GENERAL EDUCATION - BIOLOGICAL SCIENCE

BIOL/BIOL 1000 Introduction to Biology 4 Credits
Grading Scheme: Letter Grade
Introduces the scientific method and selected topics in biology, with an emphasis on the use of electronic media and the Internet for information retrieval. (S-U)
Corequisite: BIOL/BIOL 1001
Attributes: General Education - Biological Science

BIOL/BIOL 1001 Introduction to Biology Lab 1 Credit
Grading Scheme: Letter Grade
Laboratory experiments designed to accompany BIOL 1000. Students should register for BIOL 1000 and BIOL 1001 concurrently. (B)
Attributes: General Education - Biological Science

BIOL/BIOL 1002 Introduction to Biology 4 Credits
Grading Scheme: Letter Grade
Introduces the scientific method and selected topics in biology, with an emphasis on the use of electronic media and the Internet for information retrieval. (S-U)
Corequisite: BIOL/BIOL 1003
Attributes: General Education - Biological Science

BIOL/BIOL 1003 Introduction to Biology Lab 1 Credit
Grading Scheme: Letter Grade
Laboratory experiments designed to accompany BIOL 1002. Students should register for BIOL 1002 and BIOL 1003 concurrently. (B)
Attributes: General Education - Biological Science

BIOL 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

BIOL 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 BSC 2010L concurrently. (B)
Prerequisite: Degree-seeking students only.
Corequisite: BSC 2010 or the equivalent.
Attributes: General Education - Biological Science

BIOL 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

BIOL 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 BSC 2011L concurrently. (B)
Prerequisite: Degree-seeking students only.
Corequisite: BSC 2011 or the equivalent.
Attributes: General Education - Biological Science

BIOL 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.
Attributes: General Education - Biological Science

BIOL 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

BIOL 2930 Special Topics 1-4 Credits
Grading Scheme: Letter Grade
Special topics in general biology. (B)
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 and CHM 2046 and CHM 2046L.  

BSC 3911 Entering Research in Biology 1 Credit  
Grading Scheme: Letter Grade  
A seminar course to complement a students mentored research experience. Must be taken concurrently with research credits. Students meet weekly to share their research experiences and to get feedback on the progress of their research projects.  
Corequisite: BSC 4910 or BOT 4905 or ZOO 4905 or IDH 4912  

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  
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 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  
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 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 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 earths 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 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 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 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.

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 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 5 Credits
Grading Scheme: Letter Grade
Discusses the 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 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.