

Biology

BIOL 101 Science for Life

3 credits

Attributes: LA SC

This course focuses on the nature of science as a reliable method of learning about the natural world. Students will learn how to apply evidence, concepts, and theories to distinguish science from non-science, bad science, and pseudoscience, by analyzing a variety of claims and case studies. This course is designed to increase science literacy and critical thinking skills for the non-science major.

BIOL 119 Introduction to Evolutionary Biology

3 credits

Attributes: LA SC

This course is an introduction to biological evolution and the concept of evolution as the unifying theme of biology. It includes such topics as evolutionary theories, fossils, phylogeny, biodiversity, mutations, drift, selection, adaptations, and extinctions. The course also addresses the evolution of sex, family, and behavior. Emphasis is placed on the biology of evolution with emphasis on DNA, mutations, and the process of natural selection. This course is designed for the non-science major.

BIOL 121 Biological Principles I

4 credits

Attributes: LA LS SC

This course introduces basic principles of biology. Topics include scientific method, evolution, cellular and subcellular structure, basic cell chemistry, transport across cell membranes, mitosis, meiosis, metabolism, photosynthesis, DNA structure and replication, protein synthesis, and patterns of inheritance. This course is required as a prerequisite for most other four-credit biology courses. Three lecture and two laboratory hours per week.

Prerequisites: one unit of high school science (preferably biology).

BIOL 122 Biological Principles II

4 credits

Attributes: LA LS SC

This course is a study of the domains, kingdoms, and major phyla comprising the living world. The evolution of the diverse forms of life on the earth today, from the earliest life forms to the present, serves as a unifying theme throughout the course. Topics include population genetics, aspects of micro- and macroevolution, phylogeny and biodiversity of modern prokaryotes and eukaryotes, species interactions, community structure, and ecosystems ecology. Three lecture and two laboratory hours per week.

Prerequisites: C- or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam, or departmental approval.

BIOL 138 Introduction to Human Nutrition

3 credits

Attributes: LA SC

This course is an introduction to the science of human nutrition and its role in health. It includes such topics as types of nutrients, nutrient digestion, absorption and metabolism, food sources, recommended nutrient intakes, food safety, and food technology. The course may also address other topics related to health and nutrition. Emphasis is placed on application of these concepts to promote health and fitness. This course is designed for the non-science major.

BIOL 141 Introduction to Marine Biology

4 credits

Attributes: LA LS SC

The course is an introduction to biological aspects of major marine environments. Local habitats are used as examples for a survey of common marine organisms and to study interactions between organisms and their surroundings. Emphasis is placed on human relationships to the ocean environment. Communities investigated are primarily rocky coast, marsh-estuary, and sandy beach. This course also includes a discussion of marine mammals. Three lecture and two laboratory hours per week.

BIOL 143 Introduction to Environmental Science

4 credits

Attributes: LA LS SC

Students apply the process of science to investigate the relationship between humans and the environment. An interdisciplinary approach is applied to study current and emerging environmental problems and evaluate potential solutions. Students develop an awareness of their individual impact on environmental systems. The course introduces students to the scientific method and fosters scientifically-literate citizens. The concept of sustainability is a core component throughout the course. In the laboratory, students learn to measure, record, interpret, and apply environmental data to solve problems. Some field trips may be required. This course is designed for the non-science major. Three lecture and two laboratory hours per week.

BIOL 160 Human Genetics, Reproduction, and Society

4 credits

Attributes: LA LS SC

This course addresses biological, ethical, and legal aspects of human reproduction and genetics. It includes such topics as cellular division, anatomy and physiology of the human reproductive systems, prenatal development, reproductive technologies, transmission genetics, DNA and chromosomes, and genetic technologies. Laboratory topics include activities related to human reproductive anatomy, transmission genetics, and molecular biology, with an emphasis on understanding the scientific process. This course is designed for the non-science major. Three lecture and two laboratory hours per week.

BIOL 170 Vertebrate Anatomy and Physiology I 4 credits

Attributes: LA LS SC

This is the first part of an introductory course sequence in the comparative anatomy and physiology of vertebrates, with a focus on domestic animals. Students will use anatomical models and preserved specimens of a variety of species to study gross and microscopic anatomy of the integumentary, skeletal, muscular, and nervous systems. Emphasis is placed upon the normal anatomy and physiology to provide sufficient knowledge of normal physiologic processes to understand the responses to drugs and disease processes discussed later in the veterinary science curriculum. Note: Dissection is required. This course is restricted to Veterinary Technician students or by departmental approval. BIOL 170 Vertebrate Anatomy and Physiology I must be taken before BIOL 171 Vertebrate Anatomy and Physiology II. Three lecture and two laboratory hours per week.

Prerequisites: College Algebra; waiver by placement testing results; or departmental approval and C or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam.

