

BIOLOGY (BIOL)

This is a list of the Biology courses available at KPU.

BIOL 1110 **4 Credits**

Introductory Biology I

Students will study the diversity of life on Earth, the classification of organisms, and the interactions of organisms with their environments. They will examine the structure and function of body systems in a variety of organisms.

Prerequisites: English 12 (B) or equivalent

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 1112 **4 Credits**

Biology Today

Students will focus on current advances in human heredity and evolution and will examine some of the most exciting and controversial topics in current day Biology, including cloning, stem cell research and genetically modified foods. In the labs students will make a DNA fingerprint, isolate and amplify their own DNA and have a chance to use equipment found in high-tech facilities.

NOTE: This course may not be used for credit towards a science degree or as a prerequisite for further science courses. This course may be used to partially fulfill quantitative requirements for a Bachelor of Arts degree, science requirements for an elementary teacher education program, lab science requirements for an Associate of arts degree, and liberal education/breadth credits for Kwantlen degrees.

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 1160 **4 Credits**

Anatomy and Physiology I

Students will study the major organ systems of the human body responsible for support, movement, circulation, respiration and digestion. They will also overview nervous and endocrine control, microbiology, and examples of drug actions and effects. Students will study these topics using a self-directed modular format.

Prerequisites: BIOL 1110 or [(CHEM 1094 or CHEQ 1094 or Chemistry 11 with a grade of C+)] and (ABEB 0012 or BIOP 1012 or BIOQ 1099 or Biology 12 with a grade of C+)]

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 1210 **4 Credits**

Introductory Biology II

Students will study concepts of inheritance and biological evolution. They will examine the major classes of biological chemicals, the structure and function of cells, and the processes of cellular respiration and photosynthesis. They will study the patterns and mechanisms of embryological development.

Prerequisites: BIOL 1110 and [English 12 (B) or equivalent]

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 1260 **4 Credits**

Anatomy and Physiology II

Students will continue to study the major organ systems of the human body, focusing on the excretory, nervous, immune and reproductive systems. Examination of these systems will include related, basic concepts in microbiology, and examples of drug actions and effects. Students will study these topics using a self-directed modular format.

Prerequisites: BIOL 1160

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 2320 **4 Credits**

Genetics

Students will examine the principles of heredity, transmission of traits, exchange of genetic information, mutation, linkage, gene action and recombinant DNA technology, with emphasis on problem solving. They will acquire a variety of laboratory skills including sterile techniques, isolation of DNA, electrophoresis and photo microscopy.

Prerequisites: BIOL 1110 and BIOL 1210

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 2321 **4 Credits**

Cell Biology

Students will examine the ultrastructure of the eukaryotic and prokaryotic cell along with molecular activities associated with these structures. They will also identify and understand the experimental techniques and data that support the current view of cell structure and function. Students will develop considerable skill in the preparation of materials for microscopic examination.

Prerequisites: BIOL 1110 and BIOL 1210 and CHEM 1110

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 2322 **4 Credits**

Ecology

Students will learn the basic properties of ecosystem, community and population ecology, including energy transfer, mineral cycling, community structure and dynamics, competition, predation, evolution and population dynamics. They will also perform lab and field work.

Prerequisites: BIOL 1110 and BIOL 1210

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 2330 **4 Credits**

Microbiology

Students will study a variety of microorganisms including bacteria, fungi, algae, protozoa, and viruses. They will examine several aspects of microorganisms, including diversity, structure and function, metabolism, growth, reproduction and genetics.

Prerequisites: BIOL 1210

Co-requisites: CHEM 1110 or ENVI 1106 CHEM 1110 or ENVI 1106

Transferable (refer to transfer guide)

BIOL 2421 **3 Credits**
Cellular Biochemistry
Students will learn the patterns and reactions of cellular metabolism with particular attention to the structure and function of proteins, the mechanisms of reactions, and the interrelationships and control of catabolism and anabolism.

Prerequisites: BIOL 1110, BIOL 1210, BIOL 2321 and CHEM 2320

Co-requisites: CHEM 2420 CHEM 2420

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 3110 **4 Credits**
Animal Behaviour

Students will learn the basic theories, principles and concepts associated with the scientific study of animal behaviour. They will examine the relationships between behaviour and adaptation, evolution, physiology and genetics, focusing on topics such as foraging, territoriality, mating and social behaviour. Students will observe, record and analyse the behaviour of a variety of animals; in the lab component of the course.

Prerequisites: BIOL 2322

Co-requisites: BIOL 3180

Not Transferable

BIOL 3160 **4 Credits**
Human Anatomy and Physiology I

The students will acquire essential principles and procedures in anatomy, histology, physiology and general pathology for the study of human body systems. Their study will include an introduction to regional anatomy, organ tissues, organ structure, homeostatic mechanisms, electrophysiology, general and systemic pathology and drug kinetics and drug dynamics. The student will apply these essential principles while focusing on the integumentary system and the musculoskeletal system. They will also acquire laboratory skills in anatomical and histological procedures, the use of data acquisition software for collection of human physiological data, and sample diagnostic testing and its use of cellular and molecular experimental tools.

