

# DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

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## Programs

### Undergraduate

#### Majors

- Ecology and Evolutionary Biology Major (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/ecology-evolutionary-biology-major>)
- Environmental Biology Major (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/environmental-biology-major>)

#### Minors

- Marine Biology Minor for Biology Majors (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/marine-biology-minor-biology-majors>)
- Marine Biology Minor for Non-Biology Majors (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/marine-biology-minor-non-biology-majors>)

### Graduate

- Ecology and Evolutionary Biology, MS (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/ecology-evolutionary-biology-ms>)
- Ecology and Evolutionary Biology, PhD (<https://catalog.tulane.edu/science-engineering/ecology-evolutionary-biology/ecology-evolutionary-biology-phd>)

## Courses

### Ecology and Evolutionary Biology (EBIO)

#### EBIO 1010 Diversity of Life (3 Credit Hours)

An introduction to key concepts in ecology and evolutionary biology emphasizing the diversity among individuals, population, species, communities, and ecosystems.

**Prerequisite(s):** EBIO 1015\*.

\* May be taken concurrently.

#### EBIO 1015 Diversity of Life Lab (1 Credit Hour)

Laboratory and field exercises designed to augment the lecture material in EBIO 1010.

**Corequisite(s):** EBIO 1010.

#### EBIO 1040 Global Environment Change (3 Credit Hours)

An introduction to the physical and biological processes that regulate the function of the Earth system. The composition, formation, and stabilization of the Earth's atmosphere and ecosystem will be examined, emphasizing biological processes and ecosystem ecology. With an understanding of the historical rates and mechanisms of natural global change, the means by which human activities alter Earth system function at local to global scales will be explored, along with the consequences of and solutions to human-induced global change.

#### EBIO 1050 Intro to Conservation Genetics (3 Credit Hours)

This course is designed to introduce students to the general principals behind the field of conservation genetics. We will explore evolutionary genetics, the importance of genetics in conservation, and conservation management practices. The class will cover these topics in lecture, hands-on lab activities, and field trips. Course is for high school students only.

#### EBIO 1080 Intro to Plant & Human Affairs (3 Credit Hours)

This course is designed to introduce you to plants and how different plants and plant products have shaped human existence. We will explore plant history, plant domestication, and plant products through lectures, readings, discussion, and field trips. (High School Students Only)

#### EBIO 1230 Div of Animal Behavior (3 Credit Hours)

Basic concepts in animal behavior, emphasizing diversity among animals and their behaviors and the ecological and evolutionary influences on those behaviors. Course will include discussion of how behaviors are studied, physiological mechanisms of behaviors, animal diversity, and how animals communicate, find mates, reproduce, care for their young, defend and feed themselves and move within their environment.

**EBIO 1231 Exploring Animal Behavior (3 Credit Hours)**

The goal of this course is to provide an introduction to animal behavior. The course will begin with an introduction to the application of the scientific method to the study of behavior. Topics that will follow include the ontogeny (development) of behavior, neuronal and hormonal control of behavior, migration, communication, reproductive behavior, mating systems, parental care, and the evolution of social behavior. It will involve both a lecture component as well as a hands-on laboratory component in which students will engage in activities to observe the concepts in action. This class is only open to high school students who are participating in the Tulane Science Scholars Program (TSSP). For students who pass this course with a B or higher and choose to enroll at Tulane University, this course can be applied towards three hours of general elective credit. These credits will not count towards any of the Ecology and Evolutionary Biology Department majors.

**EBIO 1240 Reptile & Amphibian Diversity (3 Credit Hours)**

The goal of this course is to provide an introduction to the field of herpetology. Students will 1) become familiar with the diversity of form and function exhibited by living reptiles and amphibians, 2) gain an introductory understanding of the evolutionary histories and relationships of reptiles and amphibians to each other and to other tetrapods, 3) follow the steps of the scientific method to design and carry out experiments to test hypotheses they devise, and 4) gain experience with field and laboratory methods used to study amphibians and reptiles. The class will involve a lecture component and a hands-on laboratory component. This class is only open to high school students participating in the Tulane Science Scholars Program (TSSP). For students who pass this course with a B or higher and choose to enroll at Tulane University, this course can be applied toward three hours of general elective credit. These credits will not count toward any of the Ecology and Evolutionary Biology Department majors.

**EBIO 1890 Service Learning: EBIO 1010 (0-1 Credit Hours)****EBIO 1940 Transfer Coursework (1-4 Credit Hours)****EBIO 2010 Evolution-Human Hlth & Disease (3 Credit Hours)**

An introduction to the study of infectious and non-infectious human diseases from an evolutionary perspective.

**EBIO 2020 Theory & Methods Eco & Evo Bio (3 Credit Hours)**

EBIO 2020 is an introduction to the fundamental theories and methods in ecology and evolutionary biology for EEBI and ENVB majors. Students will acquire the knowledge and skills needed to succeed in their major through direct, active experiences evaluating and communicating scientific evidence. The course topics are designed to reflect current research interests in the department, such as tropical ecology and behavioral evolution, as well as classic case studies in the discipline. Irrespective of topic, the course emphasizes a practical understanding of the scientific process and focuses on developing the skills needed for upper-level courses in EBIO. The course also provides opportunities for students to become familiar with the research interests of department faculty members, enabling them to identify future research opportunities.

**Prerequisite(s):** (EBIO 1010, 1010, 1010 or 1010) and (EBIO 1015, 1015, 1015, 1015, 1110, 1110, 1110 or 1110).

**EBIO 2030 History of Life (3 Credit Hours)**

A multidisciplinary introduction for majors and non-majors to the evolution of life on Earth, from its origin through the Pleistocene. The course will focus on the evolution and ecology of organisms in primitive environments, with special attention given to key taxa and events, such as the transition to land, the origin of angiosperms, the rise and fall of dinosaurs, and the origin and early evolution of reptiles, birds, and mammals. Emphasis will be placed on the reconstruction of ancient environments, using modern ecological and evolutionary principles as a guideline to the nature of early biological communities and ecosystems.

**EBIO 2040 Conservation Biology (3 Credit Hours)**

A consideration of biological diversity and its persistence, threats, human value, conservation efforts, and biological bases. Specific topics include extinction, global change, population viability, habitat loss and degradation, ecosystem management, restoration, agricultural ecosystems, economic and legal considerations, and the human population.

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015).

