

BI: Courses in Biology

Department of Natural Sciences

BI 101 Life Science 4 Cr

An introduction to the fundamental principles common to all living organisms. Presents basic biological principles at the organismal level including structure and function, evolution, and ecology. A course for non-biology majors. Three (3) lectures and one three-hour laboratory per week. Fall semester.

BI 102 Human Biology 4 Cr

An introduction to the fundamental principles common to all living organisms. Presents basic biological principles using human systems as a study model including cell biology, genetics, and physiology. A course for non-biology majors. Three (3) lectures and one three-hour laboratory per week. BI 102 may be taken without BI 101. Spring semester.

BI 111-112 Intro. to Human Anatomy & Physiology 8 Cr

A study of the morphology and physiology of the human body, both from a normal and pathological viewpoint. Three (3) lectures and one two and one-half hour laboratory per week for two (2) semesters. Prerequisite for BI 111: "C" or better in CH 101 or CH 111. Prerequisite for BI 112 is BI 111 or consent of the instructor. Offered annually. BI 111 Spring Semester, BI 112 Fall Semester.

BI 161-62 Introductory Biology I and II 8 Cr

A course introducing fundamental concepts and methods for students planning to major in biology or for students needing to satisfy a professional school requirement in biology. Basic cell, developmental, and evolutionary biology, as well as genetics, ecology, and structure/function relationships of different organismal groups are covered. This course provides a foundation for more advanced courses in the biology major's program and is a prerequisite for all upper-division courses. Particular emphasis in the course is placed upon experimental design and upon the evaluation, analysis, and synthesis of information. Three (3) lectures and one three-hour laboratory per week. Prerequisites: High school biology and chemistry.

BI 206 Plant Biology 4 Cr

An introductory course focusing on the evolutionary history of plants, plant anatomy, and physiology. The laboratory exercises are diverse and emphasize recognizing reproductive and anatomical differences among major plant taxa (from algae to flowering plants), learning how to identify seed plants (gymnosperms and angiosperms) to the family level, and physiological experiments. Prerequisite: BI 161-162. Three (3) 50-minute lectures per week and one three-hour laboratory per week. Fall semester.

BI 211 Ecology 4 Cr

An introductory course focusing on the basic principles of the interactions and relationships among organisms and between organisms and their environment. The laboratory includes field observations, computer simulations, and statistical analysis of experimental data. Prerequisites: BI 161-162. Three (3) lectures and one three-hour laboratory per week. Fall semester. May fulfill writing intensive requirement. (Enrollment limited.)

BI 214 General Microbiology 4 Cr

An introductory study of micro-organisms, including history, taxonomy and nomenclature, morphology, physiology, nutrition, cultivation, ecology, genetics, immunity, and the roles of micro-organisms in disease and agriculture. Emphasis is on bacteria. Standard microbial methods and techniques are learned in the laboratory. Two (2) 75-minute lectures and two (2) 90-minute

laboratories per week. Prerequisites: At least one year of college chemistry and one semester of college biology. Spring semester.

BI 222 Comparative Anatomy 4 Cr

A comparative study of the evolution of the anatomical structures of vertebrates. The course will emphasize the basic structures of vertebrates, the functional role of anatomical structures, and the adaptive changes that have occurred in vertebrate evolution. Three (3) lectures and one three-hour laboratory per week. Prerequisites: BI 161-162. Spring semester.

BI 302 Genetics 4 Cr

A study of the principles of heredity and variation. Genetic phenomena are considered at the organismal, molecular, and population levels. Topics include transmission mechanisms, linkage, DNA replication and expression, genetic control and population genetics. The laboratory will include both computer simulations and an introduction to current molecular techniques in the field. Both lecture and lab will emphasize problem solving and experimental data analysis. Three (3) lectures and one three-hour laboratory per week. Prerequisites: BI 161-162 and CH 301. Spring semester.

BI 305 Microbiology 4 Cr

An introduction to the biology of the prokaryotes (bacteria and archaea) and the animal viruses. Course topics include bacterial cell structure, nutrition and metabolism, growth, genetics, traditional and molecular systematics, ecology of microorganisms, genetic engineering and biotechnology, antimicrobial agents, host parasite interactions, and major infectious diseases. Current methods in bacteriology are used in the identification of bacteria and the conducting of experiments. Prerequisite: BI 161-162 and 302. Fall semester.

BI 307 Animal Physiology 4 Cr

A study of the vertebrate organ systems which are most intimately involved in maintaining homeostasis: Nervous, Endocrine, Cardiovascular, Respiratory and Excretory. Regulation and integration of the systems will be emphasized. Individual study of assigned journal articles which complement the lecture material constitutes a major part of the learning experience. The laboratory offers the student experience using a variety of preparations and instrumentation. Three (3) lectures and one three-hour laboratory period per week. Prerequisites: BI 161-162. Spring semester.

BI 321 Cell Biology 4 Cr

An advanced course for students wanting a more comprehensive understanding of the eukaryotic cell. The features distinguishing eukaryotic from prokaryotic cells, including intracellular membranes and the cytoskeleton, will be emphasized. Methods currently used to study eukaryotic cell structure and function will be introduced in the laboratory. Three (3) lectures and one-three hour laboratory per week. Prerequisites: BI 161-162 and CH 301. Spring semester.

BI 350 Developmental Biology 4 Cr

A course concerned with the mechanisms of early development in animals. The molecular and cellular processes affecting differentiation, growth, and morphogenesis are emphasized. The laboratory includes experimental work and the study of anatomical changes occurring in vertebrate embryos. Three (3) lectures and one three-hour laboratory per week. Prerequisites: BI 161-162 (BI 302 Genetics is recommended). Fall semester.

BI 370 Evolutionary Analysis 4Cr

This course explores the underlying principles of evolutionary change (natural selection, genetic drift, mutation, and gene flow) from an analytical perspective. The relevance of evolutionary change to real-world concerns is emphasized while traditional and modern methods of analysis are explored and evaluated. Three (3) 50-minute lectures and one two-hour discussion or computer exercise per week. Prerequisites: BI 161-162 and BI 302. Spring semester.

BI/CH 477 Honors Thesis Writing 1 Cr

This course is intended to guide students through the process of writing an honors thesis based upon data the student have collected. The course consists of weekly meetings during which the parts of the thesis (Introduction and Literature Review, Materials and Methods, Results, and Discussion) will be discussed. Poster and Power Point presentations are covered. By the end of the semester, students will have completed a rough draft of their theses. One (1) hour lecture/discussion per week. Prerequisite: 3.25 gpa and completion of an honors research project. Required for all students who intend to graduate with honors. Fall semester. Fulfills writing intensive requirement.

BI 496 Senior Seminar 1 Cr

Readings and discussion of significant past and current literature. One hour each week. Prerequisite: Senior status. Spring semester.