MARB - MARINE BIOLOGY

MARB 603 Cetacean Behavior and Behavioral Ecology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Consists of lectures, readings and discussion sessions on the social, calf rearing, foraging and migrating strategies of whales, dolphins and porpoises. Emphasis is on the recent literature of animals in nature, although results from aquariums are also presented with comparisons to social strategies in the wild.
Prerequisite: Undergraduate or graduate level vertebrate biology course.

MARB 606 Advanced Concepts in Marine Population Biology
Credits 3. 3 Lecture Hours.
Novel Approaches and concepts employed studying factors affecting recruitment, determining trophic relationships (e.g., stable isotopes), and the consequences, at various levels, of changes in abundance of marine populations, including ecological (community), population (Allee effects) and genetic (effective population size). Inference of population connectivity determined through the use of electronic tags and molecular techniques is also examined.
Prerequisite: B.S. Marine Biology or Marine Science or approval of instructor.

MARB 607 Research and Conservation in Greece-Dolphins, Fisheries and Cultural Heritage
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Lectures, readings and labs on the ecology and behavior of the vertebrate fauna of Greece; laboratory hands-on experience of the marine environment from boats, readings, videos, interpretation and select major peer-review scientific papers and books.
Prerequisite: Approval of instructor.

MARB 610 Professional Development
Credits 3. 3 Lecture Hours.
Course will cover topics including proposal and manuscript development, the peer review process, proposal writing and speaking exercises, preparing oral and poster presentations, developing questions for quizzes and midterms, and library database management. Class discussions will include constructive critiques of participants’ experimental designs, analytical approaches and scientific writing.
Prerequisite: Approval of instructor.

MARB 615 Coastal Marine Biology and Geology of Alaska
Credits 3. 3 Lecture Hours.
The study of coastal marine biology and geology of south-central Alaska and participation in a behavioral ecological study of sea otters for 12 days at a remote field station in north-eastern Prince William Sound.
Prerequisite: Graduate classification or approval of instructor.

MARB 616 Introduction to Methods in Scientific Diving
Credits 3. 2 Lecture Hours. 3 Lab Hours.
This course prepares students to use SCUBA as a research tool for the marine sciences in compliance with University, American Academy of Underwater Sciences and Federal OSHA standards. Practical work in pool and open waters will complement academic experience and provide training towards scientific diver status.
Prerequisite: Advanced scuba certification.

MARB 616 Research Diving Methods
Credits 2. 6 Lab Hours.
Field experience in a wide range of research diving environments stressing dive planning and safety, buoyancy control, equipment configuration and scientific methodology in biological, physical, chemical, archaeological and geological sciences. Students will design, supervise and conduct independently developed scientific diving projects.
Prerequisite: MARB 616 or equivalent.

MARB 618 Marine Science of the Pacific Rim
Credits 3. 3 Lecture Hours.
Course intended for students interested in conducting research on the marine biology or fisheries of the Pacific Rim countries; tailored to specific interests of individual students; course involves directed readings, participation in the student’s research project, discussions with the instructor, and final report for possible publication.
Prerequisite: Graduate status or approval of instructor.

MARB 620 Marine Biological Resources
Credits 3. 3 Lecture Hours.
An introduction to biological resources which can be recovered from the marine environment to provide food, biomass and materials, recreation, and employment to the coastal United States and other regions. With emphasis on fisheries and hatcheries, in: oceanic resources, coastal and estuarine resources, and mariculture. Natural and societal limitations to resource recovery are investigated, and environmental impacts are analyzed.
Prerequisites: (at least 3 of these) CHEM 102, BIOL 112, GEOL 104 and/or OCNG 251; graduate status or special approval.

MARB 633 Applied Bioinformatics
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Fundamental concepts and methods in bioinformatics using sequence analysis and practical applications; includes biological databases, sequence and structure alignments, structural bioinformatics, gene prediction and genome analysis; emphasis on the understanding and application of these concepts.
Prerequisites: Graduate classification or approval of instructor.

MARB 635 Marine Invertebrate Zoology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
General biology of marine invertebrate animals; morphology, evolution and systematics; laboratory stresses study of local fauna.
Prerequisite: Graduate classification.