**EBIO 2050 Global Change Biology (3 Credit Hours)**

This course explores the biological basis of environmental issues and the changes occurring at a global scale, divided approximately into halves. The first half will provide a strong foundation in the interactions among biological and physical systems. The second half will be devoted to specific issues including global climate change, atmospheric pollution, community stability, habitat fragmentation, and loss of biodiversity. Changes that have occurred over geological time will be compared with changes in the modern industrial era.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110).

**EBIO 2070 Molec & Evolutionary Genetics (4 Credit Hours)**

This course will introduce students to fundamental principles concerning the molecular nature of DNA and chromosomes; the molecular processes of replication, transcription, translation, and mutation/repair; the transmission of genetic traits (Mendelian and non-Mendelian modes); and the application of genetic analysis to population and evolutionary biology. EBIO 2070 includes a required, no credit recitation (EBIO 2071). Students may not earn credit for both EBIO 2070/2071 and CELL 2050.

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**Corequisite(s):** EBIO 2071.

**EBIO 2071 Molec & Evol Genetics Rec (0 Credit Hours)**

This course is a required accompaniment to EBIO 2070-01 (Molecular and Evolutionary Genetics). Through readings, discussions, interactive exercises, and assignments, students will discuss the concepts and principles of genetics in an applied way, i.e. to apply genetics information to solving crosses and problems.

**Corequisite(s):** EBIO 2070.

**EBIO 2100 Marine Biology (3 Credit Hours)**

A systematic treatment of the organisms and habitat in the marine environment.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110).

**EBIO 2110 Tropical Biology (3 Credit Hours)**

Introduction to ecological, evolutionary, and organismal studies of living organisms in the neotropics.

**EBIO 2120 Clim/Biodiv/Trop Forests (3 Credit Hours)**

This course is offered as part of the Stone Center for Latin American Studies' Summer in Costa Rica Program. Students may not register on-line for this course; they must register directly with the Stone Center Summer Program office. The course will introduce students to the structure and ecology of tropical forests. Students will be expected to integrate what they learn about the real social and economic causes of deforestation and grass roots efforts to revert it with the social, political, economic and biological logic of world climate change agreements and disagreements.

**EBIO 2130 Intro to Animal Behavior (3 Credit Hours)**

The goal of this course is to provide an introduction for majors and non-majors to the field of animal behavior using an evolutionary approach. The course will begin with an introduction to the application of the scientific method to the study of behavior (levels of analysis, hypothesis testing and Darwinian theory). Topics that will follow include the ontogeny (development) of behavior, neuronal and hormonal control of behavior, foraging and anti-predator behavior, habitat selection, migration, communication, reproductive behavior, mating systems, parental care, the evolution of social behavior, and the evolution of human behavior. The course emphasizes a practical understanding of animal behavior and will focus on developing the skills needed for upper-level behavior courses in EBIO.

**EBIO 2210 Insect Biology (3 Credit Hours)**

This course is an introduction to the evolution, ecology and conservation of insects. The course will focus heavily on interactions between humans and insects, both historically and in modern times. A goal of the course is that you will develop the foundation and tools you need to continue learning about the importance of insects, their impacts on human society and/or other environmental issues of importance to you.

**EBIO 2230 Oceanography (3 Credit Hours)**

A broad survey of chemical, physical, and geological oceanography with a brief historical overview and a consideration of current concepts.

**EBIO 2240 Oceans and Human Health (3 Credit Hours)**

An overview of the relationship and interconnectivity of impacts and well-being between humans and oceans/coasts.

**Prerequisite(s):** CELL 1010 or (EBIO 1010 and 1015) or EBIO 1040 or (EENS 1300 and 1305) or SPHU 1020.

**EBIO 2250 Vertebrate Biology (3 Credit Hours)**

An introduction to vertebrate natural history, including evolution, systematics, zoogeography, population dynamics, behavior, ecology, conservation, and extinction.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110).

**EBIO 2330 Natural Hist Louisiana (3 Credit Hours)**

A survey of terrestrial and aquatic ecosystems of southern Louisiana. Lectures cover the ecology of regional plant and animal communities, with special emphasis on environmental issues such as invasive species, hurricane disturbance, conservation and management. The geology, geography, history, and culture that contribute to the formation and maintenance of each ecosystem will also be examined, from barrier islands to upland forests.

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015) or CELL 1010.

**EBIO 2335 Natural Hist Louisiana Lab (1 Credit Hour)**

The Natural History of Louisiana Laboratory introduces students to diverse biological communities of southern and central Louisiana, from barrier islands to upland forests. Field trips focus on the ecology of regional flora and fauna and provide opportunities to observe and evaluate the impacts of invasive species, hurricane disturbance, and restoration projects. Students will practice identification skills, maintain a field journal, and participate in local research projects.

**EBIO 2600 Natural Resource Conserv (3 Credit Hours)**

This course examines the theory and practice of natural resource preservation in the United States, and the agencies and organizations involved in this endeavor.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110).

**EBIO 2660 Special Topics (1-3 Credit Hours)**

Courses offered by visiting professors or permanent faculty primarily for undergraduates. For description, consult department.

**Prerequisite(s):** EBIO 1010 and CELL 2050.

**EBIO 2770 Nature Study in Scandinavia (3 Credit Hours)**

More than a Walk in the Park: Nature Study in Scandinavia has two components. Half of the course is a survey of the ecosystems of Scandinavia, from boreal forests to rocky intertidal zones. We will explore the diversity and ecology of regional plant and animal communities, with reference to environmental issues including non-native species, disturbance, conservation, and management. Information about the geology, history, and culture that contribute to the formation and maintenance of each ecosystem will be included. The other half of the course will involve observing, identifying, recording, and developing questions about the local diversity of the region. Be prepared to spend a considerable amount of time outside... where nature is!

**EBIO 2890 Service Learning: EBIO 2040 (0-1 Credit Hours)**

Students complete a service activity in the community in conjunction with the content of a three-credit corequisite course.

**EBIO 2910 Independent Study (1-3 Credit Hours)**

Laboratory or library research under direction of a faculty member.

**EBIO 2920 Independent Study (1-3 Credit Hours)**

Laboratory or library research under direction of a faculty member.

**EBIO 2940 Transfer Coursework (3 Credit Hours)****EBIO 3040 General Ecology (3 Credit Hours)**

A survey of the patterns and mechanisms of interaction among all organisms and their environments, including examples of human impacts on the biosphere.