Prerequisites: BIOL 2321, BIOL 2320, BIOL 2421, and CHEM 2420

Not Transferable

BIOL 3165 **3 Credits**
Conservation Biology

Students will examine the science, economics, politics and non-governmental organization activities relating to topical issues in conservation biology on a local, regional and global scale. Students will focus on invasive species, endangered species, pollutants, habitat fragmentation, climate change, government regulation, wildlife biology and sustainable ecosystems. Students will explore these issues further in the field component of the course.

Prerequisites: BIOL 1110, BIOL 1210, BIOL 2322

Transferable (refer to transfer guide)

BIOL 3180 **3 Credits**
Life Science Research Methods

Students will learn how to conduct research using academic literature: within the community; or within the health care profession. They will also learn basic strategies on how to make informed and critical assessment of the validity of the vast array of information available on the internet. Students will explore research paradigms, such as exploratory, descriptive, and explanatory research.

Prerequisites: BIOL 1210 and MATH 2335

Attributes: QUAN

Transferable (refer to transfer guide)

BIOL 3215 **4 Credits**
Zoology

Students will investigate animal diversity with an emphasis on the evolutionary relationships and unifying characteristics within and among extant animal taxa. Students will survey major invertebrate and vertebrate taxa in the context of ecological niche diversity, functional morphology, and comparative anatomy, by classroom lectures, observation of live specimens, and dissection. Students will further explore animal diversity and unifying characters among animal taxa by learning about fossil evidence from the Cambrian explosion, Cretaceous-Tertiary extinction and other major events in animal evolution.

Prerequisites: BIOL 1110, BIOL 1210 and BIOL 2322

Transferable (refer to transfer guide)

BIOL 3225 **4 Credits**
Biology of Plants: An Ecological and Evolutionary Perspective

Students will investigate the structure, function, classification and systematics of plants. They will learn about the evolutionary origins, adaptational trends of plants and ecological roles of plants. They will acquire skills in plant identification. They will learn to design and conduct observational and experimental studies of plant biology.

Prerequisites: BIOL 2322

Not Transferable

BIOL 3320 **4 Credits**
Molecular Genetics

Students will learn mechanisms of gene regulation, both inherited and epigenetic, primarily in eukaryotic organisms. They will study the fundamentals of genomics. They will learn the concepts underlying the most commonly used molecular biology laboratory techniques. In the laboratory, students will conduct experiments using molecular biology techniques including bacterial plasmid transformation, gel electrophoresis and polymerase chain reaction. They will learn how to work with model organisms for investigating inheritance and gene expression.

Prerequisites: All of: BIOL 1110, BIOL 1210, BIOL 2320

Transferable (refer to transfer guide)

BIOL 3321 **4 Credits****Advanced Cell and Molecular Biology**

Students will build on concepts covered in Cell and Molecular Biology (BIOL 2321) and explore advanced concepts associated with cell and molecular signalling. They will learn about topics including regulation of gene expression, cell to cell signalling, signalling between cells and the extracellular matrix, immunology, cell cycle regulation, apoptosis, and cancer. Students will be required to read and interpret current publications in these subject areas. Students will participate in labs focusing on cell culture and involve the use of advanced cell and molecular techniques such as Western Blot analysis, fluorescent labeling and microscopy, and cell transfection with Green Fluorescent Protein (GFP).

Prerequisites: BIOL 2321, BIOL 2421, and CHEM 2420

Transferable (refer to transfer guide)

BIOL 4160 **4 Credits****Human Anatomy and Physiology II**

The students will apply essential principles and processes of anatomy, histology, physiology and general pathology to the study of human cardiovascular and respiratory systems. Their study will include anatomical and physiological investigations of normal organ activity, pathophysiological descriptions of organ and tissue dysfunctions and analysis of drug categories used for treatment. The students will investigate organ and tissue structure and function using laboratory techniques such as anatomical and histological procedures, data acquisition software, diagnostic tools and basic cell/molecular experimental design.

Prerequisites: BIOL 3160

Not Transferable

BIOL 4260 **4 Credits****Human Anatomy & Physiology III**

The students will apply essential principles and processes of anatomy, histology, physiology and general pathology to the study of human gastrointestinal, urinary and nervous systems. Their study will include anatomical and physiological investigations of normal organ activity, pathophysiological descriptions of organ and tissue dysfunctions and analysis of drug categories used for treatment. The students will investigate organ and tissue structure and function using laboratory techniques such as anatomical and histological procedures, data acquisition software, diagnostic tools and basic cell/molecular experimental design.

Prerequisites: BIOL 3160

Not Transferable

BIOL 4360 **4 Credits****Human Anatomy & Physiology IV**

The students will apply essential principles and processes of anatomy, histology, physiology and general pathology to the study of the human immune system, reproductive systems and prenatal development. Their study will include anatomical and physiological investigations of normal organ activity, pathophysiological descriptions of organ and tissue dysfunctions and analysis of drug categories used for treatment. The students will investigate organ and tissue structure and function using laboratory techniques such as anatomical and histological procedures, data acquisition software, diagnostic tools and basic cell/molecular experimental design.

Prerequisites: BIOL 3160 and BIOL 3321

Not Transferable