

# MARINE BIOLOGY (MBY)

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## **MBY 411 Marine Ecology (4)**

Prerequisites for Undergraduate: BY 101, 102, 103, 104, one year of general chemistry, and one semester of general physics. Prerequisites for Graduate: Graduate standing in biology; marine invertebrate zoology or marine biology (one semester of physics recommended). Bioenergetics, community structure, population dynamics, predation, competition, and speciation in marine ecosystems will be studied; lecture and laboratory work will be included, although considerable time will be spent in field work; individual species will be studied as they relate to ecological principles which they exemplify, thus providing both a taxonomic and ecologic background.

## **MBY 412 Coastal Ornithology (4)**

Prerequisites for Undergraduate: BY 101, 102, 103, and 104. Prerequisite for Graduate: Graduate standing in biology. Study of coastal and pelagic birds with emphasis on ecology, taxonomy, and distribution; identification, population dynamics, and behavior of coastal birds; lecture, laboratory, and overnight trips to offshore islands.

## **MBY 413 Marine Aquaculture (2)**

Prerequisite(s): General biology required; ichthyology, limnology, and invertebrate zoology suggested, but not required. This course will introduce students to techniques in marine aquaculture with emphasis in the areas of nutrition and feeding, reproductive biology, production techniques, water quality requirements, processing, marketing, and economics of commercially important marine aquaculture species. This course is also designed to assist students in developing their problem solving and communication skills.

## **MBY 415 Marine Botany (4)**

Prerequisites for Undergraduate: BY 101, 102, 103, and 104. Prerequisite for Graduate: Graduate standing in biology. General study of coastal and marine flora with emphasis on taxonomy, morphology, physiology, ecology, and distribution; community structure in various ecosystems will be studied; students will have an opportunity to examine pelagic, marshland, estuarine, beach, sand dune, and inlet niches.

## **MBY 420 Coral Reef Ecology (4)**

Examines the ecology and evolution of coral reef communities, seagrass beds, and mangrove swamps with exploration of such issues as the degradation of reef-building corals by macroalgae, hurricanes, coral bleaching, diseases of corals and sea urchins, over-fishing and pollution. Students will participate in lectures and field exercises in the vicinity of Dauphin Island, and will take a one-week field trip to Andros Island, Bahamas.

## **MBY 421 Special Topics: Marine Conservation Biology (4)**

Intended to develop a student's understanding of conservation biology by building upon the foundations of ecology; lectures and field exercises; requires students to develop a topical term paper and give a presentation.

## **MBY 423 Marsh Ecology (4)**

Prerequisite for Undergraduate: Advanced undergraduate standing. Prerequisite for Graduate: Graduate standing in biology. Study of floral and faunal elements of various marine marsh communities; interaction of physical and biological factors will be emphasized; structured to provide field experience in addition to lecture material; trips will be scheduled to acquaint students with regional examples of marsh types.

## **MBY 427 Marine Technical Methods I (2)**

Prerequisite for Undergraduate: Advanced undergraduate standing. Prerequisite for Graduate: Graduate standing in biology. Introduction to instruments and procedures normally utilized aboard a marine research vessel; includes physical, biological, chemical, and geological parameter measurements and sample collections; basic positioning and communication procedures included.

## **MBY 428 Marine Technical Methods II (2)**

Prerequisite for Undergraduate: Advanced undergraduate standing. Prerequisite for Graduate: Graduate standing in biology. Introduction to the laboratory methodology associated with the usual chemical parameters of nutrient analysis; laboratory approach will be pursued; shipboard and other specific skills will be developed.

## **MBY 460 Dolphins and Whales (2)**

Prerequisite(s): BY 320 and MBY 486.

Prerequisite for Graduate: None. Designed to enable students to make rapid, accurate, and thoughtful use of a customized reference file and laboratory and field notes to respond to questions about the classification, anatomy, and ecology of marine mammals; lecture and laboratory. (Not open to students with credit in MBY 481.)

## **MBY 461 Marine Behavioral Ecology (4)**

Prerequisite for Undergraduate: BY 332. Recommended: MS 204. Prerequisite for Graduate: None. Examines how animal behavior is influenced by and interacts with its environment, and the ecological and evolutionary significance of these behaviors in a marine setting; lectures, laboratory, and field exercises (some overnight).

## **MBY 462 (3,4)**

Prerequisites for Undergraduate: BY 101, 102, 103, 104 or MBY 309. Prerequisite for Graduate: None. Study of the major groups of protists from a variety of marine habitats including their taxonomy, structure, ecology of methods of identification; lectures, laboratory, and field trips.

## **MBY 463 Marine Fish Diseases (3,4)**

Prerequisite for Undergraduate: BY 323. Prerequisite for Graduate: None. Introduction to marine animal diseases, specifically finfish and shellfish; practical microbiological techniques for isolation and identification of diseases; lecture, laboratory, and field trips.

## **MBY 464 Introduction to Neurobiology (4,5)**

for Undergraduate. (5). for Graduate. Prerequisite for Undergraduate: Advanced undergraduate standing. Prerequisite for Graduate: None. Introduction to the neuroanatomy and neurophysiology of marine invertebrates and vertebrates; Neuroism computer package used to help illustrate the basic principles and to allow a detailed exploration of neurophysiology and neural networks; lecture and laboratory.

