The discipline of marine science is broad, deep, and rewarding. As a marine scientist, you’ll explore rivers, estuaries, and oceans, and you will analyze their interactions with the surrounding environment. You’ll sample marine life and measure the tides, waves, and currents. You may spend your days working on the water, in the lab, behind a computer, or a combination of all three. Through this diverse field of study, marine scientists strive to understand fundamental questions about our oceans and their interactions with the land. Marine scientists also apply this understanding to predict earth system changes, inform policy, and cultivate an ethos of environmental stewardship.

The SMCM marine science program takes full advantage of our unique waterfront location through intensive, experiential study of the St. Mary’s River and the Chesapeake Bay, which is just a short boat ride from campus. The college is also within a short drive of Mallows Bay National Marine Sanctuary and two National Estuarine Research Reserve sites. Numerous federal agencies, such as the National Oceanographic and Atmospheric Administration and the Environmental Protection Agency, are headquartered just down the road in Washington, D.C. Other research opportunities are available in laboratories at St. Mary’s College and through the internship programs at government and privately funded research laboratories in Maryland and elsewhere. A cooperative agreement between the College and the University of Maryland’s Center for Environmental Science provides opportunities for St. Mary’s College students to take graduate courses and conduct research with faculty members at the nearby Chesapeake Biological Laboratory in Solomons, MD.

**Learning Outcomes**

- Demonstrate understanding of fundamental concepts in marine science, including principles of geological, physical, chemical, and biological processes in the marine environment.
- Demonstrate understanding of common laboratory, field, and modeling methods used in marine science.
• Demonstrate the ability to, formulate a falsifiable hypothesis, design an experiment or observational study to test your hypothesis, analyze your results in a statistically rigorous way, draw logical conclusions based on your analysis.
• Communicate effectively the concepts, methods, results, and conclusions of marine science research, in oral and written form, to specialists and the general public.
• Apply knowledge and skills learned to solve problems in marine geology, physics, chemistry, or biology.
• Demonstrate understanding of how human activities impact the marine environment, and how the marine environment impacts human activities.

**Degree Requirements for the Major**

**Physical Science Courses (12 credit hours)**
- CHEM 106: General Chemistry II & CHEM 106L
- College Physics 1&2 (PHYS 121, 122) or General Physics 1&2 (PHYS 141, 142) or Fundamental of Physics 1&2 (PHYS 151, 152)

**Biology Core Courses (10 credit hours)**
- BIOL 105: Principles of Biology I & BIOL105L
- BIOL 106: Principles of Biology II & BIOL 106L

**Math Core Courses (4 credits)**
- Math 221: Statistics OR BIOL 311: Biostatistics
  NOTE: Calculus I and II (MATH 151, 152) are recommended for all students and are required by most graduate and professional schools.

**Marine Science Core Courses (12 credits)**
- MRNE 110: Introduction to Marine Science
- MRNE 220: Physical Oceanography
- BIOL 383: Biological Oceanography

**Professional Discovery (4 credits)**
- MRNE 398: Marine Internship
- MRNE 397 Marine Science Directed Research
- MRNE 399 Marine Science Independent Study
- MRNE 493 First Semester Marine Science SMP
Marine Science Elective Courses (16 credits)
Students must select 16 credits of marine science-related elective courses of which a minimum of 12 credits must be upper level (300 or 400).

Marine Science Elective Courses
- PHEC 232 Advanced Open Water SCUBA
- BIOL 384 Ichthyology
- BIOL 303 Invertebrate Zoology
- BIOL 432 Limnology
- BIOL 463 Ecology of Coastal Systems
- ENST 392/MRNE392 Field Research Methods
- ENST 393/MRNE393 Coastal Ecosystem Management
- MRNE 181 Lower-Level Marine Science Transfer Course
- MRNE 320/ENST 320 Quantitative methods
- MRNE 307 Student Assistantship
- MRNE339/BIOL339 Ecology of Marine Plants
- MRNE 342/ BIOL 342 Plankton Ecology
- MRNE344/BIOL344 Marine Microbiology
- MRNE365/ENST365 Marine Environmental Toxicology
- MRNE 480 Topics in Marine Science
- MRNE 481 Topics in Marine Science With Laboratory
- MRNE 482 Upper-Level Marine Science Transfer Course
- ANTH 351 Underwater Archeology
- CHEM 301 Marine Chemistry
- CHEM 302 Geochemistry

Marine Science Capstone Experience (4 credits)
Students complete one of the following Capstone Experiences:
- MRNE 490: Marine Science Capstone or
- MRNE 494: Second Semester Marine Science SMP or
- Completion of an 8 credit SMP sequence in any of the following departments:
  - Biology
  - Biochemistry
Minimum Grade and GPA Requirements
Students must earn a grade of C or better in BIOL105, BIOL105L, BIOL106 and BIOL106L. Students must earn a grade of C- or better in all other courses used to complete the major. Students must have a 2.0 or greater overall GPA in the major. Excluding graduate level transfer courses from UMCES, at least half of the credits required for the major must be taken at the College.

Sequence of Study
The following sequence of courses is a typical model for the fulfillment of the requirements for the major:

- First Year: CORE 101, BIOL 105, BIOL 105L, BIOL 106, BIOL 106L, CHEM 103, CHEM 106, MATH 151, MATH 152, MRNE110
- Sophomore Year: PHYS 141, PHYS 142, Marine Science Electives, BIOL 311 or MATH 221, BIOL383, Core Curriculum requirements
- Junior Year: MRNE 220m Marine Science Electives, Core Curriculum requirements, MRNE Internship or Directed Research
- Senior Year: MRNE 490, Core Curriculum requirements, Marine Science Electives Marine Science Capstone Experiences