DEPARTMENT OF MARINE SCIENCE

MARINE SCIENCE MAJOR
Degree: Bachelor of Science

MISSION STATEMENT
The primary mission of the Department of Marine Science is to provide high quality education in the multidisciplinary field of marine science. With faculty actively involved in research, the Department embraces the teacher-scholar model and provides active learning experiences in the classroom as well as in field and research opportunities. Research both engages students with current applications and ideas and trains students to evaluate scientific ideas and pursue scientific studies. Students completing the program will have an understanding of the major concepts and applications of marine science and skills in critical thinking, use of technology, and scientific communication. Graduates of the program will be well prepared for their pursuit of advanced degrees or employment in marine science-related fields.

Within a liberal arts educational setting, the Department teaches about the active application of the scientific method and marine science concepts to produce scientifically literate citizens. At the graduate level, the Department advises and mentors future scientists and professionals. In the broader community, the Department undertakes basic and applied research to improve scientific understanding, serves as a source of scientific expertise, and enhances marine science education.

STUDENT LEARNING OUTCOMES
Students who graduate with a B. S. in Marine Science should be able to:

1. Explain the principles, concepts, applications, and inter-relations of biology, chemistry, geology, physics and mathematics as they apply to the marine environment,
2. Use the principles of scientific inquiry to describe, analyze and solve scientific problems involving marine science and related fields,
3. Exhibit proficiency in the use of technology, critical thinking, and quantitative tools used in marine-science applications,
4. Communicate effectively with peers, mentors, and the larger community, and
5. Successfully pursue entry-level jobs or enter graduate programs in various scientific fields.

The major in Marine Science integrates the study of Biology, Chemistry, Geology, Physics and Mathematics and applies these to the marine environment. Major courses are selected from Marine Science, Biology, Chemistry, Computer Science, Geography, Geology, Mathematics, Statistics, or Physics. Students are encouraged to select an area of emphasis in either marine biology, coastal geology, marine chemistry, atmosphere/ocean dynamics, or marine analytical technology. Lecture, laboratory, and field experiences are integrated to provide a well-rounded scientific program. The facilities available for Marine Science majors include a lecture and laboratory complex, computer research labs,
ocean-going and estuarine research vessels, and a full complement of oceanographic sampling equipment. Laboratories and research projects are conducted at various coastal habitats including Watah Island, a barrier island, marsh and upland complex owned by the University. Marine science graduates are employed as marine and environmental researchers for government agencies, universities, and private industry; as marine and environmental educators; as high school and middle school science teachers; and in the fields of marine and environmental management and policy. Outstanding students are encouraged to pursue graduate study.

Students must earn a grade of **C or better** in major and upper-level science courses. Students who have not earned a **C or better** in a Mathematics course within one year of enrollment at Coastal Carolina University are considered to be at risk for the Marine Science program.

**MARINE SCIENCE MAJOR (120 Credits)**

I. CORE CURRICULUM (34-41 Credits) ......................................................... 34-41

II. FRESHMAN GRADUATION REQUIREMENT (0-3 Credits)  
Minimum grade of **C** is required.  
UNIV 110 The First-Year Experience ......................................................... 3  
UNIV 110 is required for all new entering freshmen and for new transfer students with fewer than 12 transfer credit hours unless the transfer student has satisfactorily completed a college transition course.

III. FOUNDATION COURSES (34-45 Credits)*  
MSCI 111/111 L* Introduction to Marine Science/Laboratory ......................... 4  
MSCI 112/112 L The Origin and Evolution of the Marine Environment/  
Laboratory ....................................................................................................... 4  
MSCI 201* Scientific Communication .............................................................. 3  
BIOL 121 Biological Science I ........................................................................ 3  
BIOL 122* Biological Science II ...................................................................... 3

(Students planning to take advanced biology courses are advised to take BIOL 121L Biological Science I Laboratory, as it is a prerequisite for upper-level courses.)

CHEM 111/111 L* General Chemistry I/Laboratory ............................................. 4  
CHEM 112/112 L General Chemistry II/Laboratory .......................................... 4  
MATH 160* Calculus I ....................................................................................... 4  
MATH 161 Calculus II ....................................................................................... 4  
PHYS 211/211 L Essentials of Physics I/Laboratory .......................................... 4  
PHYS 212/212 L Essentials of Physics II/Laboratory ......................................... 4  
STAT 201/201 L Elementary Statistics/Laboratory ............................................ 4

A **C or better** is required in all foundation courses except BIOL 121, CHEM 111/111 L, and MATH 161.
*MATH 160, MSCI 111/111L, and MSCI 201 also satisfy Core Curriculum Math, Science, and Communication requirements. Though listed above under Foundation Courses, their credits are counted toward the total credits for the Core Curriculum and not toward the Foundation total.

