BIOLOGY (BIO)

BIO 100 Biology Today 3 credits
This course challenges students to confront, evaluate, and integrate the major discoveries and principles of the biological sciences within their worldview as members of contemporary society. Major themes of the course include the role of genes and inheritance in human growth and development; health and behavior; human origin and relationship to the Earth's biodiversity; and human impact on, role within, and responsibility for the integrity of the biosphere. Lectures, readings, discussions, films, and laboratory activities comprise the course. (Prerequisites: none. Students planning further study in biology or other natural sciences should complete BIO 120 and BIO 130.)

BIO 102 Biology in a Box 4 credits
This augmented course challenges students to confront, evaluate, and integrate the major discoveries and principles of the biological sciences within their worldview as members of contemporary society. The course incorporates hands-on experiments and activities to aid in learning core concepts in biology. All required materials can be purchased as a single lab kit that comes straight to your home - in a box! Learn about biology from the tiniest cellular viewpoint all the way up to the larger scale, whole world ecological viewpoint.

BIO 117 Human Anatomy & Physiology for Sonography 4 credits
This course is an overview of the structure and function of the human body. The course introduces concepts of cells and tissues in the context of bone, muscle, and the nervous system. Other major topics include the endocrine, cardiovascular, respiratory, digestive, reproductive and urinary systems, with an emphasis on the spatial relationships between structures and their relevance to sonography. Three lectures and one two hour lab period per week.

BIO 120 General Biology I 4 credits
This course emphasizes inquiry and investigation while introducing students to the unifying theories of modern biological science. Topics considered include foundational mechanisms of matter, energy, cells, genetics, and reproduction. The course is comprised of lectures, readings, discussions, written assignments, online assignments, and a laboratory component. (Recommended prerequisites: one year of high school biology and chemistry and four years of high school mathematics)

BIO 130 General Biology II 4 credits
This course evaluates the current hypotheses explaining the origin, development, and maintenance of the Earth's biodiversity. The major lineages of life are surveyed and compared at the organismal level by considering evolutionary relationships between structure and function. The course is comprised of lectures, readings, discussions, written assignments, online assignments, and a laboratory component. (Recommended prerequisites: one year of high school biology and chemistry and four years of high school mathematics)

BIO 210 Genetics 4 credits
This course focuses on the principles of heredity and the molecular concepts regarding the genome. Major topics include Mendelian genetics, sex linkage, extranuclear inheritance, chromosomal aberrations, structure and function of DNA, regulation of gene expression, mutation, and modern DNA technologies. Problem solving and quantitative reasoning are emphasized . (Prerequisite: Minimum grade of C- in BIO 120)

BIO 230 Animal Biology and Physiology 4 credits
This course provides a comparative study of major animal groups within a taxonomic, morphological and physiological framework. Major topics include animal cells, animal tissues, organ systems, animal phylogeny, life cycles and development. Three lecture sessions and one three hour laboratory period per week. (Prerequisites: Minimum grade of C- in BIO 120)

BIO 300 Microbiology 4 credits
Did you know that our world is covered in microorganisms? This course explores the diversity of the microbial world, providing overviews on bacteria, Archaea, viruses, fungi, and protozoans. A major emphasis is placed on how microorganisms cause disease, how the human body attempts to prevent disease, and how we can treat infectious disease. Other topics include microbial growth, metabolism, genetics, and environmental and food microbiology. The lab consists of a series of classic microbiology experiments that teach students how to visualize, culture, quantify, and identify microorganisms. A short self-directed research project allows students to design and implement their own experiment. (Prerequisite: Minimum grade of C- in BIO 120)

BIO 315 Human Anatomy and Physiology I 4 credits
This course is part one of a study of the structure and function of the human body. Major topics include the introduction to the human body, cells, tissues and skeletal, muscle, and nervous systems. Three lectures and one three hour lab period per week. (Prerequisite: Minimum grade of C- in BIO 120)

