

# BIOLOGY | BOTANY | ZOOLOGY

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Not all courses are offered every semester. Refer to the schedule of courses for each term's specific offerings.

More Info (<https://one.ufl.edu/soc/>)

*Unless otherwise indicated in the course description, all courses at the University of Florida are taught in English, with the exception of specific foreign language courses.*

## Department Information

The Department of Biology studies life at all levels from molecules to the biosphere to understand the evolution, structure, maintenance and dynamics of biological systems. The department's teaching and research provide the integrative and conceptual foundations of the life sciences.

**Website** (<https://biology.ufl.edu/>)

### CONTACT

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Map (<http://campusmap.ufl.edu/#/index/0747>)

### Curriculum

- Biology UF Online
- Biology | CALS
- Biology | CLAS
- Botany Minor
- Botany | CALS
- Botany | CLAS
- Combination Degrees
- Zoology
- Zoology Minor

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## Courses

### Biology

#### **BOT 4650 Plant Symbiosis 3 Credits**

**Grading Scheme:** Letter Grade

Examines the crucial role of symbioses in shaping the diversity of life. Topics include generalities among symbioses, origins and establishment of symbioses, and coevolution and cospeciation, as well as specifics of well-studied exemplars of bacterial, fungal, animal, and plant symbioses with plants.

**Prerequisite:** BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L with minimum grades of C.

#### **BOT 4851C Medical and Forensic Plant Biology 3 Credits**

**Grading Scheme:** Letter Grade

Basic plant taxonomy, systematics, phytochemicals, uses of plants by animals and various human cultures, and in the development of modern medicine and drug development. Uses of plant tissues and products in forensic investigations will also be discussed.

**Prerequisite:** BSC 2011 with a minimum grade of B.

#### **BSC 1920 First Year Introduction: Biology at UF 1 Credit**

**Grading Scheme:** S/U

Introduces the field of biology and the academic resources specific to this discipline at UF. Discussions of the nature and practice of scientific research, laboratory safety, advising and career resources for biologists. Developments in the instructor's area of expertise are used to illustrate key subjects.

**Prerequisite:** biology, botany, zoology or exploring science and engineering majors only.

#### **BSC 2005 Biological Sciences 3 Credits**

**Grading Scheme:** Letter Grade

A comprehensive introduction to living systems, including the scientific basis of biology, cell structure and function, genetic mechanisms, animal and plant anatomy and physiology, and ecology and evolutionary processes. Recommended for students not majoring in the natural sciences. (B)

**Attributes:** General Education - Biological Science

**BSC 2005L Laboratory in Biological Sciences 1 Credit****Grading Scheme:** Letter Grade

A laboratory for students who need experience in a nonprofessionally oriented laboratory or for those who need laboratory experience to satisfy requirements for graduation. (B)

**Attributes:** General Education - Biological Science**BSC 2010 Integrated Principles of Biology 1 3 Credits****Grading Scheme:** Letter Grade

General Biology Core: the first of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields. Studies the origin of life systems; of biological molecules and organization of living things at the subcellular, cellular and organismic levels; and of the activities of living forms in obtaining and utilizing energy and materials in growth, maintenance and reproduction. (B)

**Prerequisite:** Degree-seeking students only.**Attributes:** General Education - Biological Science**BSC 2010L Integrated Principles of Biology Laboratory 1 1 Credit****Grading Scheme:** Letter Grade

Laboratory experiments designed to accompany BSC 2010. Students should register for BSC 2010 and 2010L concurrently. (B)

**Prerequisite:** Degree-seeking students only.**Corequisite:** BSC 2010 or the equivalent.**Attributes:** General Education - Biological Science**BSC 2011 Integrated Principles of Biology 2 3 Credits****Grading Scheme:** Letter Grade

General Biology Core: the second of a two-semester sequence that prepares students for advanced biological sciences courses and allied fields.