IV. MAJOR REQUIREMENTS (36 Credits)

- MSCI 301/301L Physical Oceanography/Laboratory ........................................... 4
- MSCI 302/302L Marine Biology/Laboratory ......................................................... 4
- MSCI 304/304L Marine Geology/Laboratory ....................................................... 4
- MSCI 305/305L Marine Chemistry/Laboratory .................................................... 4

Choose Marine Science courses at the 300 level or above (8 Credits) ........... 8
Choose Science courses from the following: (12 Credits) ......................... 12

Marine Science courses numbered 300 and above

Biology courses from the following list:

- BIOL 310/310L Invertebrate Zoology/Laboratory (4)
- BIOL 315/315L Comparative Vertebrate Anatomy/Laboratory (4)
- BIOL 330/330L Microbiology/Laboratory (4)
- BIOL 340/340L Cell Biology/Laboratory (4)
- BIOL 343/343L Comparative Physiology/Laboratory (4)
- BIOL 350/350L Fundamentals of Genetics/Laboratory (4)
- BIOL 365/365L Evolution/Laboratory (4)
- BIOL 370/370L Principles of Ecology/Laboratory (4)
- BIOL 399 Independent Study (1-6)
- BIOL 410/410L Developmental Biology/Laboratory (4)
- BIOL 426/426L Ichthyology: Fish Biology/Laboratory (4)
- BIOL 436/436L Animal Behavior/Laboratory (4)
- BIOL 442/442L Advanced Genetics/Laboratory (4)
- BIOL 450/450L Molecular Biology and Evolution/Laboratory (4)
- BIOL 451 Molecular Techniques (4)
- BIOL 455/455L Marine Botany (=MSCI 455/455L) /Laboratory (4)
- BIOL 461/461L Ornithology/Laboratory (4)
- BIOL 481/481L Freshwater Ecology/Laboratory (4)
- BIOL 484/484L Conservation Ecology/Laboratory (4)
- BIOL 485/485L Vertebrate Zoology/Laboratory (4)
- BIOL 488/488L Wetland Plant Ecology/Laboratory (4)
- BIOL 499 Directed Undergraduate Research (1-6)

Chemistry Courses at the 300 level or above

- CSCI 140/140L Introduction to Algorithmic Design I/Laboratory (4)
- CSCI 150/150L Introduction to Algorithmic Design II/Laboratory (4)

Computer Science courses at the 310 level or above

- GEOG 201 Introduction to Physical Geography (4)

Geology courses numbered at the 300 level or above

Mathematics courses numbered at the 240 or above

Physics courses numbered at the 300 level or above

Statistics courses numbered at the 300 level or above
A C or better is required for all Major Requirements. No more than 6 hours of Independent Study, Internship, and/or Directed Undergraduate Research and/or Senior Thesis may be used for major credit.

**Recommended Areas of Study in Marine Science**
Students interested in graduate school and/or specific areas of interest in Marine Science are encouraged to pursue one of the following:

- Atmosphere/Ocean Dynamics
- Coastal Geology
- Marine Analytical Technology
- Marine Biology
- Marine/Environmental Chemistry

Recommended courses for these areas of emphasis can be found in the Marine Science Student Handbook or on the Department of Marine Science webpages. Students interested in graduate school are encouraged to investigate the specific admissions requirements for target graduate programs. Students will develop their academic plan in consultation with their Marine Science adviser.

**V. COGNATE OR MINOR REQUIREMENTS (0 Credits) ..............................................0**
Students majoring in Marine Science are not required to complete a minor or cognate. However, they may elect to minor in any field in which Coastal Carolina offers a minor. If the minor includes courses which can be used for Marine Science major credit, then up to 12 credit hours of those courses may also be applied toward the Marine Science major's upper level science requirement of 36 credit hours. Students seeking minors must have an advisor selected from the department offering the minor in addition to their Marine Science advisor.

**VI. ELECTIVES........................................................................................................0-13**

**TOTAL CREDITS REQUIRED ........................................................................120**

**DOUBLE MAJORS**
Students may double major in any program which offers a B.S. degree. To complete a double major, students must satisfy the major requirements for both programs and complete a minimum combined total of 48 upper-level credits in the two majors, all with a grade of C or better.

**MARINE SCIENCE MINOR (20 Credits)**
**PREREQUISITES:**
- MSCI 111/111L Introduction to Marine Science/Laboratory ......................4
- MSCI 112/112L The Origin and Evolution of the Marine Environment/
  Laboratory.................................................................4
Choose two from the following: (8 Credits) ................................................................. 8
   MSCI 301/301L Physical Oceanography/Laboratory (4)
   MSCI 302/302L Marine Biology/Laboratory (4)
   MSCI 304/304L Marine Geology/Laboratory (4)
   MSCI 305/305L Marine Chemistry/Laboratory (4)
   Marine Science course at the 300 level or above .............................................. 4

(No more than 3 credit hours of MSCI 399, MSCI 497 and/or MSCI 499 may be included in the minor.)

TOTAL CREDITS REQUIRED .................................................................................. 20

A grade of C or better is required in each course to be applied toward the minor.