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<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Lecture</th>
<th>Lab</th>
<th>Prerequisites</th>
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MARB 405 Marine Parasiology
Credits 3. 3 Lecture Hours.
Fundamentals of parasitology, with emphasis on marine applications.
Survey of major parasites of marine animals and the diseases they cause, especially in ecologically and commercially-important host species.
Prerequisite: MARB 215.

MARB 407 Research and Conservation in Greece-Dolphins, Fisheries and Cultural Heritage
Credits 4. 3 Lecture Hours. 3 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.
Prerequisites: Junior or senior classification; MARB 315 or approval of instructor.

MARB 408 Marine Botany
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Morphology, systematics, ecology, and biochemistry of representative algae, fungi, and submarine grasses.
Prerequisites: BIOL 112; junior or senior classification or approval of instructor.

MARB 409 Biology of Sharks and their Relatives
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Applied knowledge from ichthyology, marine ecology, and oceanography related to sharks, skates and rays in subtropical and tropical latitudes; emphasis placed on hands-on learning experiences coupled with traditional lectures and reading on Chondrichthyan morphology, physiology, life history, behavior and conservation.
Prerequisites: MARB 315; junior or senior classification, or approval of instructor; MARB 311 recommended.

MARB 410 Animal Behavior
Credits 3. 3 Lecture Hours.
Examination of ethological concepts. Discussion of the development, genetics, physiology, and evolution of animal behavior patterns involved in reproduction, territoriality, aggression, communication, population dispersion, sociality, and sociobiology of invertebrates and vertebrates.
Prerequisite: MARB 215.

MARB 411 Elasmobranch Ecology
Credits 3. 3 Lecture Hours.
Investigation of the ecological processes that shape the life histories and behaviors of sharks, skates and rays, including an introduction to methods used to study elasmobranchs and their applications to conservation and management.
Prerequisite: MARB 311 or MARB 315; or approval of instructor.

MARB 414 Toxicology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
History and scope of toxicology as it applies to mammals; where possible, marine species will be used for examples and assigned papers.
Prerequisites: BIOL 112, CHEM 227 and CHEM 228.

MARB 415/ECCB 415 Coastal Marine Biology and Geology of Alaska
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Field course conducted in south-central Alaska for two weeks; work at the remote Alice Cove Research Station located in Prince William Sound; conduct research on marine mammals behavior and ecology; exploration of the geology and glaciology.
Prerequisites: BIOL 112.
Cross Listing: ECCB 415/MARB 415.

MARB 416 Marine and Coastal Biology of Patagonia, Argentina
Credits 4. 3 Lecture Hours. 2 Lab Hours.
Study of the marine and coastal biology of Peninsula Valdez located in Patagonia, Argentina; augmented lectures with field observations of marine and terrestrial wildlife and local habitats, visits to a nature center and paleontological museum and cruises to observe marine mammals.
Prerequisites: BIOL 112; junior or senior classification or approval of instructor.

MARB 420 Comparative Animal Physiology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Principles of animal physiology are examined using invertebrate and vertebrate model systems; includes osmoregulation in marine versus freshwater versus terrestrial organisms, excretion, fluid circulation, nervous system structure and function, muscle activity, sensory neurobiology and endocrine mediation.
Prerequisite: BIOL 112 or MARB 215; CHEM 228 and CHEM 238.

MARB 423 Mariculture
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Study of factors determining the success of efforts to cultivate estuarine and marine species of economic importance. Mariculture practices used worldwide in the production of algae, mollusks, crustaceans, and fishes will be discussed.
Prerequisite: Junior or senior classification or approval of instructor.

MARB 425 Marine Ecology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Relationship between various marine environments and their inhabitants; intra- and interspecific relationships between organisms; structure and function among marine communities. Laboratory emphasis is placed on study of living material and natural habitats in the Gulf of Mexico.
Prerequisites: MARB 315; senior classification or approval of instructor.

MARB 426 Aquatic Animal Nutrition
Credits 3. 3 Lecture Hours.
Chemistry, digestion, absorption and intermediary metabolism of nutrient classes with special emphasis on their relationship to warmwater fish nutrition. Determination of nutrient requirements, feed evaluation, feed processing, ration formulation and feeding practices.
Prerequisites: CHEM 227; junior or senior classification or approval of instructor.