**Prerequisite(s):** (EBIO 1010, 1010, 1010 or 1010) and EBIO 2020.

**Corequisite(s):** EBIO 3045.

**EBIO 3045 General Ecology Lab (1 Credit Hour)**

Quantitative laboratory and field exercises designed to augment the lecture material. Includes data collection, sampling, experimentation, statistical hypothesis testing, modeling, discussion of research results, and writing up of results in the form of three scientific papers.

**Prerequisite(s):** EBIO 2020.

**Corequisite(s):** EBIO 3040.

**EBIO 3080 Processes of Evolution (3 Credit Hours)**

Patterns and processes in the evolution of species and populations, including discussions of natural selection, gene flow, genetic drift, adaptation, speciation, origins of evolutionary novelty, and selected trends in the fossil record.

**Prerequisite(s):** EBIO 2070 and 2071.

**EBIO 3150 Intro to GIS (4 Credit Hours)**

This course is designed to give students a general understanding of geographic information systems (GIS) and the Environmental Systems Research Institute (ESRI) ArcGIS software. The approach taken is detailed instruction in utilizing ArcGIS to solve problems in the earth and environmental sciences. (SAME AS EBIO 6150, EENS 3150, EENS 6150.)

**Corequisite(s):** EBIO 3151.

**EBIO 3151 Intro to GIS lab (0 Credit Hours)**

Co-requisite lab for Intro to GIS

**Corequisite(s):** EBIO 3150.

**EBIO 3180 Plants & Human Affairs (3 Credit Hours)**

Since ancient times, people have relied on plants for food, clothing, shelter, medicines, and more. This course investigates some of the ways in which plants support and shape human life. Topics include: early ideas about plants and the origin of plant lore; plant domestication and the rise of agriculture; plant products in commercial economies; cultural uses of plants; plants and the future of civilization.

**EBIO 3185 Plants Human Affairs Lab (1 Credit Hour)**

Laboratory course to accompany EBIO 3180. A survey of plant products and their sources, emphasizing the structure, chemistry, and diversity of economic plants.

**Corequisite(s):** EBIO 3180.

**EBIO 3190 Darwin and Darwinism (4 Credit Hours)**

A consideration of Charles Darwin's theory of Natural Selection, including the history of evolutionary thought before Darwin's time, the circumstances surrounding Darwin's research, and the effect of Darwin's ideas on the development of contemporary biology. Readings, discussions, and written assignments.

**Prerequisite(s):** (EBIO 1010, 1010, 1010 or 1010) and (EBIO 1015, 1015, 1015, 1015, 1110, 1110, 1110 or 1110).

**EBIO 3290 Behavioral Ecology (3 Credit Hours)**

This course addresses the ecological and evolutionary causes and consequences of animal behavior, using both proximate and ultimate approaches. Topics include sociality, mating systems, sexual selection, animal movement, signals, behavior and conservation, and cognition.

**Prerequisite(s):** (EBIO 1010, 1010, 1010 or 1010) and (EBIO 1015 or 1110) and (CELL 1010, 1010, 1010 or 1010).

**EBIO 3320 Microbial Diversity & Ecology (3 Credit Hours)**

A survey of micro-organisms and their roles in and relationships within their respective ecosystems. (Same as EBIO 6320)

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**Corequisite(s):** EBIO 3325.

**EBIO 3325 Microb Diversity & Ecology Lab (1 Credit Hour)**

Corequisite: EBIO 3320/6320. Laboratory activities focused on observing/ascertaining microbial taxonomy (viral, bacterial, archaeal, fungal, and protistan) and methods relating to isolating/identifying microbes and measuring growth rates and metabolisms. Prerequisites: EBIO 1010/1015, CELL 1010, either EBIO 2070 or CELL 2050.

**Prerequisite(s):** (EBIO 1010, 1010, 1010, 1010, 1015, 1015, 1015 or 1015) and (CELL 1010 or 1010) and (EBIO 2070, 2070, CELL 2050 or 2050).

**Corequisite(s):** EBIO 3320.

**EBIO 3330 Human Physiology (3 Credit Hours)**

A discussion of the functional morphology and physiology of the human body from the molecular to the whole organism level.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**EBIO 3335 Mammal Anat & Hist Lab (1 Credit Hour)**

A detailed laboratory examination of the histological and anatomical structure of the principal tissues, organs and organ systems of mammals.

**Corequisite(s):** EBIO 3330.

**EBIO 3500 Sharks and their Relatives (3 Credit Hours)**

Biology of Sharks and their Relatives is a detailed study of the evolution, ecology, morphology, functional anatomy, physiology, and conservation of the cartilaginous fishes.

**Prerequisite(s):** CELL 1010 and EBIO 1010 or (EBIO 1110 and 1015).

**EBIO 3550 Shark Paleobiology (4 Credit Hours)**

This course examines the processes and patterns of shark speciation, diversification, macroevolution, and extinction within the framework of developing a problem-based learning activity using shark teeth for a K-12 classroom. Particular emphasis is placed on the systematics and functional morphology of shark teeth.

**EBIO 3551 Shark Paleobiology Lab (0 Credit Hours)**

Lab section for EBIO 3550

**EBIO 3580 Urban Ecology (3 Credit Hours)**

Urban Ecology is the study of cities, including human inhabitants, as functioning ecosystems, supporting a complex web of life. In this course students will learn how basic ecological principles can be applied to the study of urban ecosystems and the effects of cities and urbanization on regional and global environments. Through a combination of lectures, readings and discussions, site visits and service learning, this course will provide an overview of interactions, at multiple scales, between the built environment and the natural environment with particular focus on New Orleans and the Gulf coast region.

**Prerequisite(s):** (EBIO 1010, 1010, 1010 or 1010) and (EBIO 1015, 1015, 1015 or 1015) and (CELL 1010, 1010, 1010, 1010 or 1010).

**EBIO 3590 Plant Biol & Adaptation (4 Credit Hours)**

An introduction to the biology of plants, with an emphasis on the aspects of physiology, anatomy, morphology, and ecology that have resulted in their successful adaptation and diversification.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**EBIO 3591 Plant Biology & Adaptation Lab (0 Credit Hours)**

Lab section for EBIO 3590

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**EBIO 3690 Experimental Animal Behavior (4 Credit Hours)**

This course provides students the opportunity to design, implement, write-up, and present an independent research project related to animal behavior. Research will be conducted on live animals at the Audubon Zoo or Audubon Park. The course will emphasize general principles of literature review and synthesis; experimental design; the collection, organization and analysis of data; and written and oral presentation of results. The course consists of 3 hours of laboratory per week (at the park or zoo) and 2 hours of seminar per week (on campus). This course fulfills the Newcomb-Tulane intensive writing requirement. This course serves as an elective for the SISE minor and fulfills the upper tier Service Learning Requirement.

