BSC: Biological Sciences Courses

Courses

BSC 1005  General Biology for Non-Majors
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
Survey of abiotic and biotic principles as they apply to basic structural and functional topics at the cellular, organismal, population and community levels; and the application of these principles to issues of current interest. Meets General Education requirement in Natural Sciences.

BSC 1005L  General Biology Laboratory for Non-Majors
College of Sci and Engineering, Department of Biology
1 sh (may not be repeated for credit)
Prerequisite: BSC 1005*
Lab correlating with BSC 1005. Material and Supply Fee will be assessed. Satisfies Florida Common Core Natural Sciences requirement.

BSC 1050  Fundamentals of Ecology
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
Intended for non-majors who have an interest in nature and how they interact with nature. Gives general overview of ecological principles and how these principles influence the outside world around us. Imbedded are several activities that are associated with each chapter. The activities were developed so that the student will gain a respect for ecology as well as show how ecological principles affect your daily life. Meets General Education requirement in Natural Sciences.

BSC 1085  Anatomy and Physiology I
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
General introduction to form and function of the human body. Review of basic anatomical/physiological attributes of integumentary, skeletal, muscular, nervous, and sensory organ systems. Designed for students with little or no previous anatomy or physiology experience. Lab optional. Meets General Education requirement in Natural Sciences.

BSC 1085L  Anatomy and Physiology I Laboratory
College of Sci and Engineering, Department of Biology
1 sh (may not be repeated for credit)
Optional lab associated with course. Anatomical dissection and experimental physiology exercises that enhance understanding of human form and function. Exercises parallel topics presented in the lecture series. Material and supply fee will be assessed.

BSC 1086  Anatomy and Physiology II
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
Prerequisite: BSC 1085/L
Continuation of Anatomy and Physiology I. Reviews basic anatomical/physiological attributes of endocrine, cardiopulmonary, digestive, reproductive and immune systems. Lab optional. Meets General Education requirement in Natural Sciences.

BSC 1086L  Anatomy & Physiology II Laboratory
College of Sci and Engineering, Department of Biology
1 sh (may not be repeated for credit)
Prerequisite: BSC 1085/L
Optional lab associated with course. Anatomical dissections and experimental physiology exercises that enhance understanding of human form and function. Exercises parallel topics presented in the lecture series. Material and Supply Fee will be assessed.

BSC 1905  Directed Study
College of Sci and Engineering, Department of Biology
1-12 sh (may be repeated indefinitely for credit)
Co-requisite: BSC 2011L

BSC 2010  Biology I
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
Co-requisite: BSC 2010L
Introduction to the cellular processes of living organisms, including subcellular structures, biochemical and genetic regulation of function and growth, reproduction, heredity, and evolution. Material and supply fee will be assessed for the corresponding lab. Meets General Education requirement in Natural Sciences.

BSC 2010L  Biology I Laboratory
College of Sci and Engineering, Department of Biology
1 sh (may not be repeated for credit)
Prerequisite: BSC 2010*
Co-requisite: BSC 2010
Introduction to the science method, reading, and writing, microscopy, and science measurement. Cellular processes of prokaryotic and eukaryotic organisms, including subcellular structures, biochemical and genetic regulation of function and growth, reproduction, heredity, and evidence of evolution. Material and supply fee will be assessed for this lab.

BSC 2011  Biology II
College of Sci and Engineering, Department of Biology
3 sh (may not be repeated for credit)
Co-requisite: BSC 2011L
Explores the diversity of life including bacteria, protists, fungi, plants and animals at the introductory level designed for students starting a major in biology. The course will outline the tree of life in illustrating the evolutionary relationships among organisms. The course will also cover basic functional morphology and physiology at the organismal level, and provide an introduction to ecological interactions at the population and community level. Meets General Education requirement in Natural Sciences.

BSC 2011L  Biology II Laboratory
College of Sci and Engineering, Department of Biology
1 sh (may not be repeated for credit)
Prerequisite: BSC 2010/L
Co-requisite: BSC 2011
Explores the diversity of life including bacteria, protists, fungi, plants and animals at the introductory level designed for students starting a major in biology. The course will outline the tree of life in illustrating the evolutionary relationships among organisms. The course will also cover basic functional morphology and physiology at the organismal level, and provide an introduction to ecological interactions at the population and community level.
**BSC 2311** Introduction to Oceanography and Marine Biology  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
An introduction to the chemical, physical and geological features of the world ocean and the major groups of living marine organisms that inhabit it. Physical chemical and biological interrelationships will be emphasized. Credit not granted toward a major in Biology. Meets General Education requirement in Natural Sciences.

**BSC 2311L** Introduction to Oceanography and Marine Biology Laboratory  
College of Sci and Engineering, Department of Biology  
1 sh (may not be repeated for credit)  
Lab correlating with BSC 2311. Credit not granted toward a major in Biology. Material and Supply Fee will be assessed.