MARB 430 Coastal Plant Ecology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Study of the identification, distribution, production, and ecological importance of estuarine, coastal marsh, and dune vascular plants; the interaction of plants with their abiotic and biotic environments; and techniques of vegetation management and evaluation.
Prerequisite: BIOL 111; junior or senior classification or approval of instructor.

MARB 433 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 understanding and application of these concepts.
Prerequisite: MARB 301.

MARB 435 Marine Invertebrate Zoology
Credits 4. 3 Lecture Hours. 3 Lab Hours.
General biology of marine invertebrate animals; morphology, evolution, and systematics; studies of local fauna in laboratory.
Prerequisite: BIOL 112 or MARB 215.
MARB 437 Pathology of Marine Animals
Credits 3. 3 Lecture Hours.
Examination of changes or loss of physiological function as related to common diseases (viral, bacterial, parasitic) or injury; mechanisms of disease in cells, tissues and organ systems of marine vertebrates; emphasis on marine mammals; fishes and marine reptiles/birds; clinical manifestations, diagnostics and treatments.
Prerequisite: MARB 215.

MARB 438 Coastal Ornithology
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Coastal Ornithology. Field and laboratory studies on the identification, classification, distribution and ecology of birds with special emphasis on birds of the Texas Gulf Coast. Classroom lectures to include anatomy, physiology, behavior and migration. Field trips required.
Prerequisites: MARB 315. Junior or senior classification or approval of instructor.

MARB 445 Marine Fisheries Management
Credits 3. 3 Lecture Hours.
Basic knowledge from marine ichthyology, biology of fishes and biological oceanography related to applied aspects of marine fisheries sciences; emphasis placed on management techniques applicable to tidal-influenced inland water, estuaries, and oceans.
Prerequisite: Junior or senior classification, or approval of instructor.

MARB 460 Fisheries Population Dynamics
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Principles and concepts of population dynamics related to fish; methods of estimating abundance, mortality, recruitment and sustainable harvest levels; introduction to models for population analysis with emphasis on stock assessments and quantitative fisheries; basic computer programming to explore population behavior and interactions.
Prerequisites: MATH 142, MATH 147, or MATH 151; MARB 311 or approval of instructor.

MARB 466 Evolutionary Biology
Credits 3. 3 Lecture Hours.
A conceptual examination of evolutionary theory, not a survey of specific organismal evolutions. Evidence for the abiotic origin of life is presented, followed by a discussion of micro-evolutionary (including drift and natural selection) and macro-evolutionary (including evolutionary trends) mechanisms. The course concludes with application of these concepts to human evolution.
Prerequisite: BIOL 112 or MARB 215; MARB 301; MARB 303.

MARB 482 Seminar in Marine Biology
Credit 1. 1 Lecture Hour.
Compilation of literature pertaining to topics in marine biology. Emphasis placed on preparation of a written report and presentation of a synopsis of that report.
Prerequisite: Junior or senior classification or approval of instructor.

MARB 484 Undergraduate Internship
Credits 0 to 9. 0 to 9 Other Hours.
Supervised study in a research or teaching laboratory remote from TAMUG. Student involvement is to consist of real-life learning or marine biological research, teaching, management, or a combination of these.
Prerequisite: Junior or senior classification or approval of instructor.

MARB 485 Directed Studies
Credits 1 to 6. 1 to 3 Other Hours.
Per Semester. Special topics and problems in field and/or laboratory work suited to analysis by individuals or small groups concerning aspects of marine biology. Usually requires a report describing techniques and results. Only 3 credit hours may be used in the degree plan curriculum.
Prerequisites: 2.25 GPR. Curriculum sophomore, junior or senior classification or approval of instructor.

MARB 489 Special Topics in Marine Biology
Credits 1 to 4. 1 to 4 Lecture Hours.
Study of selected topics in an identified area of marine biology.
Prerequisite: Junior or senior classification or approval of instructor.

MARB 491 Research in Marine Biology
Credits 0 to 4. 0 to 4 Other Hours.
Research conducted under the direction of faculty member in Marine Biology. Please see academic advisor in department. Registration in multiple sections of this course is possible within a given semester provided that the per semester credit hour limit is not exceeded. May be repeated for credit.
Prerequisites: Junior or senior classification and approval of instructor.