

BIOLOGY (BIOL)

BIOL 5102 Graduate Defense Seminar

1 Semester Credit Hour

Presentation of research conducted for MS degree. Should be taken the last semester of resident graduate study. Open only to MS Thesis and Non-thesis Degree Candidates in Biology. Students can enroll in any semester with the approval of their graduate advisory committee chair.

BIOL 5304 Virology

3 Semester Credit Hours (3 Lecture Hours)

Survey of bacteriophages and major pathogenic plant and animal viruses including Baltimore classification, viral replication, and emerging viral diseases. Emphasis on analysis and review of primary literature on viruses.

Prerequisite: BIOL 2416, 2421 and CHEM 3412.

BIOL 5307 Fungal Biology & Ecology

3 Semester Credit Hours (3 Lecture Hours)

Biology, classification, and ecology of the fungi. Applied aspects and current topics in mycology and mycological techniques. Offered odd Spring. Stacked with BIOL 4307.

BIOL 5308 Biogeography

3 Semester Credit Hours (3 Lecture Hours)

Selected reading, discussion and projects concerning the geographic distribution of plants and animals. Offered even Spring. Stacked with BIOL 4308.

BIOL 5311 Cellular Bases of Behavior

3 Semester Credit Hours (3 Lecture Hours)

Using vertebrate and invertebrate animal models, this graduate-level course explores how behaviors emerge from the activity of neural circuits and how experience modulates these circuits. Offered every Fall. Stacked with BIOL 4311.

BIOL 5315 Animal Behavior

3 Semester Credit Hours (3 Lecture Hours)

Adaptive aspects of animal behavior related to how and why behaviors develop, how behaviors affect fitness, and how behaviors evolve. Offered every Fall. Stacked with BIOL 4315

BIOL 5319 Biology of Marine Mammals

3 Semester Credit Hours (3 Lecture Hours)

Introduction to marine mammals, with a focus on their interactions with their biotic and abiotic environment. Offered every Fall. Stacked with BIOL 4319.

BIOL 5334 Biology and Ecology of Coral Reefs

3 Semester Credit Hours (3 Lecture Hours)

This course will introduce the biology of corals, describe the abiotic and biotic interactions among coral reef ecosystem inhabitants, identify the threats of climate change, and discuss the conservation and management of reefs for the future. Offered every Spring. Stacked with BIOL 4334.

BIOL 5340 Genomics, Proteomics and Bioinformatics

3 Semester Credit Hours (3 Lecture Hours)

Integrative biological study using genome-wide approaches and bioinformatics. The "-omics" technologies (Genomics, Proteomics, Metabolomics, etc) will be reviewed. Applications to understanding biological function in various biological disciplines will be emphasized. Offered every Fall. Stacked with BIOL 4340; Cross-listed with MARB 6342.

BIOL 5355 Public Aquarium and Animal Care Operations

3 Semester Credit Hours (3 Lecture Hours)

This course examines the unique requirements needed for aquariums and zoos to balance animal care and health with public display for general education and conservation research. Offered during Summer. Stacked with BIOL 4355; Cross-listed with FAMA 5355.

BIOL 5360 Computation for 21st Century Biologists

3 Semester Credit Hours (3 Lecture Hours)

This course is designed to prepare students to use computational tools for bioinformatic applications in advanced courses and independent research projects. Students will be introduced to powerful open-source computing tools used in biological research for creation, organization, manipulation, processing, analysis, and archiving of "big data." While not a formal requirement, it is assumed that students have a firm command of basic algebra. Offered every Fall. Stacked with BIOL 4360; Cross-listed with MARB 6360.

BIOL 5392 Thesis Proposal

3 Semester Credit Hours

Thesis track students must complete a proposal for their thesis project. A proposal is considered complete when it is approved and signed by all members of the student's graduate advisory committee. Open only to thesis track students in the MS Biology program. Qualified students can enroll in any semester with the approval of their graduate advisory committee chair.

BIOL 5393 Thesis Research

3 Semester Credit Hours

Implementation of the Thesis Proposal, and the production of a rough draft of the thesis submitted for initial editing and comment. A course section will be created for the student to enroll. Students can enroll in any semester with the approval of their graduate advisory committee chair.

Prerequisite: BIOL 5392.

BIOL 5394 Thesis Submission

3 Semester Credit Hours

The final draft of the thesis is completed, approved by the graduate advisory committee, and is readied for distribution. Students can enroll in any semester with the approval of their graduate advisory committee chair.

Prerequisite: (BIOL 5392 and 5393).

BIOL 5396 Directed Independent Study

1-3 Semester Credit Hours (1-3 Lecture Hours)

Study in areas of current interest. Credit is not given for research on the thesis project. A total of six semester hours of Directed Independent Study may be counted toward the MS degree.

BIOL 5397 Directed Research

3 Semester Credit Hours

For students in the MS Biology Professional track. Field, laboratory, and/or library research that results in the production of the professional paper, its approval by the graduate advisory committee, and its final submission.

Students can enroll in any semester with the approval of their graduate advisory committee chair. This course must be successfully completed for the professional track student to complete the MS degree.

BIOL 5406 Immunology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

An in-depth study of immunology. Emphasizes function and interaction of specific cells, cytokines, lymphokines, antibodies and molecules that are the essential components of the immune system. The course includes up-to-date coverage of both innate and adaptive immunity, and the immune system in health and disease. Offered every Spring. Stacked with BIOL 4406; Cross-listed with BIMS 4406.