**BSC 2844** Biology Skills  
College of Sci and Engineering, Department of Biology  
1 sh (may not be repeated for credit)  
A professional development course for students in the Biology and Pre-professional curriculum plan. It will introduce the students to necessary skills for upper division biology courses, including reading and interpretation of scientific publications, scientific writing styles, ethics, and critical thinking.

**BSC 2905** Directed Study  
College of Sci and Engineering, Department of Biology  
1-12 sh (may be repeated indefinitely for credit)

**BSC 3905** Directed Study  
College of Sci and Engineering, Department of Biology  
1-12 sh (may be repeated indefinitely for credit)

**BSC 4303** Biogeography  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)

Relates the principles of taxonomy, ecology and evolution to the distribution of plants and animals. Codes of taxonomic nomenclature and the processes of describing species and ranges, species concepts and speciation, paradigms of constructing phylogenies, a review of the geologic ages of the earth, modern terrestrial and oceanic biodiversity and biogeographic provinces and human impact on species extinctions and introductions. Offered concurrently with BSC 5305; graduate students will be assigned additional work.

**BSC 4434** Bioinformatics and Data Science  
College of Health, Department of Public Health  
3 sh (may not be repeated for credit)

This course explores concepts and practical applications in bioinformatics. It covers essential topics such as data organization, representing and reasoning about sequence data, simple data mining strategies, and ethical protocols for data collection. Students will learn how to apply data science principles to biological and clinical problems to effectively work with large data sets, format data, and design applications to help visualize, analyze, interpret, and communicate the resulting insights in ways that advance science. Offered concurrently with BSC 5459; graduate students will be assigned additional work.

**BSC 4854** Bioterrorism  
College of Health, Department of Health Sciences & Admin  
3 sh (may not be repeated for credit)

Biological weapons employed against man (emphasis), animals and plants will be discussed during the semester. The major biological agents targeted for use as weapons against humans will be dealt with in detail including the various clinical forms induced by exposure to the agents, prophylaxis and treatment for the resulting diseases and the primary routes of dissemination of the agents studied. The class will cover the potential for biowarfare/bioterrorist acts, how destruction is produced, and what countries / groups have access to sufficient bioagent or the capacity for producing large quantities of biological agents for use as a weapon. War games in which bioagents are employed, including casualty estimates and socioeconomic impact will be discussed and played out. Government preparedness to deal with biowarfare / bioterrorism will be addressed with emphasis on plans for surveillance and response. Offered concurrently with BSC 5856; graduate students will be assigned additional work.

**BSC 4860** Conservation Biology  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
Prerequisite: BSC 2010L AND BSC 2011L AND PCB 3043

This course will introduce students to the field of conservation biology from the perspective of terrestrial, freshwater and marine habitats. Conservation biology is broadly concerned with maintaining and restoring biodiversity at all levels from genes to ecosystems, and by definition is interdisciplinary. Conservation biology broadly aims to develop the scientific and technical approach to protection, maintenance and restoration of biological diversity. We will consider the causes and consequences of biodiversity loss, established and emerging approaches to conservation, the interface with human dimensions, and the complexities of implementing science-based conservation policy and management. This course combines lectures, readings, in-class discussions, writing exercises and student presentations, with an emphasis on critical thinking, problem solving and global fluency. This class draws from all aspects of biology for those at the upper undergraduate or beginning graduate student level who are interested in conservation, whether from a biodiversity or ecosystem perspective. Often students are majors in Environmental Sciences or Biology, but they may also come from diverse backgrounds, including Environmental Studies, Law, Government, City and Regional Planning, Geography, and Anthropology. Offered concurrently with BSC 5865. Graduate students will be assigned additional work. A basic course in ecology is required, but seek the permission of the instructor if you have a special interest in conservation biology.

**BSC 4905** Directed Study  
College of Sci and Engineering, Department of Biology  
1-12 sh (may be repeated indefinitely for credit)
BSC 4940  Biology Internship  
College of Sci and Engineering, Department of Biology  
1-3 sh (may be repeated for up to 3 sh of credit)  
This course is for students who secure an internship to gain experience in their field of interest. Faculty and agency personnel will supervise as the student participates in the internship. Goals and objectives will be planned by the student, instructor, and/or agency supervisor. Reports will be required regularly with a final report. Students must already have been hired or awarded an internship to be permitted to take this course.

BSC 5305  Biogeography  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
Relates the principles of taxonomy, ecology and evolution to the distribution of plants and animals. Codes of taxonomic nomenclature and the processes of describing species and ranges, species concepts and speciation, paradigms of constructing phylogenies, a review of the geologic ages of the earth, modern terrestrial and oceanic biodiversity and biogeographic provinces and human impact on species extinctions and introductions. Offered concurrently with BSC 4303; graduate students will be assigned additional work.