Examination in living things of the principles of information storage, transmission and utilization at the cell, organism and population levels; of the mechanisms of evolutionary change in the diversification of living things and their life styles; of population growth and regulation; and of energy flow and biogeochemical cycling in the biosphere. (B)

**Prerequisite:** BSC 2010 or the equivalent. Degree-seeking students only.**Attributes:** General Education - Biological Science**BSC 2011L Integrated Principles of Biology Laboratory 2 1 Credit****Grading Scheme:** Letter Grade

Laboratory experiments designed to accompany BSC 2011. Students should register for BSC 2011 and 2011L concurrently. (B)

**Prerequisite:** Degree-seeking students only.**Corequisite:** BSC 2011 or the equivalent.**Attributes:** General Education - Biological Science**BSC 2862 Global Change Ecology and Sustainability 3 Credits****Grading Scheme:** Letter Grade

Examines key issues in sustainability and global environmental change from an ecological perspective. Major themes include impacts of climate change on terrestrial ecological communities; feedback between the terrestrial biosphere and the atmosphere; and implications of climate change for the sustainability of natural and managed ecosystems. (B)

**Attributes:** General Education - Biological Science**BSC 2930 Special Topics 1-4 Credits****Grading Scheme:** Letter Grade

Special topics in general biology.

**BSC 3096 Human Physiology 3 Credits****Grading Scheme:** Letter Grade

Functioning of human tissues, organs and organ systems, emphasizing the physical, chemical and mechanistic bases of normal physiology and the integrated function of the human body. Also introduces pathophysiological changes associated with human diseases.

**Prerequisite:** (CHM 1031 or CHM 2046 or CHM 2047) and BSC 2011.**BSC 3307C Climate Change Biology 4 Credits****Grading Scheme:** Letter Grade

Climate change and its impacts on biological communities, feedbacks from the biosphere to the climate system and human impacts on the carbon cycle. Emphasis on the response of vegetation to climate change and rising atmospheric CO<sub>2</sub> concentrations and the role of terrestrial ecosystems in regulating climate via the carbon cycle.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C.**BSC 3911 Entering Research in Biology 1 Credit****Grading Scheme:** Letter Grade

A weekly seminar course that prepares students entering research and complements students' mentored research experience. Students get feedback on securing a research lab/mentor, share their research experiences and get feedback on their projects. Guest speakers on Biology careers and graduate/professional school admissions invited to class.

**Prerequisite:** BSC 2010/L and BSC 2011/L.

**BSC 4055 Climate Change and Human Systems 3 Credits****Grading Scheme:** Letter Grade

Principles derived from basic medical science, ecology, and relevant social sciences describe the major factors of climate change and their effects on human systems relevant to economy, wellness, energy systems, and food security. Natural science and the scientific method provide the basis for understanding sustainability science as a framework for mitigation and adaptation of the disruption of the Earth System and impacts on the biosphere and human systems.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C.**BSC 4452 Computational Tools for Research in Biology 3 Credits****Grading Scheme:** Letter Grade

Introduces computational tools for research: Linux command line, Python scripting, databases. Prepares students to conduct large-scale data analysis on high performance computing resources.

**Prerequisite:** Junior standing or higher.**BSC 4821C Evolutionary Biogeography 3 Credits****Grading Scheme:** Letter Grade

How to interpret biological data sets in a biogeographical context. Topics and methods in historical and ecological biogeography are discussed.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C.**BSC 4892 AI in Biology 3 Credits****Grading Scheme:** Letter Grade

Examines how AI has rapidly become ubiquitous in daily life and been applied to diverse areas of Biology. Focuses on machine learning approaches as well as deep learning methods, including transformers. Covers machine learning methods for tabular data, computer vision, transfer learning, natural language processing, and transformer-based architectures. Classes typically applied coding with Jupyter Notebooks on HiPerGator. Prior Python coding experience required.

**Prerequisite:** BSC 4452 or BSC 6451 or BSC 2891 or Instructor permission (Python programming experience.)**BSC 4910 Individual Mentored Research in Biology 0-3 Credits****Grading Scheme:** Letter Grade

Qualified students work with a supervising instructor on a research project in biology.

**Prerequisite:** BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L with minimum grades of C.**Corequisite:** BSC 3911.**BSC 4912 Advanced Mentored Research in Biology 0-4 Credits****Grading Scheme:** Letter Grade

Advanced students work with a supervising instructor on a research project in biology. May be repeated for full credit.

**Prerequisite:** BSC 3911 and BSC 4910 with minimum grades of C.**BSC 4930 Special Topics in Biology 1-4 Credits****Grading Scheme:** Letter Grade

Special topics of current interest in biology.

**Prerequisite:** (BSC 2011 and BSC 2011L) or equivalent with minimum grades of C.**BSC 4936 Critical Analysis of Biological Research 2 Credits****Grading Scheme:** Letter Grade

Critical analysis of current life sciences research through online discussions of research seminars and peer reviewed scientific publications.