**Prerequisite(s):** EBIO 2020.

**Corequisite(s):** EBIO 3691.

**EBIO 3691 Exper. Animal Behavior Lab (0 Credit Hours)**

Lab section for EBIO 3690

**Corequisite(s):** EBIO 3690.

**EBIO 3780 Tropical Field Biology (3 Credit Hours)**

This study abroad course deepens student's theoretical, factual, and hands-on understanding of biological research and conservation in the tropics.

**Prerequisite(s):** EBIO 2020.

**EBIO 3880 Writing Intensive (0 Credit Hours)**

Course to be attached to regular courses that incorporate a writing component within the regular course. Course added to the schedule as a regular course.

**EBIO 3890 Service Learning: EBIO 3580 (0-1 Credit Hours)**

Students complete a service activity in the community in conjunction with the content of a three-credit corequisite course.

**EBIO 3891 Service Learning: EBIO 3690 (0-1 Credit Hours)****EBIO 3940 Transfer Coursework (3 Credit Hours)****EBIO 4030 Field Botany (4 Credit Hours)**

A plant identification course focusing on terrestrial and aquatic flora of Louisiana. Lab field trips include visits to a variety of local ecosystems from coastal wetlands to upland forests. Lectures cover botany, taxonomy, and the ecological and evolutionary processes that structure plant communities, with special emphasis on how these topics apply to Louisiana ecosystems.

**Prerequisite(s):** EBIO 2020.

**Corequisite(s):** EBIO 4031.

**EBIO 4031 Field Botany Lab (0 Credit Hours)**

Lab section for EBIO 4030

**Corequisite(s):** EBIO 4030.

**EBIO 4060 Stream Ecology (4 Credit Hours)**

Ecology of freshwater stream environments, including physical forces influencing water flow, sediment and solute geochemistry, and composition and interactions of stream biota.

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**Corequisite(s):** EBIO 4061.

**EBIO 4061 Stream Ecology Lab (0 Credit Hours)**

Lab section for EBIO 4060

**Corequisite(s):** EBIO 4060.

**EBIO 4080 Biostat & Experi Design (3 Credit Hours)**

This course will teach students how to interpret statistical data in an evolutionary and ecological context. Special emphasis will be placed on understanding the nature of ecological field experiments, and experimental design. In addition, issues regarding how ecological and evolutionary analyses are perceived in the public media will be discussed. We will cover statistical methods for dealing with such problems (regression, correlation, ANOVA, etc.), and also read papers in ecological and evolutionary journals that highlight statistical issues. The class is designed for students who have not had prior experience with statistics.

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015) and CELL 1010.

**EBIO 4090 Invertebrate Paleontology (4 Credit Hours)**

Principles of invertebrate paleontology; a systematic treatment of the fossil invertebrates and their living relatives. Emphasis on functional morphology, ontogeny, and paleoecology. Lectures, laboratory, field trip.

**Prerequisite(s):** EBIO 1120.

**Corequisite(s):** EBIO 4091.

**EBIO 4091 Invertebrate Paleontology Lab (0 Credit Hours)**

Lab section for EBIO 4090

**Corequisite(s):** EBIO 4090.

**EBIO 4110 Tropical Ecology (3 Credit Hours)**

Advanced course focusing on terrestrial ecology covering all tropical ecosystems with an emphasis on forests. Ecological topics will be addressed at population, community, and ecosystem levels with an organismal treatment of plants, insects, birds, reptiles, fish, mammals, microbes (fungi and bacteria), and other model organisms.

**Prerequisite(s):** EBIO 3040.

**EBIO 4200 Ornithology (4 Credit Hours)**

An exploration of the biology of birds emphasizing their origin, evolution, diversity, zoogeography, functional morphology, behavior, ecology, and conservation. Weekly laboratories and field trips with occasional weekend field trips.

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015).

**EBIO 4201 Ornithology Lab (0 Credit Hours)**

Lab section for EBIO 4200

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015) and CELL 1010.

**EBIO 4210 Vertebrate Morphology (4 Credit Hours)**

Comparative morphology, evolution, and bionomics of representative vertebrates. Lectures supplemented by weekly labs.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**Corequisite(s):** EBIO 4211.

**EBIO 4211 Vertebrate Morphology lab (0 Credit Hours)**

Lab section for EBIO 4210

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**Corequisite(s):** EBIO 4210.

**EBIO 4230 Molecular Evol & Ecology (4 Credit Hours)**

Molecular ecology employs principles of population genetics and phylogenetics to answer questions about organismal diversity, population dynamics, community assembly and macroecology. Having a foundation in molecular evolution and genomics allows for broad topical applications, including the study of infectious diseases, conservation of endangered species, organismal responses to global environmental change, and the evolutionary origins of biological diversity. Students will first learn the principles of molecular evolution, after which they will be introduced to the core techniques used to generate molecular data. Students will learn how molecular data can be developed and analyzed to address questions in ecology and evolutionary biology. It is strongly recommended that students also have taken CELL 2050, EBIO 3080, and EBIO 3040 or have an understanding of genetics, organismal evolution and ecological principles. This class consists of 3 lectures per week supplemented with a weekly lab.

**Prerequisite(s):** EBIO 2020, 2070 and CELL 1010.

**Corequisite(s):** EBIO 4231.

**EBIO 4231 Molecular Evolution & Ecol Lab (0 Credit Hours)**

Lab section for EBIO 4230

**Corequisite(s):** EBIO 4230.

**EBIO 4250 Biol of Marine Invertebrates (4 Credit Hours)**

Biology, taxonomy and distribution of the invertebrates with emphasis on the local fauna. Lectures, laboratories, and field trips.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**Corequisite(s):** EBIO 4251.

**EBIO 4251 Biol of Invertebrate Lab (0 Credit Hours)**

Co-requisite lab for EBIO 4250

**Corequisite(s):** EBIO 4250.



**EBIO 4270 Population Ecology (3 Credit Hours)**

Principles of population dynamics in space and time, population regulation, and population interactions as determined from an integrated study of plants and animals, followed by exploration of the applicability of these principles to an understanding of the contemporary growth and control of the human population.

**Prerequisite(s):** EBIO 3040\*.

\* May be taken concurrently.

**EBIO 4271 R Prog for Population Ecology (1 Credit Hour)**

In this course, students will learn the basics of the R programming language and complete computer exercises relevant to the material covered in Population Ecology. The course gives students hands on experience of the workings of simple population models. Students enrolled in Population Ecology (EBIO 4270/6270) are strongly encouraged to enroll.

