

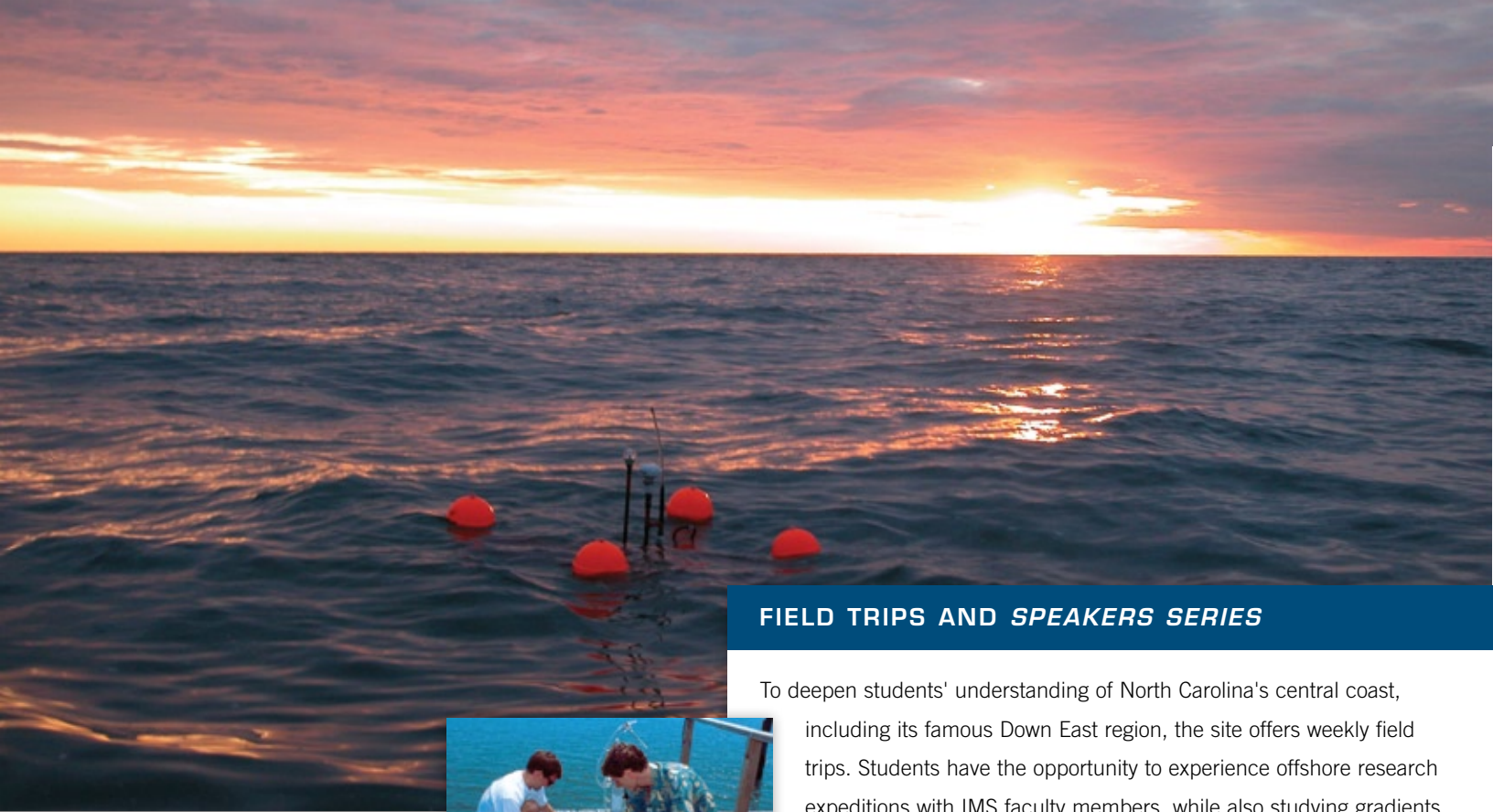


## **MOREHEAD CITY FIELD SITE**

UNC INSTITUTE OF MARINE SCIENCES, MOREHEAD CITY, NC

The University of North Carolina at Chapel Hill Institute for the Environment Morehead City Field Site is conducted at the Institute of Marine Sciences (IMS) in Morehead City, North Carolina. It offers undergraduate students opportunities for experiential learning in Environmental Science, Environmental Studies and Environmental Health Science, with emphases on microbial and phytoplankton ecology, water quality and resources, benthic ecology, wetlands, shellfish and fisheries issues, watershed-based modeling studies, sea level rise, coastal geology, barrier island ecology, ecosystem-based management, and beach renourishment.