**Prerequisite:** Senior standing or higher in biology, botany or zoology.**BSC 4956 Overseas Studies 1-15 Credits****Grading Scheme:** Letter Grade**IDS 1703 Frontiers of AI 1 Credit****Grading Scheme:** Letter Grade

Explore artificial intelligence (AI) and how it is used to solve real-world problems in a wide variety of disciplines. Presentations will be from faculty who study AI technologies in science, art, medicine, business, and more, and will equip students to think about how AI can be applied to their areas of interest. Intended for students from any major/discipline, no technical experience needed.

**ISC 2400L Cross-Disciplinary Laboratory 1 3 Credits****Grading Scheme:** Letter Grade

First course in a two-semester inquiry-based laboratory focusing on major themes and concepts in biology, chemistry and physics with an emphasis on their integrated applications in modern, quantitative research. Satisfies course requirements for BSC 2010L, CHM 2045L and PHY 2053L.

**Prerequisite:** high school algebra or equivalent. Degree-seeking students only.

**ISC 2401L Cross-Disciplinary Laboratory 2 3 Credits****Grading Scheme:** Letter Grade

Second course in a two-semester inquiry-based laboratory focusing on major themes and concepts in biology, chemistry and physics with an emphasis on their integrated applications in modern, quantitative research. Satisfies course requirements for BSC 2011L, CHM 2046L and PHY 2054L.

**Prerequisite:** ISC 2400L and MAC 1147 or equivalent;**Corequisite:** BSC 2010 and CHM 2045 or CHM 2047 or CHM 2095.**ISC 3523 Integrative Biomedical Science 3 Credits****Grading Scheme:** Letter Grade

Introduces biomedical science as the application of the natural sciences to medicine. Focuses on integration of biological and biochemical sciences, chemical and physical sciences, and social and behavioral sciences in the context of health. Activities promote skills in problem-solving, critical analysis, and quantitative reasoning.

**Prerequisite:** BSC 2011 and (CHM 2211 or CHM 2213 or CHM 3217) and (PHY 2048 or PHY 2053 or PHY 2060) and (MAC 2311 or STA 2023) and (PSY 2012 or SYG 2000).**PCB 3109 Cancer Biology 3 Credits****Grading Scheme:** Letter Grade

Introduces the dysregulation of cellular processes in cancer cells including the mechanisms of action of anti-cancer drugs.

**PCB 3402 Disease Ecology and Evolution 3 Credits****Grading Scheme:** Letter Grade

Understand how ecological patterns and evolutionary processes shape host-pathogen interactions and learn basic metrics to study infection and disease, as well as the opportunity to analyze data and interpret patterns. Use primary literature to discuss topics such as: emerging pathogens in plants, animals, and humans; evolution of host defenses; disease-diversity relationships; microbiomes and dysbiosis; herd immunity; and the one health concept.

**Prerequisite:** BSC2010.**PCB 4085 Genetical Ethics 1 Credit****Grading Scheme:** Letter Grade

Presentation and critical discussion of new genetic discoveries and discoveries in the context of society. Includes policy, historical, and legal perspectives. Covers responsible conduct of research.

**Prerequisite:** PCB 3063 or AGR 3303.**PCB 4460 Biodiversity and Ecology Field Immersion 4 Credits****Grading Scheme:** Letter Grade

Five-week intensive study of the earth's rich biodiversity. Emphasizes comparative study of form and function, and of complexity and diversity in phylogenetic and environmental contexts. Focuses on the study of living organisms in the laboratory and field in diverse habitats. Focal organisms and settings rotate according to instructor and semester.

**Prerequisite:** BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L.**PCB 4542 Synthetic Biology and Comparative Genomics 3 Credits****Grading Scheme:** Letter Grade

Synthetic biology merges genetics and engineering to redesign and fabricate existing biological systems and design and fabricate unnatural biological systems, with a strong focus on the use of comparisons among existing organisms to understand the results of synthetic biology experiments.

**Prerequisite:** BSC 2010 with a C or better and (PCB 3063 or AGR 3303 or PCB 4522).**PCB 4553 Population Genetics 4 Credits****Grading Scheme:** Letter Grade

Population and quantitative genetics, including the theory of gene frequency dynamics within and between populations, and deterministic and stochastic processes in evolution.