Prerequisite: BIOL 2421.

Co-requisite: SMTE 0092.

BIOL 5407 MYCOLOGY**4 Semester Credit Hours (3 Lecture Hours, 1 Lab Hour)**

Biology, classification, and ecology of the fungi. Applied aspects and current topics in mycology and mycological techniques.

Prerequisite: BIOL 2421.

Co-requisite: SMTE 0092.

BIOL 5408 Microbial Ecology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Relationships between microorganisms and their biotic and abiotic environments. Role of microorganisms in biogeochemical cycling. Methodology in microbial ecology. Biotechnological aspects. Offered every Fall. Stacked with BIOL 4408; Cross-listed with MARB 6408.

Co-requisite: SMTE 0092.

BIOL 5410 Mammalogy**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

The course is designed for graduate students in biology wanting to acquire a more detailed working knowledge and appreciation of mammalian diversity in structure, function, ethology, and ecology. Knowledge and skills acquired in this course will be useful to field and laboratory studies in ecology, evolution, animal behavior, biogeography, wildlife management, and related disciplines. Offered even Fall. Stacked with BIOL 4410.

Co-requisite: SMTE 0091.

BIOL 5413 Entomology**4 Semester Credit Hours (4 Lecture Hours)**

A survey of insects and their kin including natural history, classification, phylogeny, ecology, behavior, development, and physiology. Offered even Spring. Stacked with BIOL 4413.

Co-requisite: SMTE 0091.

BIOL 5415 Biology of Estuarine Organisms**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Systematics, distribution, and ecology of estuarine macrofauna. Required field trip. Individual study required. Offered every Spring. Stacked with BIOL 4444.

Co-requisite: SMTE 0091.

BIOL 5425 Ornithology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

The course is designed for graduate students in biology wanting to acquire a more detailed working knowledge and appreciation of avian diversity in structure, function, ethology, and ecology. Knowledge and skills acquired in this course will be useful to field and laboratory studies in ecology, evolution, animal behavior, biogeography, wildlife management, and related disciplines. Offered odd Fall. Stacked with BIOL 4425.

Co-requisite: SMTE 0091.

BIOL 5427 Coastal Ecology of Texas**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Study of the ecology and environmental issues of the Texas coast. Includes field trips along the entire Texas coastline.

Co-requisite: SMTE 0091.

BIOL 5429 Marine Botany**4 Semester Credit Hours (4 Lecture Hours)**

Marine plants are a diverse group that includes unicellular algae, seaweeds, seagrasses, salt marshes, and mangrove forests. The goal is to present taxonomic, physiological, chemical, and ecological aspects of marine plants, their adaptations, and how abiotic and biotic factors interact in their communities. The use of recent journals and original scientific research will allow the student to evaluate anthropogenic effects to these communities and develop methods of restoration and management. Offered every Fall. Stacked with BIOL 4429.

Co-requisite: SMTE 0091.

BIOL 5430 Marine Plankton**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Investigation of the systematics, distribution, and ecology of marine plankton. Offered odd Spring. Stacked with BIOL 4430; Cross-listed with MARB 6430.

Co-requisite: SMTE 0091.

BIOL 5432 Ichthyology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

The study of fish encompassing species diversity, natural history, and evolutionary and ecological relationships of fishes. This course will consist of four major parts: (1) Evolution, (2) Systematics, (3) Biology, and (4) Ecology of fish. Laboratory identification of marine and freshwater fishes from the University archives and collected during field excursions. Offered every Fall. Stacked with BIOL 4432; Cross-listed with MARB 6432

Co-requisite: SMTE 0091.

BIOL 5439 Case Work Methods in Forensic Anthropology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

This course combines the study of human bones (osteology) with hands-on examination of disarticulated skeletal remains using established and validated forensic anthropological methods to develop the demographic profile of the living individual, including assessment of trauma and pathological conditions. Offered every Spring. Stacked with BIOL 4439; Cross-listed with BIMS 4439.

Prerequisite: BIOL 2401.

Co-requisite: SMTE 0092.

BIOL 5442 Herpetology**4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)**

Systematics, ecology, and behavior of amphibians and reptiles providing a global perspective on the biology of amphibians and reptiles. Offered odd Spring. Stacked with BIOL 4442.

Co-requisite: SMTE 0091.

BIOL 5590 Special Topics**5 Semester Credit Hours (5 Lecture Hours)**

An advanced study of a biological topic. May be repeated with full credit in another area of biology. Topics vary by semester.

BIOL 5609 Field and Sampling Techniques**6 Semester Credit Hours (3 Lecture Hours, 6 Lab Hours)**

Systematics, ecology, and behavior of amphibians and reptiles providing a global perspective on the biology of amphibians and reptiles. Offered odd Spring. Stacked with BIOL 4442.

Co-requisite: SMTE 0091.

BIOL 5940 Project Research**1-9 Semester Credit Hours (1-9 Lecture Hours)**

Research related to the MS project. Open only to degree candidates in biology with consent of the graduate advisor. This course may be repeated as needed but a maximum of 4 hours can be applied to the MS degree in biology. Course is taken as credit/non-credit. Students can enroll in any semester with the approval of their graduate advisory committee chair.