

Logan University, College of Health Sciences
Bachelor of Science in Human Biology- Upper Division Course Descriptions
2019-2020 Catalog

ANAT03101 Anatomy and Physiology I **3 credit hours**

Anatomy and Physiology I focuses on the structure and function of the human body. Homeostasis is the underlying theme. Students will examine form following function. Related facts and principles and concepts for chemistry and biochemistry are integrated for increased understanding. This part of the course will include study of the cell and tissues, and the following systems; integumentary, skeletal, muscular, nervous, endocrine and special senses.

Pre-requisites: Chemistry II (or equivalent)

ANAT0L101 Anatomy and Physiology I Lab **1 credit hours**

Laboratory work includes dissection of preserved specimens, microscopic study, physiologic experiments, computer simulations, and multimedia presentations.

Pre-requisites: Chemistry II Lab (or equivalent)

ANAT03201 Anatomy and Physiology II **3 credit hours**

This course provides a continuation of the comprehensive study of the anatomy and physiology of the human body. Topics include the endocrine, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems as well as metabolism, nutrition, acid-base balance, and fluid and electrolyte balance.

Pre-requisites: Anatomy and Physiology I (or equivalent)

ANAT0L201 Anatomy and Physiology II Lab **1 credit hours**

Laboratory work includes dissection of preserved specimens, microscopic study, physiologic experiments, computer simulations, and multimedia presentations.

Pre-requisites: Anatomy and Physiology I Lab (or equivalent)

BCHM03101 Biochemistry I **3 credit hours**

This course provides a comprehensive study of the structure and function of biological molecules, especially proteins, lipids and carbohydrates. Important concepts include bioenergetics, biological catalysis, and metabolic pathways as interacting regulated systems.

Pre-requisites: Organic Chemistry II (or equivalent)

BCHM0L101 Biochemistry I Lab **1 credit hour**

The laboratory introduces biochemical and molecular biological methods including reagent handling, instrumentation, biochemical analysis, molecular biology techniques, and the use of computers to search the scientific literature and genomic databases.

Pre-requisites: Organic Chemistry II Lab (or equivalent)

BCHM04201 Biochemistry II **3 credit hours**

This course provides an integrated presentation of the biochemistry and molecular biology of cellular interactions. There is an emphasis on accounting for complex cellular processes in terms of protein structure and regulation of gene expression. Topics include gene structures and techniques for studying them; replication; control of gene expression; post-translational

processing; membrane associated energetics; behavior of transport systems; mechanisms of signal transduction; and interactions of cells with extracellular matrix and with other cells.

Pre-requisites: Biochemistry I (or equivalent)

BCHM0L201 Biochemistry II Lab

1 credit hour

The laboratory introduces experiments related to the Biochemistry II lecture course, as well as biochemical and molecular biological methods including reagent handling, instrumentation, biochemical analysis, molecular biology techniques, and the use of computers to search the scientific literature and genomic databases.

Pre-requisites: Biochemistry I Lab (or equivalent)

BIOL01112 General Biology II

3 credit hours

This course reinforces concepts introduced in General Biology I. Emphasis is placed on evolution, classification of organisms, biodiversity, plant and animal systems, ecology, and other related topics. Upon completion, students should be able to demonstrate comprehension of life at the organismal and ecological levels.

Prerequisites: General Biology I (or equivalent)

BIOL0L112 General Biology II Lab

1 credit hours

The laboratory reinforces and provides supplemental information related to the lecture topics related to the principles and concepts of biology.

Prerequisites: General Biology I Lab (or equivalent)

BIOL03102 Cell Biology

3 credit hours

Cell Biology will provide the student with a fundamental understanding of life at the cellular level. The first portion of this class will focus primarily on cell structure and biochemical processes, while the second portion will focus on reproduction at the cellular level. The material in the course will serve as a foundation for subsequent biology courses, as well as help the student develop critical thinking skills and proficiency in scientific reading.

Pre-requisites: General Biology I (or equivalent)

BIOL04101 Genetics

3 credit hours

This course discusses the principles of genetics with application to the study of biological function at the level of molecules, cells, and multicellular organisms, including humans. The topics include: structure and function of genes, chromosomes and genomes, biological variation resulting from recombination, mutation, and selection, population genetics, use of genetic methods to analyze protein function, gene regulation and inherited disease.

Pre-requisites: Cell Biology (or equivalent)

BIOL04102 Immunology

3 credit hours

This course provides a study of the immune response and its relationship to the diagnosis, prevention and treatment of disease. Topics include immune systems, immunopathology and antibodies.

Pre-requisites: Chemistry II (or equivalent)

CAPS04101 Health Science Capstone**3 credit hours**

This course provides students with the opportunity to integrate their course work, knowledge, and experiences into a project that results in a written report and presentation regarding an issue within the field of human biology, health or healthcare, a culminating experience in the bachelor degree program.

Pre-requisites: All didactic coursework; Exception - may be taken in conjunction with other courses in last trimester

CAPS04102 Pre-Med Capstone**3 credit hours**

This course provides students with the opportunity to integrate their course work, knowledge, and experiences into a project that results in a written report and presentation regarding an issue within the field of human biology, health or healthcare, a culminating experience in the bachelor degree program.