**Prerequisite:** BSC 2011 and 2011L with minimum grades of C.**PCB 4562 Epigenetics and Human Disease 3 Credits****Grading Scheme:** Letter Grade

Introduction of epigenetic processes and epigenetic basis of human disease through lectures and in-class group activities, with focus on epigenetic modifications, chromatin remodeling, long-range chromatin interactions, dosage compensation, genomic imprinting, pluripotent stem cells, epigenetic reprogramming, and how knowledge of epigenetic processes leads to understanding and treatment of human disease.

**Prerequisite:** BSC 2011 and PCB 3063, with minimum grades of C.**PCB 4917 Molecular Biology Lab Immersion 4 Credits****Grading Scheme:** Letter Grade

Perform authentic research employing techniques of molecular biology in an intensive 5 week format. Each semester the instructor chooses a general area of research and set of techniques for projects. Design hypotheses, plan and carry out experiments, and analyze data.

**Prerequisite:** BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L with minimum grades of B.

**ZOO 4050 Animal Behavior 3 Credits****Grading Scheme:** Letter Grade

Scientific study of the mechanistic and evolutionary causes of animal behavior. Topics include communication, foraging and anti-predator behavior, spatial behavior, aggressive behavior, mating behavior, parental care, and social behaviors.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C.**ZOO 4405 Sea Turtle Biology and Conservation 3 Credits****Grading Scheme:** Letter Grade

Biology of sea turtles and their roles in marine ecosystems, current major issues in sea turtle biology, and challenges in their conservation and management.

**Prerequisite:** BSC 2010 and BSC 2011 with a minimum grade of C.**ZOO 4462C Herpetology 4 Credits****Grading Scheme:** Letter Grade

A broad introduction to the biology of amphibians and reptiles, including their evolution, systematics, diversity, ecology, behavior, physiology, anatomy, and natural history. Laboratory sections provide hands-on experience with amphibians and reptiles from Florida and internationally.

**Prerequisite:** BSC 2011 and BSC 2011L.**ZOO 4485 Marine Mammal Biology 3-4 Credits****Grading Scheme:** Letter Grade

Provides an understanding of the marine mammals (cetaceans, pinnipeds, sirenians, sea otters and the polar bear), including evolutionary biology, physiology (locomotion, diving, thermoregulation, osmoregulation, reproduction), ecology (foraging/feeding behavior, distribution and habitat use, population dynamics), and conservation and management. Appropriate for advanced undergraduates.

**Prerequisite:** BSC 2011 and BSC 2011L.

## Botany

**BCH 3023 Elementary Organic and Biological Chemistry 3 Credits****Grading Scheme:** Letter Grade

Elementary organic chemistry and biochemistry for students in the agricultural technical curricula. This is a terminal course and is not part of any sequence.

**Prerequisite:** CHM 2046 or CHM 2047.**BOT 2010C Introductory Botany 3 Credits****Grading Scheme:** Letter Grade

Structures and functions of cells, tissues and organs of flowering plants. Students with credit in BSC 2005 or BSC 2010 cannot register for this course; they should take BOT 2011C. (B)

**Attributes:** General Education - Biological Science**BOT 2011C Plant Diversity 4 Credits****Grading Scheme:** Letter Grade

Survey of major plant groups with regard to structure, life histories and uses accompanied by a laboratory showing the diversity of plants in the world. (B)

**Prerequisite:** introductory college biology/botany course or the equivalent.**Attributes:** General Education - Biological Science**BOT 2710C Practical Plant Taxonomy 3 Credits****Grading Scheme:** Letter Grade

Introduces plant taxonomy including principles of systematic botany, nomenclature and classification, but emphasizing identification. Student will be able to identify the common ferns, fern allies, gymnosperms and flowering plants of field and garden.

**BOT 2800C Plants in Human Affairs 3 Credits****Grading Scheme:** Letter Grade

The role of plants in the development of civilization and the influence of plants on world history, politics, economics and culture. A survey of useful and harmful plants and plant products. (B)

**Attributes:** General Education - Biological Science**BOT 3151C Local Flora of North Florida 3 Credits****Grading Scheme:** Letter Grade

Laboratory observation of the gross features of vascular plants and practice in the use of keys to identify plants. Elementary ecology of principal types of plant communities in northern Florida. Field trips.

**BOT 3503 Physiology and Molecular Biology of Plants 3 Credits****Grading Scheme:** Letter Grade

The chemical organization, cellular organization, metabolism, nutrition, growth and molecular biology of the higher plants.