BSC 5459  Bioinformatics and Data Science  
College of Health, Department of Public Health  
3 sh (may not be repeated for credit)  
This project-based course explores concepts and practical applications in bioinformatics. It covers essential topics such as data organization, representing and reasoning about sequence data, simple data mining strategies, and ethical protocols for data collection. Students will learn how to apply data science principles to biological, clinical, and public health problems to effectively work with large data sets, format data, and design applications to help visualize, analyze, interpret, and communicate the resulting insights in ways that advance science. Students will further examine current events demonstrating how collaborative, cross-disciplinary teams use bioinformatic technologies and tools with big data analytics to support translational research. Open to students from any discipline.

BSC 5514  Directed Study  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
A review of contemporary laboratory protocols and techniques necessary for the modern biologist to succeed in the professional, academic, or intellectual biology community. Provides students with a theoretical understanding of various techniques, their application, and the opportunity to master basic essential techniques in the laboratory. Topics include good laboratory practices, cell culture techniques, nucleic acid manipulation, macromolecular separation and detection, DNA analysis, chromatographic separations, spectrophotometry, microscopy, and radioisotope usage. Material and Supply Fee will be assessed.

BSC 5854  Bioterrorism  
College of Health, Department of Public Health  
3 sh (may not be repeated for credit)  
Biological weapons employed against man (emphasis), animals, and plants will be discussed. The major biological agents targeted for use as weapons against humans will be dealt with in detail, including the various clinical forms induced by exposure to the agents, prophylaxis and treatment for the resulting diseases, and the primary routes of dissemination of the agents. The class will cover the potential for biowarfare and terrorist acts, how destruction is produced, what countries and groups have access to sufficient bioagents, and the capacity for producing large quantities of biological agents for use as a weapon. Wargames in which bioagents are employed, including casualty estimates and socioeconomic impact, will be discussed and played out. Government preparedness to deal with biowarfare and bioterrorism will be addressed with emphasis on plans for surveillance and response. Offered concurrently with BSC 4854; graduate students will be assigned additional work.

BSC 5865  Conservation Biology  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
This course will introduce students to the field of conservation biology from the perspective of terrestrial, freshwater and marine habitats. Conservation biology is broadly concerned with maintaining and restoring biodiversity at all levels from genes to ecosystems, and by definition is interdisciplinary. Conservation biology broadly aims to develop the scientific and technical approach to protection, maintenance and restoration of biological diversity. We will consider the causes and consequences of biodiversity loss, established and emerging approaches to conservation, the interface with human dimensions, and the complexities of implementing science-based conservation policy and management. This course combines lectures, readings, in-class discussions, writing exercises and student presentations, with an emphasis on critical thinking, problem solving and global fluency. This class draws from all aspects of biology for those at the upper undergraduate or beginning graduate student level who are interested in conservation, whether from a biodiversity or ecosystem perspective. Often students are majors in Environmental Sciences or Biology, but they may also come from diverse backgrounds, including Environmental Studies, Law, Government, City and Regional Planning, Geography, and Anthropology. Offered concurrently with BSC 4860. Graduate students will be assigned additional work.

BSC 5905  Directed Study  
College of Sci and Engineering, Department of Biology  
1-12 sh (may be repeated indefinitely for credit)  
BSC 6002L  Contemporary Laboratory Skills  
College of Sci and Engineering, Department of Biology  
4 sh (may not be repeated for credit)  
A review of contemporary laboratory protocols and techniques necessary for the modern biologist to succeed in the professional, academic, or intellectual biology community. Provides students with a theoretical understanding of various techniques, their application, and the opportunity to master basic essential techniques in the laboratory. Topics include good laboratory practices, cell culture techniques, nucleic acid manipulation, macromolecular separation and detection, DNA analysis, chromatographic separations, spectrophotometry, microscopy, and radioisotope usage. Material and Supply Fee will be assessed.
**BSC 6840  Professional Development in Biology**  
College of Sci and Engineering, Department of Biology  
3 sh (may not be repeated for credit)  
A review of contemporary protocols, techniques, and methods needed to succeed in the professional, academic, or intellectual biology community. Topics include 1) organization of the professional and academic biology environment, 2) reading, interpreting, organizing and publishing biological literature, 3) biological project development, presentation, and funding, 4) locating and securing positions in the biological sciences.

**BSC 6905  Directed Study**  
College of Sci and Engineering, Department of Biology  
1-12 sh (may be repeated indefinitely for credit)

**BSC 6971  Thesis**  
College of Sci and Engineering, Department of Biology  
1-6 sh (may be repeated for up to 12 sh of credit)  
Graded on satisfactory / unsatisfactory basis only. Permission is required.