The Morehead City/Beaufort, North Carolina area boasts a unique concentration of marine science resources. Morehead City hosts IMS, the adjacent North Carolina State University Center for Marine Sciences and Technology (CMAST), the Shellfish Sanitation and Recreational Water Quality Section of the North Carolina Division of Water Quality, and the headquarters of the North Carolina Department of Environment and Natural Resources Division of Marine Fisheries. Three miles east of Morehead City is Beaufort, home of the Duke University Marine Laboratory, a National Oceanic and Atmospheric Administration (NOAA Beaufort Lab) facility, the North Carolina National Estuarine Research Reserve Education Office and the North Carolina Maritime Museum. Just across Taylor's Creek from downtown Beaufort are wild horses on Carrot Island's Rachel Carson Estuarine Research Reserve and world-class beaches on Shackleford Banks and Core Banks.



### FIELD TRIPS AND *SPEAKERS SERIES*

To deepen students' understanding of North Carolina's central coast, including its famous Down East region, the site offers weekly field trips. Students have the opportunity to experience offshore research expeditions with IMS faculty members, while also studying gradients from estuaries to the open ocean and gaining first hand exposure to advanced shark research. They may choose to steam to the Gulf Stream and examine life from reef habitats there. On coring field trips

on the Neuse River Estuary and Pamlico Sound, students will gain exposure to nearshore environments, beach erosion issues, and discuss sea level rise on several field trips to Atlantic Beach/Pine Knoll Shores. Students will see first-hand the impacts of human development, water quality issues, and the impacts of stormwater on coastal receiving waters. They will also learn about local culture by visiting the Morehead City Port and the Beaufort-located North Carolina Maritime Museum. The Fall Speaker Series brings in internationally and nationally acclaimed researchers to discuss all aspects of marine science, including seminar speakers from UNC Wilmington, Duke University, North Carolina State University, NOAA, the North Carolina Coastal Federation, North Carolina Division of Marine Fisheries and CMAST. The Speaker Series, held in the IMS Seminar Room, is free and open to the public. It also provides students attending the site with seminar credit (ENST 204).

### LOCATION

The Morehead City Field Site is based at the UNC-Chapel Hill Institute of Marine Sciences in Morehead City, North Carolina. IMS is strategically located in North Carolina's central coastal region on 6.5 acres of waterfront property on Bogue Sound. The region is rich in estuarine and wetland habitats and includes the large embayments (e.g., Core, Pamlico and Albemarle Sounds) that are typical of North Carolina's coast and tied to much of its seafood production. Field study opportunities will take students to nearby areas, with a focus on the well characterized Neuse River Estuary-Pamlico Sound system, and nearshore oceanic and Gulf Stream environments. Pamlico Sound is the second largest lagoonal estuary in the country, and the site of dynamic larval fish and invertebrate activity. Morehead City's many public access points offer ready access to the local rivers, creeks, estuaries and coastal areas, as well as the ecologically significant Cape Hatteras and Cape Lookout areas. IMS will house the site's administrative offices and host its classes and the Fall Speaker Series. Field trips will leave from IMS, utilizing its vans, boats and research vessels, including IE's R/V, Watts Hill, Jr. All of the field site students have the opportunity to conduct independent research projects with IMS faculty. Students live in the dormitories of the Duke University Marine Laboratory.



## COURSEWORK

Students typically spend 2 days a week in classes, 1-2 days on field excursions, and 1-2 days conducting independent research with faculty members of their choice.

The courses offered are:

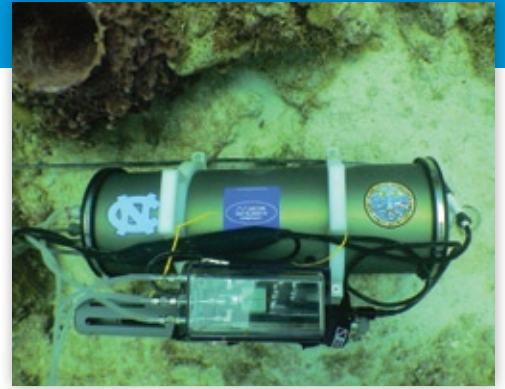
**ENST 204 Seminar on Marine Issues (2 credit hours):** A different speaker comes to IMS each week of the fall semester. Topics include conservation science, fisheries management, microbial ecology, water quality, and technological advances in marine science. The students have the opportunity to interact with each speaker, including meeting for lunch to discuss their personal interests with each speaker.

**ENST 698 Capstone Project (3 credit hours):** Students conduct an interdisciplinary, team-based analysis of environmental phenomena or marine science problems. Past Capstone projects include investigations of introduction of invasive species, beach renourishment issues, stormwater runoff, and the potential for wind energy along the coast of North Carolina. The students work with professors, local management agencies, and experts in the field to complete their Capstone projects.

**ENST 395 Research in Environmental Science and Studies for Undergraduates (3 credit hours):** Students receive credit for independent research hours completed with an Institute of Marine Sciences faculty member. Internships with outside agencies (such as NOAA, Duke University, etc.) in the Beaufort and Morehead City areas are also available for students.

**ENST 471 Human Impacts on Estuarine Processes (4 credit hours):** This course provides a detailed and cohesive examination of the human impacts on biological processes in estuarine ecosystems. Students learn about estuarine trophic dynamics, estuarine mixing and water movement, estuarine formation, and the ways that human impacts ecosystems. Laboratory/recitation/field work is included and contributes two credit hours to the course.