BIO 316 Human Anatomy and Physiology II 4 credits
This course is part two of a study of the structure and function of the human body. Major topics include the endocrine, cardiovascular, respiratory, digestive, reproductive and urinary systems. Three lectures and one three hour lab period per week. (Prerequisite: BIO 315)

BIO 330 Cell Biology 4 credits
This course is a study of the structure and function of eukaryotic cells from a molecular viewpoint. Major topics include molecular cell structure, metabolism, membrane transport, cell signaling, cell division and cancer, stem cells and tissue differentiation. Students read and discuss the ethical implications of biomedical research in the context of The Immortal Life of Henrietta Lacks. The lab focuses on cell culture technique and requires students to design and implement a self-directed mini research project. (Prerequisite: Minimum grade of C- in BIO 120)

BIO 335 Molecular Biology 4 credits
This course focuses on the principles of modern molecular biology. Major topics to be covered include organization and maintenance of eukaryotic and prokaryotic genes and genomes, the process and regulation of transcription and translation, splicing and processing of RNA, epigenetics, and cellular pathways that maintain homeostasis. Lab included. (Prerequisite: Minimum grade of C- in BIO 120 and BIO 210)

BIO 340 Science Issues and Ethics 4 credits
This course includes a short introduction to the study of philosophy and ethics, followed by critical analyses of current issues in health and environmental sciences. Ethical discussions are framed in a solid understanding of the science behind each topic. The course will include a variety of formats, including reading and reviewing papers and/or texts, analyzing case studies, and participating in class discussions. (Prerequisite: Minimum grade of C- in BIO 120 and CHE 115).

BIO 350 Medical Terminology 2 credits
This course will help students learn the components of medical terms. Students will learn the basic elements of words, such as roots, prefixes, suffixes, combining vowels, and combining forms in order to understand, the word's meaning. Students will be able to apply the meaning of the word to an anatomical structure, physiological function or pathology. This course is entirely online.

BIO 415 Biology of Aging 3 credits
This 3 credit course will focus on theories of human aging from a biological perspective. The structural and functional changes that occur during the aging process will be investigated at several levels: molecular, cellular, tissue, and organ system. The symptoms and clinical management of age-related diseases will also be explored. This course is targeted for students interested in the health sciences and is required for the gerontology minor/certification. (Prerequisite: Minimum grade of C- in BIO 120 (preferred) OR BIO 100)

BIO 430 Immunology 4 credits
This course provides a comprehensive study of the immune system. Major topics include passive immunity, cell-mediated immunity, humoral immunity, autoimmune diseases, vaccination strategies and other medically relevant topics. (Prerequisite: BIO 120)

BIO 440 Human Gross Anatomy 4 credits
This course is a comprehensive study of human anatomy which includes dissection of a human cadaver. Skeletal, muscular, nervous, digestive, cardiovascular, respiratory, and urogenital systems will be covered, and emphasis will be placed on the relatedness of structure and function.

BIO 450 Special Topics in Biology 1 credit
The topic for this course will vary each semester, chosen from a wide range of current research in biology. Students will read background material, participate in discussions and complete writing assignments as directed by the instructor. This course will meet for one lecture/discussion hour per week. (Prerequisite: Minimum grade of C- in BIO 120)

BIO 456 Research in Biology 1-4 credits
This course offers students an opportunity to do original research in an area of expertise of one of the biology faculty members. When applicable, the research will be followed with presentation of a poster or a paper at a research symposium. (Prerequisite: Minimum grade of C- in BIO 120)

BIO 488 Independent Study 1-4 credits
Independent Study courses can be designed by the student and instructor to meet special needs. Presently offered as independent study are Scientific Presentation and Bottle Biology, both one credit experiences.

BIO 497 Biology Teaching Assistant 1-4 credits
Students enrolled in this course will work with a faculty member to gain teaching experience in biology courses. Activities may include: designing laboratory exercises; working with students in laboratory, classroom and tutoring environment; preparing and delivering lectures; developing course materials; and grading.

BIO 498 Biology Internship 1-16 credits
This internship is designed to provide students with a work/educational experience which will help them determine their future educational and occupational goals.