BIOL-201 – Cell Biology

University Arts and Science

Effective Term & Year: Fall 2025
Course Outline Review Date: 2030-03-01

Program Area: Math and Sciences

Description:

This course studies the relationship between cell structure and cell function. The structure/function of the cell membrane and most organelles are covered in detail. Topics also include the evolution of the eukaryotic cell, cell movements, and cell reproduction. An introduction to cytogenetics is also presented. The material in Biology 201 is an integral part of an undergraduate biological sciences program and is especially appropriate for students interested in health-related sciences, microbiology, genetics, developmental biology, biochemistry, botany, zoology, and general biology.

Program Information:

This course can be used as either a required course or an elective in several University Studies Programs. Refer to the College Program Guide for additional information.

Delivery Methods: On-campus (Face-to-Face)

Credit Type: College of the Rockies Credits

Credits: 3

Course type/s: Lab Sciences, Sciences

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	45
Seminar/Tutorials	

Laboratory/Studio	45
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	90

Course Requisites:

- Complete all of the following
  - Completed the following:
    - BIOL101 – Introduction to Biology 1 (3)
    - BIOL102 – Introduction to Biology 2 (3)
  - Completed or concurrently enrolled in:
    - CHEM101 – Fundamentals of Chemistry 1 (3)

Prior Learning and Recognition: Yes

Students are able to request formal recognition of their prior learning or experience outside the classroom. Challenge examination, portfolio-assisted assessment, work-based assessment or a combination of assessments that is appropriate to identify, assess, and recognize prior skills, competencies, and knowledge to achieve course credit. Tuition fees apply, refer to Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR) or contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at other BC institutions, please see http://www.bctransferguide.ca. All requests for course transfer credit from institutions in BC or elsewhere should go to the College of the Rockies Enrollment Services office.

Textbook Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

1. Hardin, G. Bertoni and L.J. Kleinsmith. *Becker's World of the Cell 10th ed.,*Pearson, 2022.

Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.

Learning Outcomes:

Upon the successful completion of this course, students will be able to

- compare and contrast structures of prokaryotic and eukaryotic cells and understand the significance of these differences in patterns of evolution and treatment of disease;
- investigate the ethical issues surrounding scientific achievements that have occurred at the expense of marginalized individuals or that have resulted in rigorous moral debate;
- relate the general structure and chemical characteristics of the five major groups of molecules important to life (water, carbohydrates, lipids, proteins, nucleic acids) to their function in cellular processes and cellular structure;
- relate the function of cells to the structure of the cell and the quantity, location, and function of organelles within them;
- identify the components of the cell cycle or the process of programmed cell death that are malfunctioning in some cancer cells; and
- discuss the specific roles each organelle and system play in maintaining homeostasis at the cellular level and relate the malfunction of these organelles to disease.

LAB LEARNING OUTCOMES

- use the scientific method to analyze and write up the results of an experiment;
- use common glassware and instruments such as micropipettes, volumetric pipettes, and graduated pipettes and determine what type of glassware is most appropriate for an experiment;
- differentiate between different microscopy techniques such as fluorescence microscopy, brightfield and dark field microscopy, and phase contrast microscopy;
- separate cellular components via cellular fractionation;
- practice aseptic technique; and
- culture eukaryotic cells and determine cell viability under varying conditions.

Course Topics:

- Structural Organization of Cells
- Biological Molecules
- From Molecules to Cells
- Membrane Structure and Function
- The Endomembrane System
- Cell Movements
- Photosynthesis
- The Cell Cycle
- Signal Transduction
- Cancer

See instructor Syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face)

Assessment Type	% of Total Grade
Lecture – Midterm Tests	30%
Lecture – Final Exam	35%
Lab – Laboratory Exam	10%
Lab – Assignments, Reports and Laboratory book	25%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Evaluation Notes: A grade of “D” grants credit, but may not be sufficient as a prerequisite for sequential courses.

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a “0” on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.