**EBIO 4280 Ichthyology (4 Credit Hours)**

Biology of fish-like vertebrates, including taxonomy, evolution, anatomy, physiology, and biogeography.

**Prerequisite(s):** EBIO 1010 and (EBIO 1015 or 1110) and CELL 1010.

**Corequisite(s):** EBIO 4281.

**EBIO 4281 Ichthyology Lab (0 Credit Hours)**

Lab section for EBIO 4280

**Corequisite(s):** EBIO 4280.

**EBIO 4300 Biol of Amphibians & Reptiles (4 Credit Hours)**

This course will provide an introduction to herpetology, the study of reptiles and amphibians. Topics covered will include the evolutionary history, systematics, physiology, ecology, life history, behavior and conservation of amphibians and reptiles. The course consists of two lectures and a lab or field trip each week. Occasional weekend field trips may also be scheduled.

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**Corequisite(s):** EBIO 4301.

**EBIO 4301 Biol of Amph & Reptiles lab (0 Credit Hours)**

Co-requisite lab for EBIO 4300

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**Corequisite(s):** EBIO 4300.

**EBIO 4310 Plant Systematics (4 Credit Hours)**

A review of the structure and evolution of land plants and a survey of the major families of flowering plants. Laboratory emphasis on structural terminology and plant identification.

**Corequisite(s):** EBIO 4311.

**EBIO 4311 Plant Systematics Lab (0 Credit Hours)**

Lab section for EBIO 4310

**Corequisite(s):** EBIO 4310.

**EBIO 4360 Wetlands Ecology (3 Credit Hours)**

This course will introduce students to the occurrence, morphology, hydrology, soils, ecology and regulation of wetlands.

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**EBIO 4370 Aquatic Autotrophs (3 Credit Hours)**

This course will survey and provide a systematic treatment of the most common autotrophic organisms found in oceanic, coastal, estuarine, and freshwater habitats with particular emphasis on those organisms along the northern Gulf of Mexico.

**Prerequisite(s):** EBIO 1010 and 1015.

**EBIO 4430 Entomology (4 Credit Hours)**

In this course we will study the organismal, ecological, and evolutionary biology of insects, while surveying recent literature. In addition to learning about insects as organisms and as integral parts of our ecosystem, we will study the scientific process. This course will discuss how scientists come to reach understanding about nature in general, using insects as our model. Insect collection required.

**Prerequisite(s):** EBIO 1010 and (EBIO 1110 or 1015) or CELL 1010.

**EBIO 4431 Entomology Lab (0 Credit Hours)**

Lab section for EBIO 4430



**EBIO 4460 BiodivEnvir Informatics (3 Credit Hours)**

This upper-level course explores theory and practice in biodiversity informatics, an emerging field of cyber-enabled discovery and innovation. Topics to be discussed include natural history collection databases and networks, data mining, morphological databases and ontology, digital libraries, phyloinformatics, cybertaxonomy, Georeferencing methods and algorithms, GIS and predictive niche modeling.

**Prerequisite(s):** EBIO 3080 and (CELL 2050 or EBIO 2070).

**EBIO 4560 Internship (1-3 Credit Hours)**

An experiential learning process coupled with pertinent academic course work. Open only to juniors and seniors in good standing. Registration is completed in the academic department sponsoring the internship on BANNER.

**EBIO 4660 Special Topics (1-4 Credit Hours)**

Courses offered for undergraduate students by visiting professors and permanent faculty.

**Prerequisite(s):** EBIO 1010, 1015 and CELL 1010.

**EBIO 4665 Special Topics Lab (1-3 Credit Hours)**

Special Topics Lab.

**EBIO 4670 Topics In Marine Science (1-4 Credit Hours)**

Reserved for courses offered by LUMCON on a temporary basis or for courses taken at other marine field stations. EBIO 4680/6680 - Topics in Field Biology would be reserved for summer field courses taken at non-marine biological field stations.

**EBIO 4672 Marine Field Ecology (4 Credit Hours)**

Relationships of marine and estuarine organisms to environmental factors; interactions among organisms; ecological processes of energy and materials flow; field studies of communities and ecosystems of the Louisiana coastal zone.

**EBIO 4673 Marine Fish Ecology (3 Credit Hours)**

This course will explore the ecology of coastal marine fishes emphasizing aspects of how fish utilize coastal habitats and how environmental factors influence that distribution, movement, growth, reproduction, abundance and interspecific interactions of fishes, especially in early life history stages.

**EBIO 4674 Marine Invertebrate Ecology (3 Credit Hours)**

In-depth study of the interaction of marine and estuarine invertebrates with their environment. Emphasis will be placed on understanding the functional role of invertebrates and how the environment shapes morphology, physiology and behavior.

**EBIO 4676 Wetland Vegetation (3 Credit Hours)**

Identification, taxonomy and distribution of wetland plants. Plant adaptations, vegetation analysis methods, marsh types, community processes and coastal wetland restoration will also be discussed.

**EBIO 4890 Service Learning: EBIO 4360 (0-1 Credit Hours)**

Students complete a service activity in the community in conjunction with the content of a three-credit corequisite course.

**EBIO 4910 Independent Study (1-3 Credit Hours)**

Laboratory or library research under direction of a faculty member.

**EBIO 4920 Independent Study (1-4 Credit Hours)**

Laboratory or library research under direction of a faculty member.

**EBIO 4930 Capstone Indep Study (3-4 Credit Hours)**

A senior capstone experience for students majoring in Environmental Science-Ecology and Evolutionary Biology Track and for departmental majors unable to complete EBIO 4970/4980 due to extenuating circumstances. Under faculty supervision, students select a topic in ecology and evolutionary biology, write an expository paper on that topic and give an oral presentation of their findings. Students also attend departmental research seminars and meet to discuss contemporary issues in ecology and evolutionary biology.

**EBIO 4940 Transfer Coursework (3 Credit Hours)****EBIO 4960 Special Projects (1-3 Credit Hours)**

Individual studies in a selected field. Open to qualified juniors and seniors with approval of instructor and advisor.

