Program Overview

The School for Marine Science & Technology (SMAST) now offers the COAST Professional Science Master’s program as a new opportunity for students to pursue a non-thesis degree that blends a study of science with coursework in management, policy, or law, and also has a strong emphasis on writing and communication skills. This unique program is designed to enable students to enter the workforce immediately as advanced marine science, engineering, and technology professionals. For those already in the workforce, the COAST PSM is an excellent way to broaden their knowledge of the marine sciences and technology along with the business practices in their field, while advancing their own careers.

Faculty and Areas of Expertise

DEPARTMENT OF ESTUARINE AND OCEAN SCIENCES

Mark A. Altabet, Chair, Professor; PhD, Harvard University, 1984. Study of present and past major marine biogeochemical cycles using natural variations in isotopic ratio; the global nitrogen cycle and climate change; atmospheric CO2 concentration; coastal eutrophication.

James Bisagni, Professor; PhD in Oceanography, University of Rhode Island Graduate School of Oceanography, 1991. Physical oceanography, satellite oceanography.

Wendell Brown, Professor; PhD in Oceanography, Massachusetts Institute of Technology, 1971. Coastal physical oceanography, moored ocean observations, real-time circulation modeling and data/information management system development.

Avijit Gangopadhyay, Professor; PhD in Ocean Engineering, University of Rhode Island School of Oceanography, 1990. Physical oceanography, numerical modeling, climate studies.

Louis Goodman, Associate Dean, Professor; PhD in Physics, Drexel University, 1971. Physical oceanography, internal waves, turbulence and mixing, bottom and surface mixed layers, acoustic scattering from turbulence, biophysical coupling, autonomous underwater vehicles.

Brian L. Howes, Professor; PhD, Boston University Marine Program, 1984. Estuarine and embayment nutrient cycling and modeling; saltwater and freshwater wetland, lake, embayment management and restoration.

Steven Lohrenz, Dean, Professor; PhD in Biological Oceanography, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program, 1985. Study of biological distributions and productivity as well as cycling of carbon and nutrients in coastal and ocean waters.

Daniel MacDonald, Associate Professor; PhD in Oceanographic Engineering, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program, 2003. Estuarine oceanography, hydrodynamics, stratified turbulence, marine renewable energy, environmental/pollutant transport.

Cynthia Pilska1n, Professor; PhD in Geological Sciences, Harvard University, 1985. Marine biogeochemical particle fluxes and sedimentation as related to short- and long-term climate variability; regeneration budgets of carbon, nitrogen and silica; in-situ particle optics and imaging studies.

Miles Sundermeyer, Associate Professor; PhD in Physical Oceanography, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program, 1998. Dispersion and transport processes, observations and numerical modeling of mixing and stirring.

Amit Tandon, Professor (joint appointment with Physics); PhD in Mechanical Engineering, Cornell University, 1992. Mixing processes in the upper ocean, using a combination of analytical, laboratory, and field data.

DEPARTMENT OF FISHERIES OCEANOGRAPHY

Steven Cadrin, Associate Professor; PhD in Fisheries Science, University of Rhode Island, 2003. General fisheries science relevant to resource management, population modeling of fishery resources, spatial population structure and movement, collaborative research with fishermen.

Changsheng Chen, Professor; PhD in Physical Oceanography, Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program, 1992. Modeling and observational exploration of coastal ocean circulation, oceanic frontal processes, turbulent mixing/bottom boundary layer dynamics, chaotic mixing, western boundary currents, internal waves and tides, biological/physical interaction.

Geoffrey Cowles, Assistant Professor; PhD in Mechanical and Aerospace Engineering, Princeton University, 2001. Application of computational methods to problems in fluid and ecosystem dynamics.

Daniel Lee Georgianna, Chancellor Professor (joint appointment with Economics); PhD in Economics, University of Massachusetts Amherst, 1977. Marine resource economics, comparative economic systems, and economic history.

Pingguo He, Associate Professor; PhD, University of Aberdeen, 1987. Fish behavior and fishing gear; sustainable utilization of fisheries resource of northeastern US and beyond.
Program Highlights

The Professional Science Master’s degree is conferred through the University of Massachusetts’ system-wide Intercampus Marine Science program. This connection gives PSM students access to the resources and faculty of four campuses and allows them to take courses elsewhere in the UMass system at UMass Dartmouth prices.

Student Achievements

The achievements of SMAST students include Fulbright Fellowships, Knauss Marine Policy Fellowships, the NOAA Sea Grant Fellowship in Population Dynamics, the Nancy Sayles Day Foundation Research Award, and Best Research Paper awards from the International Council for the Exploration of the Sea, the American Meteorological Society, the National Shellfisheries Association, the International Pectinid Workshop, the American Institute of Fishery Research Biologists, and the American Fisheries Society.

Application Requirements

Successful applicants will generally have completed an undergraduate or graduate degree with a GPA of 3.00 or better. They should also have an undergraduate major in one of the basic scientific disciplines or engineering, or strong multidisciplinary training with completion of at least six semesters of coursework in the natural sciences, generally to include biology, chemistry, and/or physics. Preparation in mathematics at least through integral calculus is strongly encouraged.

Degree Requirements

The PSM program requires completion of eleven (11) courses plus an internship. The eleven courses include two core courses from among the four (4) science core courses in biological, chemical, geological and physical oceanography. An additional, third core course in marine policy and/or management areas (including law and economics) is also required.

The remaining eight (8) elective courses include:
- Four (4) science electives—12 credits
- Two (2) elective “Plus” courses (includes such areas as communication, project management, and science leadership)—6 credits
- Two (2) courses selected from science AND/OR “Plus” electives, chosen to fit the student’s area of concentration—6 credits.

Within these guidelines, there is considerable flexibility for COAST PSM students to design a suite of courses that meet their specific interests and professional needs. A Program Coordinator is available to help students select courses under a variety of themes. Course offerings are structured so that students may attend the program part-time while working full-time, as there is no residency requirement. Classes are scheduled with an eye toward enabling working professionals to pursue their degrees while maintaining their professional responsibilities within their places of employment. The internship may be arranged at the student’s current place of employment or elsewhere.

Example of a full-time COAST PSM course sequence

**Semester 1:**
- Physical Oceanography
- U.S. Ocean Policy
- Quantitative Methods for Marine Scientists

**Semester 2:**
- Chemical Oceanography
- Project Management for Science Professionals
- Physics of Fluids

**Semester 3:**
- Professional and Scientific Communication
- Coastal Physical Oceanography
- Marine Biogeochemical Cycles

**Semester 4:**
- Pollutant Transport in the Environment
- Professional Science Leadership
- Internship

Contact Information

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