**Prerequisite:** (BOT 2010C or BSC 2005 or BSC 2010) and CHM 2046 and CHM 2046L.**Corequisite:** BOT 3503L; laboratory may be taken in subsequent term.

**BOT 3503L Physiology and Molecular Biology of Plants Laboratory 2 Credits****Grading Scheme:** Letter Grade

Laboratory experiments to accompany BOT 3503.

**Corequisite:** BOT 3503.**BOT 4053 Practical Experience in Teaching Botany 2 Credits****Grading Scheme:** Letter Grade

Participation in teaching one 3000-level botany course with practical experience in instructional procedures, testing and grading, course and laboratory preparation and laboratory assistance.

**Prerequisite:** generally, senior standing with recommendations from two faculty members, including the course instructor.**BOT 4650 Plant Symbiosis 3 Credits****Grading Scheme:** Letter Grade

Examines the crucial role of symbioses in shaping the diversity of life. Topics include generalities among symbioses, origins and establishment of symbioses, and coevolution and cospeciation, as well as specifics of well-studied exemplars of bacterial, fungal, animal, and plant symbioses with plants.

**Prerequisite:** BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L with minimum grades of C.**BOT 4905 Individual Studies in Botany 2-4 Credits****Grading Scheme:** Letter Grade

Qualified students and an instructor choose a particular problem for study.

**Prerequisite:** 8 credits of botany.**BOT 4911 Undergraduate Research in Botany 0-3 Credits****Grading Scheme:** Letter Grade

Provides firsthand, supervised research in Botany. Projects may involve inquiry, design, investigation, scholarship, discovery or application in Botany.

**BOT 4935 Special Topics 1-4 Credits****Grading Scheme:** Letter Grade

Special topics in botany.

**BOT 4956 Overseas Studies 1-15 Credits****Grading Scheme:** Letter Grade

Overseas Studies

**PCB 3023 Essential Cell Biology 3 Credits****Grading Scheme:** Letter Grade

Introduces the basic concepts of molecular cell biology in prokaryotic and eukaryotic systems including experimental strategies and methodology.

This course is intended for those interested in plants.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent.**PCB 3601C Plant Ecology 3 Credits****Grading Scheme:** Letter Grade

Principles of ecology at scales ranging from individual plants to landscapes. Emphasis is on species, ecosystems and environmental programs in Florida.

**Prerequisite:** introductory college biology or botany.

## Zoology

**AST 2037 Life in the Universe 3 Credits****Grading Scheme:** Letter Grade

The origin of life on Earth and the possibility of life elsewhere. A multidisciplinary approach is followed. Conditions for life to form and the likelihood that such conditions may exist elsewhere in the universe are discussed. Also considered are schemes proposed for the search for extraterrestrial intelligence (SETI). (P)

**Attributes:** General Education - Physical Science**BSC 3402 Theory and Practice in the Biological Sciences 2 Credits****Grading Scheme:** Letter Grade

Presents the scientific method, in its many formulations, from historical, philosophical and sociological perspectives. Explores generation and presentation of data, formulation of hypotheses and theories and dissemination of results. Also examines the ethical implication of biological research.

**GLY 3603C Paleontology 4 Credits****Grading Scheme:** Letter Grade

Investigation of the history of life on earth, including aspects of invertebrate and vertebrate paleontology, micropaleontology and paleobotany.

**Prerequisite:** refer to the department.

**PCB 3063 Genetics 4 Credits****Grading Scheme:** Letter Grade

Fundamental properties of inheritance in eukaryotic organisms emphasizing examples in humans. Develops basic concepts for the nature, organization, transmission, expression, recombination, and function of genetic materials, and principles derived for genetically characterizing populations.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C and general chemistry.

**PCB 3713C Cellular and Systems Physiology 4 Credits****Grading Scheme:** Letter Grade

How cells, organs, and higher level systems are integrated and coordinated in the functions of humans and other animals. Emphasizes the use of model organisms, mathematical models, and the physical sciences to understand the mechanistic basis of normal physiology and dysfunction.

**Prerequisite:** BSC 2010 and (CHM 2046 or CHM 2047 or CHM 2051 or CHM 2096) and (PHY 2048 or PHY 2060), all with minimum grades of C.

**Corequisite:** PHY 2049 or PHY 2061.

**PCB 4043C General Ecology 4 Credits****Grading Scheme:** Letter Grade

Ecological processes and organization in terrestrial and aquatic habitats. Laboratory and field exercises emphasize techniques of ecological analysis.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C.