**EBIO 4970 Contemp Ecol & Evol Biol I (1 Credit Hour)**

This is the senior capstone experience for departmental majors. Under faculty supervision, students select a research topic in ecology and evolutionary biology, write an expository paper on that topic, and give an oral presentation of their findings. Students also attend departmental research seminars and meet to discuss contemporary issues in ecology and evolutionary biology. EBIO 4970-4980 are required of all departmental majors, and both courses must be completed to receive credit for the capstone experience. EBIO 4970 is offered each fall, and EBIO 4980 is offered each spring. EBIO 4970 is a pre-requisite for EBIO 4980. EBIO H5000 Honors Thesis may be substituted for or taken in addition to EBIO 4980 in the spring semester.

**Prerequisite(s):** EBIO 3040, 3045 and 3080.

**EBIO 4980 Contemp Ecol & Evol Biol II (3 Credit Hours)**

This is the senior capstone experience for departmental majors. Under faculty supervision, students select a research topic in ecology and evolutionary biology, write an expository paper on that topic, and give an oral presentation of their findings. Students also attend departmental research seminars and meet to discuss contemporary issues in ecology and evolutionary biology. EBIO 4970-4980 are required of all departmental majors, and both courses must be completed to receive credit for the capstone experience. EBIO 4970 is offered each fall, and EBIO 4980 is offered each spring. EBIO H5000 Honors Thesis may be substituted for or taken in addition to EBIO 4980 in the spring semester.

**Prerequisite(s):** (EBIO 3040, 3040, 3040 or 3040) and (EBIO 3045, 3045, 3045, 3045, 3140, 3140, 3140 or 3140) and (EBIO 3080, 3080, 3080 or 3080).

**EBIO 4990 Honors Thesis (3 Credit Hours)**

Honors thesis research, first semester. Register in department.

**EBIO 5000 Honors Thesis (4 Credit Hours)**

Honors thesis research, second semester. Register in department.

**EBIO 5380 Study Abroad (1-20 Credit Hours)**

Courses taught abroad by non-Tulane faculty. Does not count toward Tulane GPA.

**EBIO 5390 Study Abroad (1-20 Credit Hours)****EBIO 5970 Capstone Research Seminars (2 Credit Hours)**

Enrollment in EBIO 5970 requires a pre-requisite or co-requisite of an approved research experience involving field, laboratory, or literature research in ecology and evolutionary biology during the junior or senior year.

**EBIO 5971 Capstone Research Seminars (2,3 Credit Hours)**

Enrollment in EBIO 5970 requires a pre-requisite or co-requisite of an approved research experience involving field, laboratory, or literature research in ecology and evolutionary biology during the junior or senior year.

**EBIO 6030 Field Botany (4 Credit Hours)**

A plant identification course focusing on terrestrial and aquatic flora of Louisiana. Lab field trips include visits to a variety of local ecosystems from coastal wetlands to upland forests. Lectures cover botany, taxonomy, and the ecological and evolutionary processes that structure plant communities, with special emphasis on how these topics apply to Louisiana ecosystems.

**Corequisite(s):** EBIO 6031.

**EBIO 6031 Field Botany Lab (0 Credit Hours)**

Lab section for EBIO 6030

**Corequisite(s):** EBIO 6030.

**EBIO 6040 General Ecology (3-4 Credit Hours)**

A survey of the patterns and mechanisms of interaction among all organisms and their environments, including examples of human impacts on the biosphere. Lectures plus two field trips.

**EBIO 6045 General Ecology Lab (1 Credit Hour)****EBIO 6060 Stream Ecology (4 Credit Hours)**

Ecology of freshwater stream environments, including physical forces influencing water flow, sediment and solute geochemistry, and composition and interactions of stream biota. Class Hours: Lectures supplemented by weekly labs, some day field trips, and one weekend field trip.

**Corequisite(s):** EBIO 6061.

**EBIO 6061 Stream Ecology lab (0 Credit Hours)**

Lab section for EBIO 6060

**Corequisite(s):** EBIO 6060.

**EBIO 6080 Biostat & Experi Design (3 Credit Hours)**

This course will teach students how to interpret statistical data in an evolutionary and ecological context. Special emphasis will be placed on understanding the nature of ecological field experiments, and experimental design. In addition, issues regarding how ecological and evolutionary analyses are perceived in the public media will be discussed. We will cover statistical methods for dealing with such problems (regression, correlation, ANOVA, etc.), and also read papers in ecological and evolutionary journals that highlight statistical issues. The class is designed for students who have not had prior experience with statistics.

**EBIO 6090 Invertebrate Paleontology (4 Credit Hours)**

Principles of invertebrate paleontology; a systematic treatment of the fossil invertebrates and their living relatives. Emphasis on functional morphology, ontogeny, and paleontology.

**Corequisite(s):** EBIO 6091.

**EBIO 6091 Invertebrate Paleontology Lab (0 Credit Hours)**

Lab section for EBIO 6090

**Corequisite(s):** EBIO 6090.

**EBIO 6110 Tropical Ecology (3 Credit Hours)**

Advanced course focusing on terrestrial ecology covering all tropical ecosystems with an emphasis on Neotropical forests. Ecological topics will be addressed at population, community, and ecosystem levels with an organismal treatment of plants, insects, birds, reptiles, fish, mammals, microbes (fungi and bacteria), and other model organisms.

**EBIO 6150 Intro to GIS (4 Credit Hours)**

This course is designed to give students a general understanding of geographic information systems (GIS) and the Environmental Systems Research Institute (ESRI) ArcGIS software. The approach taken is detailed instruction in utilizing ArcGIS to solve problems in the earth and environmental sciences. (SAME AS EBIO 3150, EENS 3150, EENS 6150,)

**Corequisite(s):** EBIO 6151.

**EBIO 6151 Intro to GIS lab (0 Credit Hours)**

(Same as EBIO 3151, EENS 3151, EENS 6151)

**Corequisite(s):** EBIO 6150.

**EBIO 6180 Plants & Human Affairs (3 Credit Hours)**

Since ancient times, people have relied on plants for food, clothing, shelter, medicines, and more. This course investigates some of the ways in which plants support and shape human life. Topics include: early ideas about plants and the origin of plant lore; plant domestication and the rise of agriculture; plant products in commercial economies; cultural uses of plants; plants and the future of civilization.

**EBIO 6190 Darwin and Darwinism (4 Credit Hours)**

A consideration of Charles Darwin's theory of Natural Selection, including the history of evolutionary thought before Darwin's time, the circumstances surrounding Darwin's research, and the effect of Darwin's ideas on the development of contemporary biology. Readings, discussions, and written assignments.

**EBIO 6200 Ornithology (4 Credit Hours)**

An exploration of the biology of birds emphasizing their origin, evolution, diversity, zoogeography, functional morphology, behavior, ecology, and conservation. Weekly laboratories and field trips with occasional weekend field trips.

