

Marine Science (MSCI)**MSCI 103. Marine Ecology (4)**

Prerequisites: ecology and statistics (or concurrent registration in MSCI 104) or permission of instructor. A field-oriented introduction to the interrelationships between marine and estuarine organisms and their environment with emphasis on quantitative data collection and analysis. (2 lecture, 6 lab or field hours)

MSCI 104. Quantitative Marine Science (4)

Prerequisite: college mathematics. The mathematical methods for analysis of biological, chemical, and physical data from the marine environment; experimental design, parametric and nonparametric statistics. (3 lecture, 3 lab or field hours)

MSCI 105. Marine Science Diving (3)

Prerequisites: upper-division science major; thorough physical examination; ability to pass swimming test. Skin and SCUBA diving course; pool-training culminates in 10 ocean dives. Topics include diving physics, physiology, diving environments, night diving, and research diving. Successful completion gives NAUI and MLML certification. (1 lecture, 6 lab or field hours)

MSCI 112. Marine Birds and Mammals (4)

Prerequisite: upper-division vertebrate zoology; MSCI 103 recommended. Systematics, morphology, ecology, and general biology of marine birds and mammals. (2 lecture, 6 lab or field hours)

MSCI 113. Marine Ichthyology (4)

Prerequisite: college zoology or equivalent. Taxonomy, morphology, and ecology of marine fishes. Both field and laboratory work concentrate on the structure, function, and habits of marine fishes and the ecological interactions of these fishes with their biotic and abiotic surroundings. (2 lecture, 6 lab or field hours)

MSCI 124. Marine Invertebrate Zoology I (4)

Prerequisite: college zoology or permission of instructor; MSCI 103 recommended. A field-oriented introduction to the structure, systematics, evolution, and life histories of the major phyla. (2 lecture, 6 lab or field hours)

MSCI 125. Marine Invertebrate Zoology II (3)

Prerequisite: college zoology or permission of instructor; MSCI 103 and MSCI 124 recommended. A field-oriented introduction to the structure, systematics, evolution, and life histories of the minor phyla. (1 lecture, 6 lab or field hours)

MSCI 131. Marine Botany (4)

Prerequisite: MSCI 103 recommended. Introduction to the plants of the sea, marshes, and dunes, with emphasis on the morphology, taxonomy, and natural history of seaweeds and vascular plants. (2 lecture, 6 lab or field hours)

MSCI 135. Physiology of Marine Algae (4)

Prerequisites: MSCI 103, 131, 144. Develops physiological basis for understanding the adaptation of marine algae (seaweeds and microalgae) to their environment. Students will learn modern methods in physiological research, covering areas such as photosynthesis, respiration, enzyme activity, and biochemical composition. (2 lecture, 6 lab hours)

MSCI 141. Geological Oceanography (4)

Prerequisite: MSCI 142 or 143 or concurrently. Structures, physiography, and sediments of the sea bottom and shoreline. (2 lecture, 6 lab or field hours)

MSCI 142. Physical Oceanography (4)

Prerequisite: college algebra; college physics recommended. An introduction to the nature and causes of various oceanic motions including currents, waves, tides and mixing, and the physical properties of seawater including transmission of sound and light; does not require calculus. (3 lecture, 3 lab or field hours)

MSCI 143. Chemical Oceanography (4)

Prerequisite: one year of college chemistry. An introduction to the theoretical and practical aspects of the chemistry of the oceans, including major salts, dissolved gases, nutrient ions, carbonate system, transient tracers, and shipboard sampling techniques. (2 lecture, 6 lab and field hours)

MSCI 144. Biological Oceanography (4)

Prerequisites: general biology and general chemistry. The ocean as an ecological system. Emphasis is on the complexity of organismal-environmental interaction of the plankton, the transfer of organic matter between trophic levels and nutrient cycles. Laboratory includes methods in sampling, shipboard techniques, identification of plankton, and current analytical techniques. (2 lecture, 6 lab or field hours)

MSCI 173T. Topics in Marine Biology (1-4)

Prerequisite: permission of instructor. The study of a selected area in marine biology (morphology, physiology, ecology, etc.). Subjects will vary depending on student demand and availability of instructors. (Lecture and/or laboratory)

MSCI 174T. Topics in Oceanography (1-4)

Prerequisite: permission of instructor. The study of selected areas in oceanography;

subject varies depending on student demand and availability of instructors. (Lecture and/or laboratory)

MSCI 175T. Topics in Marine Science (1-4)

The study of a selected area in the marine sciences. The subjects vary depending on student demand and availability of instructors. (Lecture and/or laboratory)

MSCI 180. Independent Study (1-4; max total 6)

Prerequisite: permission of instructor. Faculty directed study of selected problems; open to undergraduate students with adequate preparation. Approved for *RP* grading.

GRADUATE COURSES

(See *Catalog Numbering System*.)

Marine Science (MSCI)**MSCI 201. Library Research Methods in Marine Science (1)**

Prerequisites: graduate standing and permission of instructor. Provides framework for using and evaluating information sources in marine science. Strong emphasis will be placed on developing critical skills. Interweaving bibliographic tools in to the history of marine science will reinforce knowledge of the appropriate resource for each question.

MSCI 202. Oceanographic Instrumentation (4)

Prerequisites: MSCI 141, 142, and permission of instructor. Principles of instruments used in oceanographic research, introduction to electronics, and applications of instrument measurements. Emphasis will vary from CTD profilers, current meters, radiometry, and chemical measurements. Offered alternate spring semesters. (2 lecture, 6 lab or field hours)

MSCI 206. Molecular Biological Techniques (4)

Prerequisites: graduate standing; college level genetics, molecular biology, or permission of instructor. Laboratory-based overview of concepts and techniques for the isolation, characterization, and analysis of DNA and RNA. Covers standard methods (amplification, cloning, and sequencing) and selected specialized techniques (analysis of gene expression) emphasizing marine science applications.

MSCI 208. Scientific Methods (4)

Prerequisites: graduate standing and permission of instructor. Information and skills for graduate students beginning their research careers. Includes the philosophy of science, scientific writing, design of experiments and

*Late afternoon, Saturday and/or overnight field trips may be required.