BIOLOGY (BIO)

BIO 100. Principles of Biology. (4 Credits)
This course explores the fundamental concepts of biology in the fields of: research science, cytology, genetics, microbiology, human biology, botany, taxonomy, zoology, ecology and evolution through reading, online activities, lecture and laboratory experiences. Laboratory course.

BIO 141. General Biology I. (4 Credits)
This course is an introductory laboratory course which contains a heavy emphasis on the cell, its structures, and the processes which take place inside the smallest of living units. Laboratory course.

BIO 142. General Biology II. (4 Credits)
This course is a continuation of BIO 141 that focuses on the biological processes that occur at the system level in both plants and animals. Topics such as transportation, organism control, nutrient breakdown and utilization will be compared in different organisms. Laboratory course.

BIO 146. Essentials of Anatomy and Physiology. (4 Credits)
This is a course for non-biology majors. It surveys the major organ systems in the human body from both a structural and functional perspective. Laboratory course.

BIO 149. Medical Microbiology. (4 Credits)
This course introduces students to the role that bacteria, viruses and eukaryotic microbes play in human health and disease. It is designed for students in the nursing program. Laboratory course.
Prerequisites: CHEM 105 or 105.

BIO 151. Functional Human Biology I. (4 Credits)
This course is an introduction to the cellular processes that occur in the human body with an emphasis on cellular composition/structure, biochemistry and genetics. It is designed for students in the biomedical sciences and pre-professional programs. Laboratory course.

BIO 152. Functional Human Biology II. (4 Credits)
This course is a continuation of BIO 151 with emphasis on the structure and function of selected human organ systems. Laboratory course.
Prerequisites: BIO 151 or 151.

BIO 156. Environmental Science. (4 Credits)
This course is a study of the effects man has on his surroundings through a basic understanding of ecological, biochemical, and physical systems in nature. Laboratory course.

BIO 191. Human Anatomy and Physiology I. (4 Credits)
This course begins with a study of the cell and cellular processes and tissues. It continues with investigation of the integumentary, skeletal, muscular, and nervous systems. Students must consult with their academic advisor or the Academic Advising office before enrolling in this course. Laboratory course.

BIO 192. Human Anatomy and Physiology II. (4 Credits)
This course is a continuation of BIO 191 and provides students with an in-depth study of the endocrine, circulatory, respiratory, digestive, excretory, and reproductive systems. Laboratory Course.
Prerequisite: BIO 191.

BIO 210. Summative Human Anatomy and Physiology. (4 Credits)
This course examines all major human organ systems (integumentary, skeletal, muscular, nervous, endocrine, circulatory, respiratory, digestive, excretory, and reproductive). This course is for students in the Bridge Physical Therapy program pursuing a BS in Rehabilitation Science. Laboratory course.

BIO 240. Zoology. (4 Credits)
This course is a survey of the animal kingdom and study of the biology of animals in their natural environment. Laboratory course.

BIO 244. Botany. (4 Credits)
This course is an in depth study of the plant kingdom with emphasis on the study of plants in their natural habitat. Laboratory course.

BIO 260. Biology of Microorganisms. (4 Credits)
This course focuses on the biology and genetics of organisms too small to be seen by the human eye. Students will be introduced to the roles that bacteria, viruses, and eukaryotic microbes play in the environment and human disease. Laboratory course.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) or (BIO 151 and 240) and (CHEM 100, 105 or 141).

BIO 285. Pathophysiology. (3 Credits)
This course introduces the student to the study of the etiology, pathogenesis and clinical manifestations of common disease processes. Basic principles into the mechanism of cellular and tissue injury is followed by presentations of common diseases in the various organ systems.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) or (BIO 191 and 192).

BIO 321. Cell Biology. (4 Credits)
This course provides a more detailed study of the relationships between cellular structure and function. Emphasis will be placed on proteins and enzymatic reactions, plasma and cellular membranes, cytoskeleton and cell motility, cellular interactions with the environment, and cell division. Laboratory course.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) or (BIO 151 and 240) and (CHEM 100, 105 or 141).