BIOL 171 Vertebrate Anatomy and Physiology II 4 credits

Attributes: LA LS SC

This is the second part of an introductory course sequence in the comparative anatomy and physiology of vertebrates, with a focus on domestic animals. Students will use anatomical models and preserved specimens of a variety of species, to study gross and microscopic anatomy of the endocrine, cardiovascular, respiratory, digestive, urinary, and reproductive systems. Emphasis is placed upon the normal anatomy and physiology to provide sufficient knowledge of normal physiologic processes to understand the responses to drugs and disease processes discussed later in the veterinary science curriculum. Note: Dissection is required. This course is restricted to Veterinary Technician students or by departmental approval. Three lecture and two laboratory hours per week.

Prerequisites: C or higher in BIOL 121 Biological Principles, C or higher in BIOL 1XX Vertebrate Anatomy and Physiology I, College Algebra; waiver by placement testing results; or departmental approval.

BIOL 201 Anatomy and Physiology I 4 credits

Attributes: LA LS SC

This is the first part of a two-semester course that presents in a comprehensive manner the structure and function of the human body. Topics include tissues and the integumentary, skeletal, muscular, and nervous systems. A dissection component of the laboratory work is required for successful completion of the course. This course is designed for students in the health programs. BIOL 201 Anatomy and Physiology I must be taken before BIOL 202 Anatomy and Physiology II. Three lecture and two laboratory hours per week.

Prerequisites: C- or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam, or departmental approval.

BIOL 202 Anatomy and Physiology II 4 credits

Attributes: LA LS SC

This is the second part of a two-semester course that presents in a comprehensive manner the structure and function of the human body. Topics include the cardiovascular, respiratory, digestive, urinary, endocrine, and reproductive systems. A dissection component of the laboratory work is required for successful completion of the course. This course is designed for students in the health programs. Three lecture and two laboratory hours per week.

Prerequisites: C- or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam, C- or higher in BIOL 201 Anatomy and Physiology I, or departmental approval.

BIOL 215 Ecology 4 credits

Attributes: GL LA LS SC

This course explores major ecological concepts and enables students to identify the techniques used by ecologists to study those concepts. Topics include the interrelationships of organisms with physical and biotic factors of the environment, the structure of terrestrial and aquatic communities, population structure and dynamics, species interactions, succession, energy flow, nutrient cycling, and global ecology. Laboratory allows students to investigate biotic communities and ecosystems in southeastern Massachusetts while emphasizing data collection, analysis, interpretation, and relevance at larger scales. Three hours of lecture and one three-hour laboratory period weekly. Offered fall semester.

Prerequisites: C- or higher in BIOL 121 Biological Principles I, C- or higher in BIOL 122 Biological Principles II, and MATH 203 College Algebra or higher; waiver by placement testing results; or departmental approval. Pre-/Co-requisites: CHEM 151 General Chemistry I and MATH 217 Precalculus; waiver by placement testing results; or departmental approval.

BIOL 231 Microbiology 4 credits

Attributes: LA LS SC

This is a course in general microbiology with emphasis placed on the practical applications for medical, food, dairy, water, and environmental microbiology. Part of the laboratory experience includes an introduction to techniques in molecular biology and the identification of one or more bacterial "unknowns" to demonstrate adequate knowledge of the proper laboratory technique. Organisms of discussion include bacteria, viruses, fungi, and some of the primitive algae and protozoa. Topics include classification, prokaryotic cell structure, microbial genetics, biotechnology, microbial metabolism, microbial growth, and control of microbial growth. Chemistry is recommended, but not required, before taking this course. Two lecture and four laboratory hours per week.

Prerequisites: C- or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam, or departmental approval.

BIOL 234 Cellular Biology

4 credits

Attributes: LA LS SC

This laboratory-intensive course provides an overview of the cellular and molecular basis for living systems, focusing on eukaryotic cells. Lecture topics include DNA replication, gene expression and regulation, plasma membrane dynamics, signal transduction, cell cycle control, metabolism, intracellular compartments, and protein sorting. In the laboratory, students apply the theory and practice of modern cell biology techniques by designing and executing experiments. Emphasis in the laboratory placed on Good Manufacturing Practices (GMP), Standard Operating Protocols (SOP), aseptic techniques, and trouble shooting. Intended for students intending on transferring into bachelor's programs in biology, chemistry or biochemistry, or those interested in pursuing careers in biotechnology or pharmacy. Two lecture and four laboratory hours per week.

Prerequisites: C- or higher in BIOL 121 Biological Principles I or successful performance on departmental challenge exam, C- or higher in BIOL 122 Biological Principles II, or departmental approval.

Pre/Co-requisite: CHEM 152 General Chemistry II; or departmental approval.

BIOL 400 Special Study in Biology

1 credit

Attributes: LA SC

This course involves independent work on a selected topic under the direction of members of the Biology Department. Limited to two courses per student.

Prerequisite: approval of the Department Chair and Division Dean.