BIOLOGY | BOTANY | ZOOLOGY

Not all courses are offered every semester. Refer to the schedule of courses for each term’s specific offerings. More Info (http://registrar.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. Our teaching and research provide the integrative and conceptual foundations of the life sciences. Website (https://biology.ufl.edu/)

CONTACT

Email info@biology.ufl.edu | 352.273.0125 (tel) | 352.392.3704 (fax)

P.O. BOX 118525
220 BARTRAM HALL
GAINESVILLE FL 32611-8525
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

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 co-speciation, 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. (S-U)
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 2044L Accelerated, Integrated Principles of Biology Laboratory 2 Credits
Grading Scheme: Letter Grade
A cross-disciplinary, inquiry-based curriculum that focuses on major themes and concepts in biology with an emphasis on their physical and chemical foundations and applications in quantitative research. Equivalent to BSC 2010L and BSC 2011L.
Corequisite: BSC 2010 or the equivalent.

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 CO2 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 3422C Principles of the Biotechnology Industry 2 Credits
Grading Scheme: Letter Grade
Introduces practices, skills, and careers in the biotechnology industry; provides an applied understanding of regulatory compliance, product development, process development, manufacture, testing, and release-for-sale of biomedical products. Learn the profiles of major departments and participate in simulated departmental roles through lecture and hands-on laboratory applications.
Prerequisite: (BSC 2011 and BSC 2011L) or equivalent 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 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 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 in biology, botany or zoology.

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

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).
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Prerequisites</th>
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<tbody>
<tr>
<td>PCB 3109</td>
<td>Cancer Biology 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Introduces the dysregulation of cellular processes in cancer cells including</td>
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<td>the mechanisms of action of anti-cancer drugs.</td>
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<td>PCB 3402</td>
<td>Disease Ecology and Evolution 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Understand how ecological patterns and evolutionary processes shape</td>
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<td>host-pathogen interactions and learn basic metrics to study infection and</td>
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<td>disease, as well as the opportunity to analyze data and interpret patterns.</td>
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<td>Use primary literature to discuss topics such as: emerging pathogens in</td>
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<td>plants, animals, and humans; evolution of host defenses; disease-</td>
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<td>diversity relationships; microbiomes and dysbiosis; herd immunity; and the</td>
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<td>one health concept.</td>
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<td>Prerequisite: BSC 2010.</td>
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<td>PCB 4085</td>
<td>Genetical Ethics 1 Credit</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Presentation and critical discussion of new genetic discoveries and</td>
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<td>discoveries in the context of society. Includes policy, historical, and</td>
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<td>legal perspectives. Covers responsible conduct of research.</td>
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<td>Prerequisite: PCB 3063 or AGR 3303.</td>
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<tr>
<td>PCB 4460</td>
<td>Biodiversity and Ecology Field Immersion 4 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Five-week intensive study of the earth’s rich biodiversity. Emphasizes</td>
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<td>comparative study of form and function, and of complexity and diversity</td>
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<td>in phylogenetic and environmental contexts. Focuses on the study of</td>
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<td>living organisms in the laboratory and field in diverse habitats. Focal</td>
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<td>organisms and settings rotate according to instructor and semester.</td>
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<td>Prerequisite: BSC 2010 and BSC 2010L and BSC 2011</td>
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<td></td>
<td></td>
<td>and BSC 2011L.</td>
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<td>PCB 4553</td>
<td>Population Genetics 4 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Population and quantitative genetics, including the theory of gene</td>
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<td>frequency dynamics within and between populations, and deterministic</td>
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<td>and stochastic processes in evolution.</td>
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<td>Prerequisite: BSC 2011 and 2011L with minimum</td>
<td>grades of C.</td>
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<td>PCB 4917</td>
<td>Molecular Biology Lab Immersion 4 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Perform authentic research employing techniques of molecular biology</td>
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<td>in an intensive 5 week format. Each semester the instructor chooses a</td>
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<td>general area of research and set of techniques for projects. Design</td>
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<td>hypotheses, plan and carry out experiments, and analyze data.</td>
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<td>Prerequisite: BSC 2010 and BSC 2010L and BSC 2011</td>
<td>with minimum grades of B.</td>
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<tr>
<td>ZOO 4050</td>
<td>Animal Behavior 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Scientific study of the mechanistic and evolutionary causes of animal</td>
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<td>behavior. Topics include communication, foraging and anti-predator</td>
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<td>behavior; spatial behavior, aggressive behavior, mating behavior, parental</td>
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<td>care, and social behaviors.</td>
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<td>Prerequisite: BSC 2011 and BSC 2011L with minimum</td>
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<td>grades of C.</td>
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<td>ZOO 4405</td>
<td>Sea Turtle Biology and Conservation 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Biology of sea turtles and their roles in marine ecosystems, current major</td>
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<td>issues in sea turtle biology, and challenges in their conservation and</td>
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<td>management.</td>
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<td>Prerequisite: BSC 2010 and BSC 2011 with a</td>
<td>minimum grade of C.</td>
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<tr>
<td>ZOO 4462C</td>
<td>Herpetology 4 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>A broad introduction to the biology of amphibians and reptiles, including</td>
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<td>their evolution, systematics, diversity, ecology, behavior, physiology,</td>
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<td></td>
<td>anatomy, and natural history. Laboratory sections provide hands-on</td>
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<td>experience with amphibians and reptiles from Florida and internationally.</td>
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<td>Prerequisite: BSC 2011 and BSC 2011L.</td>
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<td>Botany</td>
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<tr>
<td>BCH 3023</td>
<td>Elementary Organic and Biological Chemistry 3</td>
<td>Letter Grade</td>
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<td>Credits</td>
<td>Elementary organic chemistry and biochemistry for students in the</td>
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<td>Grading Scheme: Letter Grade</td>
<td>agricultural technical curricula. This is a terminal course and is not part</td>
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<td>of any sequence.</td>
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<td>Prerequisite: CHM 2046 or CHM 2047.</td>
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<td>BOT 2010C</td>
<td>Introductory Botany 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Structures and functions of cells, tissues and organs of flowering plants.</td>
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<td>Students with credit in BSC 2005 or BSC 2010 cannot register for this</td>
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<td>course; they should take BOT 2011C. (B)</td>
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<td>Attributes: General Education - Biological Science</td>
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<td>BOT 2011C</td>
<td>Plant Diversity 4 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Survey of major plant groups with regard to structure, life histories and</td>
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<td>uses accompanied by a laboratory showing the diversity of plants in the</td>
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<td>world. (B)</td>
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<td>Prerequisite: introductory college biology/botany</td>
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<td>course or the equivalent.</td>
<td>Attributes: General Education - Biological Science</td>
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<td>BOT 2710C</td>
<td>Practical Plant Taxonomy 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Introduces plant taxonomy including principles of systematic botany,</td>
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<td>nomenclature and classification, but emphasizing identification. Student</td>
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<td>will be able to identify the common ferns, fern allies, gymnosperms and</td>
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<td>flowering plants of field and garden.</td>
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<td>BOT 2800C</td>
<td>Plants in Human Affairs 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>The role of plants in the development of civilization and the influence of</td>
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<td>plants on world history, politics, economics and culture. A survey of</td>
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<td>useful and harmful plants and plant products. (B)</td>
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<td>Attributes: General Education - Biological Science</td>
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<td>BOT 3151C</td>
<td>Local Flora of North Florida 3 Credits</td>
<td>Letter Grade</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Laboratory observation of the gross features of vascular plants and</td>
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<td>practice in the use of keys to identify plants. Elementary ecology of</td>
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<td>principal types of plant communities in northern Florida. Field trips.</td>
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<td>BOT 3503</td>
<td>Physiology and Molecular Biology of Plants 3</td>
<td>Letter Grade</td>
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<td>Credits</td>
<td>The chemical organization, cellular organization, metabolism, nutrition,</td>
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<td>Grading Scheme: Letter Grade</td>
<td>growth and molecular biology of the higher plants.</td>
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<td>Prerequisite: (BOT 2010C or BSC 2005 or BSC 2010) and CHM 2046 and CHM</td>
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<td>2046L.</td>
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<td>Corequisite: BOT 3503L; laboratory may be taken in subsequent term.</td>
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<tr>
<td>BOT 3503L</td>
<td>Physiology and Molecular Biology of Plants</td>
<td>Letter Grade</td>
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<td>Laboratory 2 Credits</td>
<td>Laboratory experiments to accompany BOT 3503.</td>
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<td>Grading Scheme: Letter Grade</td>
<td>Corequisite: BOT 3503.</td>
</tr>
</tbody>
</table>

