BIOL-091 – Biology – Provincial Level (Ecology)

College Preparation and Upgrading

Effective Term & Year: Fall 2026
Course Outline Review Date: 2031-03-01

Program Area: Upgrading for Academic and Career Entry

Description:

Biology 091 explores the principles of biology and ecology, focusing on cellular processes, bioenergetics, and the anatomy of plants and animals. Topics include gene expression, membrane transport, cellular respiration, and the relationship between photosynthesis and respiration. Students will also study population dynamics, energy flow, and community interactions, exploring how biodiversity enables adaptation and the challenges to biome integrity. Through lab and/or fieldwork, students will develop practical skills and gain a deep understanding of the connections between organisms and their environments.

Program Information:

This course is one of several UACE courses for adults who require it as a prerequisite course for program entry, to upgrade their skills and confidence to pursue additional education, and/or obtain an Adult Graduation Diploma.

Delivery Methods: Directed/Guided Studies

Credit Type: ABE Credits

Credits: 0

Course type/s:

Instructional Activity and Hours:

Activity	Hours

Classroom, Directed Studies or Online Instruction	90
Seminar/Tutorials	
Laboratory/Studio	
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	90

Course Requisites:

None

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 either British Columbia or Alberta institutions, please see https://www.bctransferguide.ca/ or https://transferalberta.alberta.ca . For more transfer credit information, please visit https://www.cotr.bc.ca/Transfer

All requests for course transfer credit from institutions in British Columbia or elsewhere should go to the College of the Rockies Enrollment Service office.

Textbook Resources:

Textbook selection may change from year to year. At the course outline effective date, course material included chapters from the following open educational resources (OER):

Molnar, C., & Gair, J. (2015). *Concepts of biology – 1st Canadian edition*. Adapted from OpenStax. Rice University. Retrieved from https://opentextbc.ca/biology/

Clark, M. A., Douglas, M., & Choi, J. (2018, March 28). *Biology*. OpenStax. Rice University. Retrieved from https://openstax.org/details/books/biology-2e.

Miller, C. (2020). *College human biology: An adaptation of the CK-12 Foundation textbook*. Thompson Rivers University. Adapted from *College human biology* by J. Brainard & R. Henderson, 2016, CK-12 Foundation. https://www.ck12.org/book/ck-12-human-biology/

Refer to the instructor's syllabus for the resources used each term.

Learning Outcomes:

College of the Rockies Biology 091 is articulated as Provincial Biology (Ecology) in the Adult Basic Education system (ABE) in British Columbia and Yukon.

All Biology 091 – Provincial Biology (Ecology) learning outcomes follow those outlined in the current edition of Adult Basic Education: A Guide to Upgrading in British Columbia's Public Post-Secondary Institutions – An Articulation Handbook. https://www.bctransferguide.ca/transfer-options/adult-basic-education/past-abe-guides/ (2024-2025 ABE Articulation Guide).

A. Cell Biology

- Explain the role of molecules, including water, carbohydrates, proteins, lipids, and nucleic acids
- Describe major structures and functions of cells and their components, including the basic mechanisms of
    - Gene expression
    - Membrane transport
    - DNA replication
- Describe the role of enzymes and their importance to cellular processes
- Outline the processes of cellular respiration
    - Describe and compare mitosis and meiosis

B. Bioenergetics

- Outline the processes of photosynthesis and cellular respiration and their relationship to one another.

C. Plant Anatomy and Physiology

- Describe the major plant tissue types and their functions
- Describe the functions of plant control and reproductive systems

D. Animal Anatomy and Physiology

- Apply the concept of homeostasis
- Demonstrate knowledge of integration of tissues, organs and systems
- Identify structures and describe functions of the following systems:
- Respiratory system
- Cardiovascular system
- Skeleton-muscular system
- Reproductive system
- Nervous and sensory systems

E. Ecology

- Use fundamentals of classification to identify organisms
- Explain how plant and animal diversity enables adaptation to environments
- Explain the principles of population dynamics: population growth, density, distribution, and regularity
- Explain ecosystem dynamics: energy flow and nutrient cycling
- Explain community dynamics, including community structure, diversity, and interspecific relationships
- Demonstrate knowledge of the challenges to biome integrity

Laboratory Skills

All Provincial Biology courses must include a minimum of seven dedicated laboratory and/or fieldwork activities. The learning outcomes for these are described in the overall learning outcomes for biology.

Course Topics:

A. Cell Biology

- Biomolecules, Cell Structure, Gene Expression, Enzymes, Respiration, Mitosis & Meiosis

B. Bioenergetics

- Photosynthesis and Respiration

C. Plant Anatomy

- Plant Tissues and Reproduction

D. Animal Anatomy

- Homeostasis, Organ Systems

E. Ecology

- Classification, Adaptations, Population & Ecosystem Dynamics

Lab Skills

- Microscopy, Dissections, Experiments

See instructor’s syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: Directed/Guided Studies

Assessment Type	% of Total Grade
Unit Tests and/or Midterm Exams	30%
Unit Quizzes and Assignments	20%
Lab Report(s) and Lab Assignments	15%
Lab Exam(s)	5%
Final Exam	30%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=95	94-90	89-85	84-80	79-75	74-70	69-65	64-60	59-55	54-50	<50

Evaluation Notes Comments:

Please see the instructor’s syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments, and use of electronic aids.

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.