**ENST 472 Coastal and Estuarine Ecology (4 credit hours):** This course is a field intensive study of the ecology of marine organisms and their interactions with their environment, including commercially important organisms. Students have the opportunity to travel offshore to learn about Gulf Stream trophic dynamics, fish populations and management, and a range of coastal and ecological issues relevant to marine sciences. Laboratory/recitation/field work is included and contributes two credit hours to the course.



## STUDENT RESEARCH AND THE CAPSTONE PROJECT

The coursework, field excursions, internships or independent research, and seminar series are complemented by a collaborative, team-based research and classroom effort known as the "Capstone" project. At the Morehead City Field Site, the Capstone project is typically an examination of a real-world marine science problem or issue. For example, recent Capstone projects have been focused on stormwater runoff and beach renourishment. Capstone projects are conducted with the support and guidance of IMS faculty, but the goal is for the project to be a product of a team effort among the resident students. The Capstone project includes frequent interaction among the students, field site faculty, and local collaborating scientists and management officials. Students gain experience in research, project and experimental design, teamwork, group writing, and public speaking and presentation. The Capstone project is listed as ENST 698 and is worth three credit hours.



## FACULTY

Faculty at the Morehead City Field Site include Field Site Director and Associate Professor Rachel Noble, Research Assistant Professors Steve Fegley and Johanna Rosman, Assistant Professors Joel Fodrie and Michael Piehler, Professors Tony Rodriguez, Hans Paerl, Rick Luettich, Niels Lindquist, Charles “Pete” Peterson, Frank Schwartz, and other faculty members from the campus-based Department of Marine Sciences. Noble, who participates in teaching Human Impacts on Estuarine Processes and oversees the Capstone project, the field trips and the Fall Speaker Series, holds a Ph.D. in Marine Biology from the University of Southern California. A marine microbial ecologist, Noble’s areas of research and study are the dynamics of marine microbial food webs; the relationships between viruses, bacteria and phytoplankton in marine environments; and issues related to beach water quality and human inputs to coastal ecosystems. Hans Paerl, Tony Rodriguez, Johanna Rosman and Mike Piehler support the teaching effort of Human Impacts on Estuarine Processes by contributing lectures. Joel Fodrie, Steve Fegley, and others support the teaching of the Coastal and Estuarine Ecology course by contributing supporting lectures.

## TIMING • CREDIT HOURS

The Morehead City Field Site program, which is only offered in fall semesters, gives preference to rising UNC-Chapel Hill seniors, but rising juniors will also be considered. Students from other UNC campuses will also be considered on a space available basis. Students are encouraged to begin planning with their advisors during their sophomore year if they wish to attend the Morehead City Field Site. The Morehead City Field Site is geared toward students with an active interest in pursuing scientific research, both laboratory and field-based. The semester at the site follows the same schedule as the University during the fall semester. It is expected that students will complete all research and writing for their Capstone Project during the time they are at the Morehead City Field Site. The site offers study of interest to students in Environmental Health Science, Environmental Science, Environmental Studies, Geography, Geology, Public Policy and other fields. The Department of Marine Sciences offers an undergraduate Minor in Marine Sciences that is a complementary course of study for students attending the site.

## AWARDS AVAILABLE TO STUDENTS ATTENDING THE SITE

The Betsy Steele and Geo. Watts Carr III Environmental Student Support Fund, given by Betsy and Watts Carr III, of Greensboro, and the Mary and Watts Hill, Jr. Student Internship Fund, given by Mary Hill, of Chapel Hill, fund awards to students attending the Morehead City Field Site. For details about these awards, and awards and scholarships assisting students attending other IE field sites, or majoring in environmental degrees at Carolina, contact the IE’s Educational Programs Office at (919) 962-9805.

## ABOUT THE INSTITUTE

The UNC Institute for the Environment is the multidisciplinary program leading UNC-Chapel Hill’s world-renowned environmental community in educating practitioners, researching and solving global challenges, and informing the public about critical issues. It focuses on four key areas: balancing energy production and environmental quality, protecting human health, supporting environmental policy makers, and developing sustainable community design principles and practices. The Morehead City Field Site is part of a network of IE field sites that also includes locations in Highlands, Manteo and Chapel Hill, North Carolina, as well as in the Galápagos Islands, Thailand, and Cambridge, United Kingdom.

## FOR FURTHER DETAILS AND AN APPLICATION

Please contact the Institute for the Environment at 919-966-9922 or send an email to [ie@unc.edu](mailto:ie@unc.edu). You may also visit the web site at [www.ie.unc.edu](http://www.ie.unc.edu).

You may obtain more information about the UNC Institute of Marine Sciences and the undergraduate Minor in Marine Sciences by visiting the UNC Marine Sciences Program website at [www.marine.unc.edu](http://www.marine.unc.edu)