



Biology (BIOL) 204

Principles of Biology I (Revision 8)

Status: Replaced with new revision, see the [course listing](#) [↗](#) for the current revision **✖**

Delivery mode: [Individualized study online](#) [↗](#) or [Grouped study](#) [↗](#) with [eText](#) [↗](#), and a [Home Lab](#) [↗](#). This course is charged a [lab fee](#) [↗](#).

Credits: 3

Area of study: Science

Prerequisites: None. Senior-level high school biology is strongly recommended.

Precluded: None

Challenge: BIOL 204 is not available for challenge.

Faculty: [Faculty of Science and Technology](#) [↗](#)

Overview

Biology 204: Principles of Biology I is an introductory course in general biology for BSc. students and the first of two introductory biology courses that will prepare students for second-year biology courses. It is designed to help students learn more about the nature of life, topics include the nature of science, enzymes, cells, cellular respiration, photosynthesis, classical genetics, DNA structure and replication, gene structure and expression, regulation of gene expression, and molecular biology.

Outline

After an introduction about the nature of science, BIOL 204 covers four units:

- Unit 1: Cell Biology
- Unit 2: Bioenergetics
- Unit 3: Classical Genetics
- Unit 4: Molecular Genetics

The material covers the following chapters in the course textbook:

- Chapter 1: Light and Life
- Chapter 2: The Cell: An Overview
- Chapter 3: Defining Life and Its Origins
- Chapter 4: Energy and Enzymes
- Chapter 5: Cell Membranes and Signalling
- Chapter 6: Cellular Respiration
- Chapter 7: Photosynthesis
- Chapter 8: Cell Cycles
- Chapter 9: Genetic Recombination
- Chapter 10: Mendel, Genes, and Inheritance
- Chapter 11: Genes, Chromosomes, and Human Genetics
- Chapter 12: DNA Structure, Replication, and Organization


- Chapter 13: Gene Structure and Expression
- Chapter 14: Control of Gene Expression
- Chapter 15: DNA Technologies
- Chapter 16: Genomes and Proteomes

Learning outcomes

Upon successful completion of this course, you should be able to

- explain that biology is the science of living organisms based on the scientific method, which is a unique method of exploration that uses open-ended inquiry
- describe cells as the basic units of life, explain cell theory, and point out the fundamental differences between pro- and eukaryotes, as well as the roles of membranes and organelles
- explain that all organisms are dependent on a steady supply of energy and that respiration and photosynthesis are some of the major metabolic pathways
- describe how enzymes play a crucial role as catalysts in all processes of the cell
- describe the key concepts of classical genetics including cell division, gene recombination and Mendelian principles as well as chromosomal theory
- describe in detail DNA structure and replication, as well as gene expression by transcription and translation as fundamental processes of molecular biology
- explain why gene expression requires a tight regulation at several levels and point out some examples for modern DNA technologies

Evaluation

To **receive credit** for BIOL 204, you must achieve a course composite grade of at least **“D” (50 percent)** , a minimum of 50 percent for the composite lab activities, and a grade of at least 50 percent on the final examination. The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	9%
Assignment 2	9%
Assignment 3	9%
Assignment 4	9%
Lab Report	9%
Essay	8%
Lab Results	7%
Midterm Exam	15%
Final Exam	25%
Total	100%



The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the [Exams and grades](#) section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#).

Materials

Russell PJ, Hertz PE, McMillan B, Fenton MB, Addy H, Maxwell D, Haffie T, Milsom B. 2016. *Biology: Exploring the diversity of life*. 3rd Canadian ed.

eText

Registration in this course includes an electronic textbook. For more information on **electronic textbooks** , please refer to our **eText Initiative site** .

Mind Tap is an online resource provided by the publisher.






Other Resources

Home Lab Kit. All other learning resources will be available online.

Special Course Features

The *Home Lab Kit* supplies most of the materials used for the home labs. The student will, however, have to supplement the Home Lab Kit with some common kitchen items or supplies.

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services](#) 
- › [Biology Lab Resources](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