**EBIO 6201 Ornithology lab (0 Credit Hours)**

Lab section for EBIO 6200

**EBIO 6210 Vertebrate Morphology (4 Credit Hours)**

Comparative morphology, evolution, and bionomics of representative vertebrates.

**Corequisite(s):** EBIO 6211.

**EBIO 6211 Vertebrate Morphology Lab (0 Credit Hours)**

Lab section for EBIO 6210

**Corequisite(s):** EBIO 6210.

**EBIO 6230 Molecular Evol & Ecology (4 Credit Hours)**

Molecular ecology employs principles of population genetics and phylogenetics to answer questions about organismal diversity, population dynamics, community assembly and macroecology. Having a foundation in molecular evolution and genomics allows for broad topical applications, including the study of infectious diseases, conservation of endangered species, organismal responses to global environmental change, and the evolutionary origins of biological diversity. Students will first learn the principles of molecular evolution, after which they will be introduced to the core techniques used to generate molecular data. Students will learn how molecular data can be developed and analyzed to address questions in ecology and evolutionary biology. It is strongly recommended that students also have taken CELL 2050, EBIO 3080, and EBIO 3040 or have an understanding of genetics, organismal evolution and ecological principles. This class consists of 3 lectures per week supplemented with a weekly lab. (Same as EBIO 6230)

**Corequisite(s):** EBIO 6231.

**EBIO 6231 Molecular Evolution & Ecol Lab (0 Credit Hours)**

Lab section for EBIO 6230

**Corequisite(s):** EBIO 6230.

**EBIO 6250 Biol of Marine Invertebrates (4 Credit Hours)**

Biology, taxonomy and distribution of the invertebrates with emphasis on the local fauna.

**Corequisite(s):** EBIO 6251.

**EBIO 6251 Biol of Invertebrate Lab (0 Credit Hours)**

Co-requisite lab for EBIO 6250

**Corequisite(s):** EBIO 6250.

**EBIO 6270 Population Ecology (3 Credit Hours)**

Principles of population dynamics in space and time, population regulation, and population interactions as determined from an integrated study of plants and animals, followed by exploration of the applicability of these principles to an understanding of the contemporary growth and control of the human population.

**EBIO 6271 R Prog for Population Ecology (1 Credit Hour)**

In this course, students will learn the basics of the R programming language and complete computer exercises relevant to the material covered in Population Ecology. The course gives students hands on experience of the workings of simple population models. Students enrolled in Population Ecology (EBIO 4270/6270) are strongly encouraged to enroll.

**EBIO 6280 Ichthyology (4 Credit Hours)**

Biology of fish-like vertebrates, including taxonomy, evolution, anatomy, physiology, and biogeography. Class Hours: Lectures supplemented by weekly labs, some day field trips, and one weekend field trip.

**Corequisite(s):** EBIO 6281.

**EBIO 6281 Ichthyology Lab (0 Credit Hours)**

Lab section for EBIO 6280

**Corequisite(s):** EBIO 6280.

**EBIO 6290 Behavioral Ecology (3 Credit Hours)**

This course addresses the ecological and evolutionary causes and consequences of animal behavior, using both proximate and ultimate approaches. Topics include sociality, mating systems, sexual selection, animal movement, signals, behavior and conservation, and cognition.

**EBIO 6300 Biol of Amphibians & Reptiles (4 Credit Hours)**

This course will provide an introduction to herpetology, the study of reptiles and amphibians. Topics covered will include the evolutionary history, systematics, physiology, ecology, life history, behavior and conservation of amphibians and reptiles. The course consists of two lectures and a lab or field trip each week. Occasional weekend field trips may also be scheduled.

**Corequisite(s):** EBIO 6301.

**EBIO 6301 Biol of Amp & Reptiles lab (0 Credit Hours)**

Co-requisite lab for EBIO 6300

**Corequisite(s):** EBIO 6300.

**EBIO 6320 Microbial Diversity & Ecology (3 Credit Hours)**

A survey of micro-organisms and their roles in and relationships within their respective ecosystems. (Same as EBIO 3320)

**Corequisite(s):** EBIO 6325.

**EBIO 6325 Microb Diversity & Ecology Lab (1 Credit Hour)**

Corequisite: EBIO 3320/6320. Laboratory activities focused on observing/ascertaining microbial taxonomy (viral, bacterial, archaeal, fungal, and protistan) and methods relating to isolating/identifying microbes and measuring growth rates and metabolisms. Prerequisites: EBIO 1010/1015, CELL 1010, either EBIO 2070 or CELL 2050.

**Corequisite(s):** EBIO 6320.

**EBIO 6340 Ecological Analysis (3 Credit Hours)**

Study of powerful methods for designing ecological studies and analyzing ecological data, assuming a knowledge of basic parametric and nonparametric statistics.

**EBIO 6360 Wetlands Ecology (3 Credit Hours)**

This course will introduce students to the occurrence, morphology, hydrology, soils, ecology and regulation of wetlands.

**EBIO 6370 Aquatic Autotrophs (3 Credit Hours)**

This course will survey and provide a systematic treatment of the most common autotrophic organisms found in oceanic, coastal, estuarine, and freshwater habitats with particular emphasis on those organisms along the northern Gulf of Mexico.

**EBIO 6380 Phylogenetics (3 Credit Hours)**

A consideration of biological homology, species definition, problems of character data analysis, and Hennigian cladistics as a means of reconstructing the evolutionary history of life. The implications of phylogenetic hypotheses for biological classification, biogeography, paleontology, comparative ecology, and conservation biology. Seminars, readings, and projects.

**EBIO 6430 Entomology (4 Credit Hours)**

In this course we will study the organismal, ecological, and evolutionary biology of insects, while surveying recent literature. In addition to learning about insects as organisms and as integral parts of our ecosystem, we will study the scientific process. This course will discuss how scientists come to reach understanding about nature in general, using insects as our model. Insect collection required.

**EBIO 6431 Entomology Lab (0 Credit Hours)**

Lab section for EBIO 6430

**Corequisite(s):** EBIO 6430.

**EBIO 6460 BiodivEnvir Informatics (3 Credit Hours)**

This upper-level course explores theory and practice in biodiversity informatics, an emerging field of cyber-enabled discovery and innovation. Topics to be discussed include natural history collection databases and networks, data mining, morphological databases and ontology, digital libraries, phyloinformatics, cybertaxonomy, Georeferencing methods and algorithms, GIS and predictive niche modeling. A computer laboratory is a required corequisite.