**PCB 4674 Evolution 4 Credits****Grading Scheme:** Letter Grade

Processes and mechanisms of evolution, including population genetics, speciation, patterns of evolution and molecular evolution.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C;

**Corequisite:** one semester of calculus; PCB 3063 recommended.

**PCB 4712 Comparative Biomechanics 3 Credits****Grading Scheme:** Letter Grade

Reviews physical principles governing the form and function of organisms.

**Prerequisite:** (BSC 2011 and BSC 2011L or equivalent with minimum grades of C) and PHY 2048 and PHY 2053L and PCB 4674 and ZOO 3713C.

**PCB 4723C Physiology and Molecular Biology of Animals 4 Credits****Grading Scheme:** Letter Grade

Processes and mechanisms of maintenance, activity, and integration in animals with emphasis on vertebrates. Laboratory experience in quantitative methods and techniques of physiological investigation.

**Prerequisite:** BSC 2011 and (CHM 2046 or CHM 2047) with a minimum grades of C. Recommended: ((PHY 2053 and PHY 2054) or (PHY 2060 and PHY 2061)) and PCB 3063 and PCB 4674.

**ZOO 3513C Animal Behavior 4 Credits****Grading Scheme:** Letter Grade

The causes, origins and evolution of animal behavior emphasizing field observations and experiments on the behavior of a variety of animal groups.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, and PCB 4674.

**ZOO 3603C Evolutionary Developmental Biology 4 Credits****Grading Scheme:** Letter Grade

Analysis of embryonic development, underlying genetic mechanisms and how these processes have driven the evolutionary diversification of animal body plans.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C.

**ZOO 3713C Functional Vertebrate Anatomy 4 Credits****Grading Scheme:** Letter Grade

The form and function of chordates accompanied by laboratory work dealing with a selected series of chordates.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C.

**ZOO 4205C Invertebrate Biodiversity 4 Credits****Grading Scheme:** Letter Grade

Comparative biology of invertebrates, emphasizing morphology, evolution, ecology and life history.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C.

**ZOO 4307C Vertebrate Biodiversity 4 Credits****Grading Scheme:** Letter Grade

Comparative biology of vertebrates, emphasizing morphology, evolution, ecology and behavior.

**Prerequisite:** BSC 2011 and (BSC 2011L or ISC 2401L) with minimum grades of C.

**ZOO 4403C Marine Biology 4 Credits****Grading Scheme:** Letter Grade

Survey of major marine taxa, systematics of local marine fauna and flora, with familiarization of the marine environment. Laboratory emphasizes field work and independent projects.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C.



**ZOO 4472C Avian Biology 4 Credits**

**Grading Scheme:** Letter Grade

The basic biological characteristics of birds, which, as exceptionally unique flying vertebrates, are confronted with a spectrum of problems in terms of anatomy, physiology, behavior, migration and population ecology.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, and PCB 4674 (recommended).

**ZOO 4905 Individual Studies in Zoology 1-4 Credits**

**Grading Scheme:** Letter Grade

Qualified students and the instructor concerned may choose a particular topic or problem for study.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, and instructor permission.

**ZOO 4911 Undergraduate Research in Zoology 0-3 Credits**

**Grading Scheme:** Letter Grade

Provides firsthand, supervised research. Projects may involve inquiry, design, investigation, scholarship, discovery, or application.

**ZOO 4926 Special Topics in Zoology 1-4 Credits**

**Grading Scheme:** Letter Grade

Lectures, conferences or laboratory sessions covering selected topics of current interest in zoology.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, and instructor permission.

**ZOO 4940 Practical Experience in Teaching Zoology 2 Credits**

**Grading Scheme:** S/U

Participation in teaching approved Zoology courses with practical experience in instructional procedures, testing and grading, course and laboratory preparation, and laboratory assistance. Cannot be used to satisfy the minimum credit requirement for Zoology majors.

**Prerequisite:** BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, one zoology laboratory-based course, senior status or higher and instructor permission.

**ZOO 4956 Overseas Studies 1-18 Credits**

**Grading Scheme:** Letter Grade

Provides a mechanism by which coursework taken as part of an approved study abroad program can be recorded on the UF transcript and counted toward graduation.

**Prerequisite:** BSC 2011 and BSC 2011L with minimum grades of C and undergraduate advisor permission.

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