

# Biology - CPS (BIO)

## Courses

### BIO 1050. Medical Terminology. (3 Hours)

Offers students an opportunity to explore the language of medicine, learning about the importance of word structure in medical fields. A command of medical terminology is fundamental for anyone who aspires to work in the healthcare field. Examines the fundamentals of word analysis and construction, including root words, prefixes, and suffixes, all in the context of the anatomy and physiology of human body systems and healthcare systems. Seeks to provide the fundamentals of science and medicine through reading, writing, listening, and speaking exercises focusing on technical terms used in medical terminology.

### BIO 1100. Principles of Biology 1. (3 Hours)

Introduces a variety of biological concepts. Surveys plant and animal characteristics by comparing cell structure and function. Examines specific elements of structure, function, and natural history. Specific topics include cytology, histology, physiology, genetics, cellular respiration, and botany.

**Corequisite(s):** BIO 1101

**Attribute(s):** NUpath Natural/Designed World

### BIO 1101. Lab for BIO 1100. (1 Hour)

Accompanies BIO 1100. Studies the specialization of animal cells and ecological succession. Offers students an opportunity to learn about proper experimental design and the limits of experimentation. Includes observing the structure and function of unicellular organisms and the characteristics of biological molecules, measuring aerobic and anaerobic respiration rates, observing cellular reproduction, and genetic analysis of plants and animals.

**Corequisite(s):** BIO 1100

### BIO 1200. Principles of Biology 2. (3 Hours)

Covers the major evolutionary trends leading to complex life forms. Surveys organisms beginning with unicellular algae and leading to basic animal structure and function. Describes the anatomy of each body system as well as physiological processes such as hormonal control, nerve impulse transmission, muscular contraction, and the immune response.

**Prerequisite(s):** BIO 1100 with a minimum grade of D- ; BIO 1101 with a minimum grade of D-

**Corequisite(s):** BIO 1201

**Attribute(s):** NUpath Natural/Designed World

### BIO 1201. Lab for BIO 1200. (1 Hour)

Accompanies BIO 1200. Uses prepared slides and preserved specimens to study the Protista and animal kingdoms. Studies the appendicular and axial bones, muscles, blood vessels, urogenital anatomy, and the nervous system.

**Prerequisite(s):** BIO 1100 with a minimum grade of D- ; BIO 1101 with a minimum grade of D-

**Corequisite(s):** BIO 1200

### BIO 1600. Human Anatomy and Physiology 1. (3 Hours)

Provides an overview of anatomic terminology and organization of the body. Presents the structure and function of cells and tissues. Includes the anatomy and physiology of the integumentary and musculoskeletal systems, joint structure and function, and the nervous and endocrine systems, including special senses.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 1601

**Attribute(s):** NUpath Natural/Designed World

### BIO 1601. Lab for BIO 1600. (1 Hour)

Accompanies BIO 1600. Covers a range of topics from the course.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 1600

### BIO 1700. Human Anatomy and Physiology 2. (3 Hours)

Covers the structure and function of the cardiovascular system (including the properties of blood, the lymphatic system, and immunity) and the respiratory, digestive, and urogenital systems.

**Prerequisite(s):** BIO 1600 with a minimum grade of D- ; BIO 1601 with a minimum grade of D-

**Corequisite(s):** BIO 1701

**Attribute(s):** NUpath Natural/Designed World

**BIO 1701. Lab for BIO 1700. (1 Hour)**

Accompanies BIO 1700. Covers a range of topics from the course.

**Prerequisite(s):** BIO 1600 with a minimum grade of D- ; BIO 1601 with a minimum grade of D-

**Corequisite(s):** BIO 1700

**BIO 1990. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**BIO 2100. Microbiology. (3 Hours)**

Emphasizes the close relationship between the development of technology and science. Compares prokaryotic and eukaryotic cellular morphology and physiology, including bioenergetics, carbohydrate metabolism, and cellular nutrition and growth. Studies viral replication, microbial genetics, bacterial taxonomy, and evolution. Discusses the principles of epidemiology and public health related to food, water, and sewage microbiology and the role of microbes in fermentation and industrial and environmental microbiology.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 2101

**BIO 2101. Lab for BIO 2100. (1 Hour)**

Accompanies BIO 2100.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 2100

**BIO 2300. Cell Biology. (3 Hours)**

Introduces the chemical composition and structure of cells and organelles. Focuses on transport processes, cell cycle and cell death, and cytoskeleton and matrix. Includes cellular control systems, including cellular energy supply, action of chemical messengers and regulators, cellular principles of respiration, and photosynthesis.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**BIO 2500. Genetics and Molecular Biology. (3 Hours)**

Covers a detailed analysis of the biochemical mechanisms that control the maintenance, expression, and evolution of prokaryotic and eukaryotic genomes. Topics covered in lectures and readings of relevant literature include gene regulation, DNA replication, genetic recombination, and mRNA translation. Emphasizes the logic of experimental design and data analysis.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 2501

**BIO 2501. Lab for BIO 2500. (1 Hour)**

Accompanies BIO 2500.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 2500

**BIO 2990. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**BIO 3100. Biochemistry. (3 Hours)**

Covers the fundamental chemistry of biomolecules such as proteins, enzymes, lipids, carbohydrates, and nucleotides. Studies important molecular structures and their role in metabolic cycles. Introduces metabolism and catabolic and anabolic pathways of carbohydrates, lipids, proteins, and nucleotide metabolism. Discusses the importance of nutrition and how it affects metabolic pathways, genetic disorders, and mechanisms of action of various drugs that affect these pathways.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 3101

**Attribute(s):** NUpath Writing Intensive

**BIO 3101. Lab for BIO 3100. (1 Hour)**

Accompanies BIO 3100. Introduces modern research techniques used in biochemistry. Topics include purification and characterization of proteins, kinetic properties of enzymes, isolation of high-molecular-weight DNA, and protein separation; DNA mapping; spectrophotometry; peptide mapping and sequencing; enzyme kinetics; and extraction, separation, and isolation techniques.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**Corequisite(s):** BIO 3100

**BIO 3990. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**BIO 4215. Human Parasitology. (3 Hours)**

Examines the general biology, life cycles, modes of transmission, and pathogenesis of major parasites on global human health. Explores a number of important diseases, along with the diverse protozoans, worms, and arthropods responsible for them.

**Prerequisite(s):** BIO 1200 with a minimum grade of D- ; BIO 1201 with a minimum grade of D-

**BIO 4850. Biological Sciences Senior Project. (3 Hours)**

Focuses on an in-depth project in which a student conducts research or produces a product related to the student's major field.

**Prerequisite(s):** BIO 2300 with a minimum grade of D- ; BIO 2500 with a minimum grade of D-

**Attribute(s):** NUpath Capstone Experience, NUpath Writing Intensive

**BIO 4955. Project. (1-4 Hours)**

Offers students an opportunity to prepare a discipline-specific project. May be repeated without limit.

**BIO 4983. Topics. (1-4 Hours)**

Covers special topics in biology. May be repeated without limit.

**BIO 4990. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**BIO 6962. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

**BIO 7962. Elective. (1-4 Hours)**

Offers elective credit for courses taken at other academic institutions.