**EBIO 6500 Sharks and Their Relatives (3 Credit Hours)**

Biology of Sharks and Their Relatives is a detailed study of the evolution, ecology, morphology, functional anatomy, physiology, and conservation of the cartilaginous fishes.

**EBIO 6550 Shark Paleobiology (4 Credit Hours)**

This course examines the processes and patterns of shark speciation, diversification, macroevolution, and extinction within the framework of developing a problem-based learning activity using shark teeth for a K-12 classroom. Particular emphasis is placed on the systematics and functional morphology of shark teeth.

**EBIO 6551 Shark Paleobiology Lab (0 Credit Hours)**

Lab section for EBIO 6550

**EBIO 6580 Urban Ecology (3 Credit Hours)**

Urban Ecology is the study of cities, including human inhabitants, as functioning ecosystems, supporting a complex web of life. In this course students will learn how basic ecological principles can be applied to the study of urban ecosystems and the effects of cities and urbanization on regional and global environments. Through a combination of lectures, readings and discussions, site visits and service learning, this course will provide an overview of interactions, at multiple scales, between the built environment and the natural environment with particular focus on New Orleans and the Gulf coast region.

**EBIO 6590 Plant Biol & Adaptation (4 Credit Hours)**

An introduction to the biology of plants, with an emphasis on the aspects of physiology, anatomy, morphology, and ecology that have resulted in their successful adaptation and diversification. Lectures supplemented by weekly labs and occasional field trips.

**EBIO 6591 Plant Biology & Adaptation Lab (0 Credit Hours)**

Lab section for EBIO 6590

**EBIO 6660 Special Topics (0-4 Credit Hours)**

Courses offered by visiting professors or permanent faculty primarily for undergraduates. For description, consult department.

**EBIO 6665 Special Topics Lab (1-3 Credit Hours)**

Special Topics Lab.

**EBIO 6670 Topics in Marine Science (1-4 Credit Hours)**

Reserved for courses offered by LUMCON on a temporary basis or for courses taken at other marine field stations. EBIO 4680/6680 - Topics in Field Biology would be reserved for summer field courses taken at non-marine biological field stations.

**EBIO 6672 Marine Field Ecology (4 Credit Hours)**

Relationships of marine and estuarine organisms to environmental factors; interactions among organisms; ecological processes of energy and materials flow; field studies of communities and ecosystems of the Louisiana coastal zone.

**EBIO 6673 Marine Fish Ecology (3 Credit Hours)**

In-depth study of the interaction of marine and estuarine invertebrates with their environment. Emphasis will be placed on understanding the functional role of invertebrates and how the environment shapes morphology, physiology and behavior.

**EBIO 6674 Marine Invertebrate Ecology (3 Credit Hours)**

In-depth study of the interaction of marine and estuarine invertebrates with their environment. Emphasis will be placed on understanding the functional role of invertebrates and how the environment shapes morphology, physiology and behavior.

**EBIO 6676 Wetland Vegetation (3 Credit Hours)**

Identification, taxonomy and distribution of wetland plants. Plant adaptations, vegetation analysis methods, marsh types, community processes and coastal wetland restoration will also be discussed. Class will include lecture, labs and field collection of plants.

**EBIO 6690 Experimental Animal Behavior (4 Credit Hours)**

This course provides students the opportunity to design, implement, write-up, and present an independent research project related to animal behavior. Research will be conducted on live animals at the Audubon Zoo or Audubon Park. The course will emphasize general principles of literature review and synthesis; experimental design; the collection; organization and analysis of data; and written and oral presentation of results. The course consists of 3 hours of laboratory per week (at the park or zoo) and 2 hours of seminar per week (on campus). This course fulfills the Newcomb-Tulane intensive writing requirement.

**Corequisite(s):** EBIO 6691.

**EBIO 6691 Exper. Animal Behavior Lab (0 Credit Hours)**

Lab section for EBIO 6690

**Corequisite(s):** EBIO 6690.

**EBIO 6700 Math Models Ecol & Evolution (3 Credit Hours)**

An introductory course in mathematical modeling in biology with emphasis on construction and interpretation of models in ecology. The goals of the course are to provide training in a wide variety of mathematical and computational techniques that are used to describe ecological systems, to learn to construct ecological models and provide instruction in the biological interpretation of mathematical results.

**EBIO 6810 EEB Journal Review (1 Credit Hour)**

Discussion of significant new publications in ecology, evolutionary biology, and related fields.

**EBIO 6850 Cur Top/Ecol & Evol Biol (3 Credit Hours)**

In-depth examination of a selected topic in ecology and evolutionary biology.

**EBIO 6910 Independent Study (1-4 Credit Hours)**

Advanced independent studies in a selected field of biology.

**EBIO 6911 Independent Study (1-4 Credit Hours)**

This is a directed study course that allows a graduate student to pursue a topic of particular interest under the direction of a faculty member.

**EBIO 6920 Independent Study (1-4 Credit Hours)**

Advanced independent studies in a selected field of biology.

**EBIO 6940 Transfer Coursework (3 Credit Hours)****EBIO 7010 Process of Sci In Ee Bio (3 Credit Hours)**

The class presents a thorough review and experimental exposure to the process of funding and disseminating results of scientific research. Students will write and submit fundable grant proposals, give research seminars, participate in the peer review process, and examine job opportunities within and outside academia.

**EBIO 7150 Problems In Envr Biology (3 Credit Hours)**

Restricted to 5 graduate year students; Directed independent study applying field and laboratory methods to environmental problems.

**EBIO 7160 Problems In Env Biology (3 Credit Hours)**

Restricted to 5 graduate year students; Directed independent study applying field and laboratory methods to environmental problems.

**EBIO 7660 Internship Envr Biology (3 Credit Hours)**

Restricted to 5 graduate year students: Experimental learning in cooperation with federal, state, municipal or private agencies and industry.

**EBIO 7670 Internship Envir Biology (3 Credit Hours)**

Restricted to 5 graduate year students: Experimental learning in cooperation with federal, state, municipal or private agencies and industry.

**EBIO 7940 Transfer Credit-Grad (1-12 Credit Hours)****EBIO 7990 Doctoral Pre-Candidacy RSH (1-9 Credit Hours)****EBIO 9980 Masters Research (3 Credit Hours)**

Research toward completion of a masters degree.

**EBIO 9990 Dissertation Research (3 Credit Hours)**

Research toward completion of a doctoral degree.