**Letter Grade**

**Credits**

**Prerequisites**

**Corequisites**

**Attributes**

**Genetic Ethics**

**Population Genetics**

**Molecular Biology**

**Animal Behavior**

**Sea Turtle Biology**

**Herpetology**

**Elementary Organic and Biological Chemistry**

**Introductory Botany**

**Plant Diversity**

**Practical Plant Taxonomy**

**Plants in Human Affairs**

**Local Flora of North Florida**

**Physiology and Molecular Biology of Plants**

**Physiology and Molecular Biology of Plants Laboratory**
**Biology | Botany | Zoology**

**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 4621 Plant Geography 2 Credits**  
**Grading Scheme:** Letter Grade  
Patterns in the distribution of plants around the earth and factors that influence plant geography. Topics include similarities of plant communities in different parts of the world, common distribution patterns among individual taxa, and methods for inferring biogeographic history and predicting future changes in plant distribution.  
**Prerequisite:** (BSC 2010 and BSC 2010L and BSC 2011 and BSC 2011L with minimum grades of C) or instructor permission.

**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 3034C Introduction to Ecology 4 Credits**  
**Grading Scheme:** Letter Grade  
Basic principles of ecology as they apply to environmental problems including major terrestrial and aquatic ecosystems of Florida.  
**Prerequisite:** introductory college biology.

**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  
The fundamental properties of inheritance in eukaryotic organisms emphasizing examples in man. Basic concepts are developed for the nature, organization, transmission, expression, recombination and function of genetic materials and principles are 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 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 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 minimum hour requirement for zoology major. (S-U)
Prerequisite: BSC 2011 and BSC 2011L, or equivalent, with minimum grades of C, one zoology laboratory-based course, senior status 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.