BIO 348. Genetics. (4 Credits)
This course is a study of Mendelian, molecular, and population genetics. Laboratory course. MATH 205 is recommended prior to taking this course.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152).

BIO 351. Immunology. (3 Credits)
This course introduces the upper level biology student to the principles of the adaptive and innate immune systems and how these systems protect against and cause disease. Emphasis is placed on how the cells of the immune system recognize and eliminate foreign invaders from the human body. Laboratory course. Cell Biology (BIO 321) is strongly recommended.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) or (BIO 151 and 240) and (CHEM 100, 105 or 141).

BIO 367. Ecology of the Tropics. (3 Credits)
This course is a field study of tropical habitats and organisms as well as their interactions with humans. Requires class travel to the Caribbean or Central America. Students will experience the influence of Spanish, French, Dutch, British, African, and US cultures on this diverse region. This is a travel course that satisfies the core culture requirement. Travel costs will be in addition to tuition.

BIO 368. Ecology of the Tropics-Lab. (1 Credit)
This course is an optional lab course that explores tropical organisms and ecosystems which complements BIO 367. BIO 367/BIO 368 together fulfill the core lab science requirement.

BIO 381. Histology. (3 Credits)
This course is a study of tissues present in the human body. Basic tissue types are analyzed and special emphasis is placed on how these tissues interact as components of organs.
Prerequisites: BIO 191 and 192.

BIO 399. Biology Internship. (1-6 Credits)
This course provides credit for majors in the biological sciences who obtain laboratory or field experience outside of the typical academic environment. The experience must be approved in advance by the Chair of Life and Earth Sciences. Note: Students may enroll in this course multiple times, up to a maximum of 6 total credits.

BIO 410. Ecology. (4 Credits)
This course s a study of the interactions between the organism and its environment. Ecology surveys the biotic and abiotic environments, ecosystem types, population ecology, community structure, and succession. Laboratory course.
Prerequisites: BIO 142 and (BIO 240 or 244).

BIO 420. Molecular Biology. (4 Credits)
This course explores the molecular mechanisms underlying an array of biological processes including gene expression, DNA mutation and repair, genetic engineering, development, cancer, and stem cell regulation. There is a strong emphasis on current techniques used in biological research. The lab utilizes molecular biology techniques, including gene editing, in an original semester-long research project culminating in a poster presentation. Laboratory course.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) and (BIO 260, 321, 348 or CHEM 425).

BIO 430. Pharmacology. (3 Credits)
This course focuses on the principles of drug action. These principles will then be invoked in the discussion of various therapeutic interventions for diseases associated with selected organ systems. Treatments of pathogenic diseases and cancer will be discussed as well as the use of natural products.
Prerequisites: (BIO 141 and 142) or (BIO 151 and 152) or (BIO 151 and 240) or (BIO 191 and 192) and (CHEM 241 and 242).

BIO 470. Human Physiology. (4 Credits)
This course focuses on medical physiology with emphasis on cellular and organ system physiology. Functions of circulation, respiration, heat regulation, water balance, neuromuscular mechanisms, neural and endocrine integration will be included.
Prerequisites: (BIO 151 and 152) or (BIO 191 and 192).

BIO 490. Biology Senior Seminar. (1 Credit)
This course looks at current issues in biology by evaluating the biological literature. A general topic area is selected each semester for student presentations. Students must have Senior Status and 20 credits of Biology prior to taking this course.

BIO 499. Undergraduate Research. (1-4 Credits)
This course provides students with the opportunity to work with members of the faculty conducting research in the biological sciences. Students must submit appropriate form to the Department Chair for approval. Note: Students may enroll in this course multiple times, up to a maximum of 4 total credits.

BIO 3730. Global Health and Disease. (3 Credits)
This course provides students in biology, sciences, and pre-health care professions an overview of global health, international public health infrastructure, and endemic diseases found in various areas of the world. This course includes an international travel component for students to learn about the health care system and culture of another country and provide students with a variety of global health perspectives and service opportunities. Note: Completion of course pre-req(s) or approval of the instructor is required for registration.
Prerequisites: (BIO 142, 152, 192 or CHEM 142).