MARB 640 Ecosystem Functions in Marine Environments
Credits 3. 3 Lecture Hours.
Advanced study of ecological processes in marine environments, with an emphasis on the investigation of the interactions between organisms and physical processes that regulate marine ecosystem functions.
Prerequisite: Graduate standing.

MARB 642 Marine Bioacoustics
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Fundamentals of wave theory, sound propagation, acoustic analysis methods, physiology and communication theory that are required for understanding primary literature on topics in marine bioacoustics; various topics of marine bioacoustics including instrumentation, fisheries acoustics, animal hearing and sound production, behavioral importance of sound production by animals and impacts of anthropogenic sound on marine animals; hands-on analytical approaches and data collection principles.
Prerequisite: Graduate classification or instructor approval.
MARB 654 Coastal Plant Ecology  
Credits 3.3 Lecture Hours. 0 Lab Hours.  
Study of estuarine, coastal and dune plant communities and associated environmental factors affecting plants including the identification, distribution, ecological importance and management techniques of vascular plants in these communities.  
Prerequisites: Graduate standing; approval of instructor. 

MARB 656 Tropical Marine Ecology  
Credits 3.1 Lecture Hour. 6 Lab Hours.  
Topical Marine Ecology. Field oriented experience in coral reef, mangrove, sea grass, cave and other tropical marine ecosystems. Special emphasis will be placed on biodiversity, ecology and conservation issues specific to the Yucatan Peninsula of Mexico. This course will involve one week of course work in Galveston and a two-week field trip to Akumal on the Caribbean coast of Yucatan. Students will design, supervise and conduct an independently developed research project.  
Prerequisite: Scuba Certification. 

MARB 658 Marine Evolutionary Biology  
Credits 3.3 Lecture Hours.  
Lecture, readings, and discussions on advanced evolutionary topics including history of evolutionary thought, organic evolution, evolutionary methods, and modern applications to organismal evolutionary questions. Students will lead and participate in journal club style discussion of selected recent literature.  
Prerequisite: Graduate standing. 

MARB 668 Marine Evolutionary Biology  
Credits 3.3 Lecture Hours.  
Lecture, readings, and discussions on advanced evolutionary topics including history of evolutionary thought, organic evolution, evolutionary methods, and modern applications to organismal evolutionary questions. Students will lead and participate in journal club style discussion of selected recent literature.  
Prerequisite: Graduate standing. 

MARB 669 Adaptations in Extreme Environments  
Credits 3.3 Lecture Hours.  
Key metabolic and physiological innovations of extremophile organisms; topics include the molecular biology, biochemistry and physiology of organisms living in extreme environments.  
Prerequisites: Graduate classification or approval of instructor. 

MARB 6681 Seminar in Marine Biology  
Credit 1.1 Lecture Hour.  
Detailed reports on specific topics within the field of marine biology. Students may register in no more than two sections of this course in a given semester.  
Prerequisite: Graduate Standing. 

MARB 6684 Professional Internship  
Credits 1 to 9.1 to 9 Other Hours.  
On the job training in the field of marine biology.  
Prerequisites: Graduate standing; approval of instructor. 

MARB 6685 Directed Studies  
Credits 1 to 6.1 to 6 Other Hours.  
Limited investigations in fields other than those chosen for the thesis or dissertation topic. May be repeated for credit.  
Prerequisites: Graduate standing; approval of instructor. 

MARB 6689 Special Topics in  
Credits 1 to 4.1 to 4 Lecture Hours.  
Selected topics in an identified area of marine biology.  
Prerequisites: Graduate standing; approval of instructor. 

MARB 6691 Research for Thesis or Dissertation  
Credits 1 to 9.1 to 9 Other Hours.  
MARB 6691 is the designated field and/or laboratory research leading to the M.S. or Ph.D. degree. MARB 6691 may be offered by any faculty member in MARB and may be offered as many times as necessary in a given semester. MARB 6691 may be repeated for credit by a student.  
Prerequisites: Graduate standing; approval of instructor.