## **MBY 486 Marine Vertebrate Zoology (4)**

Prerequisites for Undergraduate: BY 101, 102, 103, and 104. Prerequisite for Graduate: Graduate standing in biology. Study of marine fish, reptiles, and mammals, with a comprehensive treatment of their systematics, zoogeography, and ecology; lectures will encompass subject matter on a non-regional basis; field and laboratory work will stress the vertebrate fauna of the northern Gulf of Mexico; students will have the opportunity to assemble a collection of vertebrate species.

## **MBY 487 Marine Invertebrate Zoology (4)**

Prerequisites for Undergraduate: BY 101, 102, 103, and 104. Prerequisite for Graduate: Graduate standing in biology. Examination of the systematics, ecology, physiology, and phylogenetic relationships of locally occurring marine invertebrate taxa; lecture, laboratory, and field work required; students have an opportunity to acquire collections of local fauna.

**MBY 501 Field Marine Science-Florida (2)**

Prerequisite(s): MBY 309.

This course will consist of a 10-day field exercise in representative tropical sites in the southeastern Gulf of Mexico. Lecture, field exercises, research exercises.

**MBY 502 Field Marine Science-Maine (2)**

Prerequisite(s): MBY 309.

Consists of a 12-day field exercise in coastal Maine with emphasis on rocky intertidal, kelp bed and eelgrass habitats; lecture, field exercises, research exercises.

**MBY 505 Fisheries Techniques (3)**

Prerequisite(s): An ichthyology course or MBY 486 or an introductory course in fisheries; introductory statistics recommended.

Detailed, semi-quantitative introduction to current biological and technological methodologies for studying fishes and aquatic habitats, with an emphasis on study design and integration across sub-disciplines.

**MBY 515 Marine Resource Management (2)**

Designed to acquaint students to the management of marine resources, development of legislation, evolution of policy, legal processes, and impacts on human resources; lecture and discussion sessions.

**MBY 530 Marine Microbial Ecology (3)**

General survey of the types of micro-organisms found in the marine environment; emphasis will be on the interaction of micro-organisms with each other and with their environment; lecture and discussion sessions.

**MBY 540 Marine Biology for Teachers (6)**

Prerequisite(s): One year of general biology and graduate standing in biology.

General survey of marine plants, invertebrates, and vertebrates, the communities they form and the physical and chemical factors which influence their lives; second component will cover materials and methods of instruction on marine topics.

**MBY 542 Marine Plankton (3)**

Prerequisite(s): MBY 566.

Familiarizes students with the taxonomic breadth of phytoplankton, bacterioplankton, and zooplankton in estuaries, coastal seas, and open oceans; lecture and discussion sessions.

**MBY 554 Marine Biogeography and Paleobiology (3)**

Prerequisite(s): BY 332 or MBY 411.

Broad overview of the time course of evolutionary changes in the structure and function of marine ecosystems, and will consider the interacting roles of both historical and current factors as they influence the distribution and abundance of marine organisms; lecture and discussion sessions.

**MBY 555 Marine Biogeochemical Processes (2)**

Prerequisite(s): Graduate standing in biology and a background that includes inorganic and organic chemistry, geology, marine ecology or oceanography. Interaction between biological, chemical, and geological processes in the marine environment; examination of the cycling of major elements, how these cycles differ between different marine ecosystems and how these processes serve to regulate ecosystem functioning. Interaction between biological, chemical, and geological processes in the marine environment; examination of the cycling of major elements, how these cycles differ between different marine ecosystems and how these processes serve to regulate ecosystem functioning.

**MBY 558 Advanced Marine Ecology (2)**

Prerequisite(s): BY 332 and MBY 411.

Study of the understanding of ecological processes with an emphasis on the mechanisms that control the distribution of plants and animals at scales ranging from the individual to the ecosystem; lecture and discussion sessions.

**MBY 559 Benthic Ecology (2)**

Prerequisite(s): BY 332 or MBY 411G. Evolutionary history and the ecology of marine benthic communities from the earliest fossils to the present; topics include predation, competition, adult/larval interactions, dispersal mechanisms, productivity, materials cycling, and the relative importance of grazing and detritus in different ecosystems.

**MBY 564 Marine Zoogeography (4)**

Prerequisite(s): 12 semester hours of biology.

Study of physical, chemical, and biological factors influencing distribution of marine organisms; importance of continents; open oceans, and species competition on animal distribution; special attention to zoogeographical patterns in the Gulf of Mexico, western North Atlantic, and Caribbean regions.

**MBY 566 Biological Oceanography (3)**

Focuses on patterns and processes that are of consequence to the interaction of organisms and the sea and encompasses both pelagic and benthic environments; lecture, laboratory, and discussions.

**MBY 567 Fisheries Oceanography (2)**

Examination of the relationships between fish and life history, recruitment dynamics and harvest potential, and local-, meso-, and global-scale oceanographic processes; lecture and discussion sessions.

**MBY 572 Coastal Ecosystems Dynamics (2)**

Prerequisite(s): MBY 566 recommended.

Investigation of the basic principles of ecosystem structure and function; course divided into two parts: an instructional phase of learning basics of ecosystem modeling, and a student-led investigation of the structure and function of a variety of coastal ecosystems.

**MBY 591 Directed Research (2)**

Prerequisite(s): Special arrangement and approval of the instructor.

Research in any subject areas of marine science currently offered at the Sea Lab.