014. The focus of the study was to find links between biological processes in the surface ocean and the production of organic compounds in the lower atmosphere that can significantly impact Earth's climate by attenuating incoming solar radiation.

**Jeremiah** (left) defended his departmental honors thesis based on his WACS II research in December 2015.

**Evan** (right), who double-majored in meteorology and OSCS, gained valuable working knowledge of contemporary research issues regarding the atmosphere-ocean link. His research experience is an excellent example of the practical application of a physical oceanography and meteorology double major.