Pre-requisites: All didactic coursework; Exception - may be taken in conjunction with other courses in last trimester

CAPS04103 Pre-Dentistry Capstone**3 credit hours**

This course provides students with the opportunity to integrate their course work, knowledge, and experiences into a project that results in a written report and presentation regarding an issue within the field of human biology, health or healthcare, a culminating experience in the bachelor degree program.

Pre-requisites: All didactic coursework; Exception - may be taken in conjunction with other courses in last trimester

CAPS04104 Pre-Allied Health Science Capstone**3 credit hours**

This course provides students with the opportunity to integrate their course work, knowledge, and experiences into a project that results in a written report and presentation regarding an issue within the field of human biology, health or healthcare, a culminating experience in the bachelor degree program.

Pre-requisites: All didactic coursework; Exception - may be taken in conjunction with other courses in last trimester

CHEM01102 General Chemistry II**3 credit hours**

General Chemistry II course provides knowledge of fundamental concepts in inorganic and physical chemistry. Topics include gases, intermolecular forces, reaction kinetics, equilibrium, acid/base chemistry, and buffers.

Prerequisites: General Chemistry I or equivalent

CHEM0L102 General Chemistry II Lab**1 credit hour**

This laboratory course accompanies the General Chemistry II lecture course and includes exercises demonstrating lecture topics. Topics include laboratory safety, determination of the gas constant, molar mass of a volatile compound, reaction rate, chemical equilibrium, measurement of pH, and preparation of buffers.

Prerequisites: General Chemistry I Lab or equivalent

CHEM02201 Organic Chemistry I**3 credit hours**

In this course, which is offered the first half of a term, students will learn and understand molecular structure and bonding, nomenclature of alkanes, alkenes, alkynes, and alcohols, stereochemistry, reactivity of acids and bases, and nucleophilic substitution and elimination of alkyl halides.

Prerequisites: General Chemistry II or equivalent**CHEM0L201 Organic Chemistry I Lab****1 credit hour**

This laboratory course accompanies the Organic Chemistry I lecture and includes exercises demonstrating lecture topics. Topics include laboratory safety, melting point determination, chromatography, extraction, distillation and halogenation of alkenes.

Prerequisites: General Chemistry II Laboratory or equivalent**CHEM02202 Organic Chemistry II****3 credit hours**

In this course, which is offered the second half of a term, students will learn and understand the chemistry and preparation of alkenes, alkynes, alcohols, aldehydes, ketones, carboxylic acids, and amino acids.

Prerequisites: Organic Chemistry I or equivalent**CHEM0L202 Organic Chemistry II Lab****1 credit hour**

This laboratory course accompanies the Organic Chemistry II lecture and includes exercises demonstrating lecture topics. Topics include: dehydration reactions, nitration of an aromatic compound, isolation of organic compounds, preparation of esters, soap, and synthesis of aspirin.

Prerequisites: Organic Chemistry I Laboratory or equivalent**MATH03101 Biostatistics****3 credit hours**

This course provides an introduction to the methods used to analyze biological data. The course will cover topics such as describing and displaying data, probability, hypothesis testing, how to design experiments, and many others.

Pre-requisites: Statistics (or equivalent)**MICR03101 Microbiology I****3 credit hours**

This course introduces concepts related to the study of bacteria, viruses, protozoa and fungi. These microorganisms maintain both beneficial and pathogenic relationships with humans, and concepts related to both types of relationships will be examined.

Pre-requisites: Cell Biology (or equivalent)**MICR0L101 Microbiology I Lab****1 credit hours**

This course emphasizes basic laboratory techniques such as microscopy, staining, and aseptic technique.

Pre-requisites: Cell Biology (or equivalent)**MICR04201 Microbiology II****3 credit hours**

This course explores microbial evolution, ecology and diversity. Students will explore infectious diseases and epidemiology to learn the applied uses of microorganisms in industry, agriculture and medicine.

Pre-requisites: Microbiology I (or equivalent)

MICR0L201 Microbiology II Lab**1 credit hours**

This course covers laboratory exercises demonstrating the natural occurrences and processes of microbes in the environment and gene transfer in bacteria along with techniques for the isolation and identification of pathogens, and the use of microbes in industry.

Pre-requisites: Microbiology I Lab (or equivalent)

PHYS01101 Physics I**3 credit hours**

This course is offered the first half of a term and presents an introduction to physics concepts, kinetics, mechanics, dynamics, circular motion, work, energy, linear momentum, rotational motion, static equilibrium, vibration, waves, and sound.

Prerequisites: College Algebra

PHYS0L101 Physics I Lab**1 credit hour**

This laboratory course accompanies the Physics I course and includes exercises demonstrating lecture topics.

Prerequisites: College Algebra

PHYS01102 Physics II**3 credit hours**

This course is offered the second half of a term and presents an introduction to fluids, electric charge and potential, electric fields, electric currents, magnetism, electromagnetic induction and waves, light, nuclear physics and radioactivity.

Prerequisites: Physics I or equivalent

PHYS0L102 Physics II Lab**1 credit hour**

This laboratory course accompanies the Physics II course and includes exercises demonstrating lecture topics.

Prerequisites: Physics I Lab or equivalent

PUBH01101 Introduction to Public Health**3 credit hours**

This course provides a history of public health. It demonstrates the methodology for understanding populations and population health through multiple disciplines. It provides an overview of five core disciplines: epidemiology, biostatistics, environmental health, social and behavioral health, and health policy and management.

Pre-requisites: N/A