



## Introduction to Biology 1 – BIOL 101

University Studies Program

### Course Outline

COURSE IMPLEMENTATION DATE: Pre 1998  
OUTLINE EFFECTIVE DATE: January 2021  
COURSE OUTLINE REVIEW DATE: September 2026

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#### GENERAL COURSE DESCRIPTION:

This course is an introduction to the structure and function of organisms with particular reference to molecular, biochemical and physiological aspects of the living world. Designed for students seeking a degree or diploma in a field of science or technology, BIOL 101, with BIOL 102, lays the foundations on which the higher-level courses in Biology are based. It is also suitable as an elective course for general interest or arts students.

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**Program Information:** BIOL 101 and BIOL 102 can be used as lab science courses in an Associate of Arts or an Associate of Science degree at COTR.

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**Delivery:** This course is delivered face-to-face.

**COTR Credits:** 3

**Hours for this course:** 90 hours

#### Typical Structure of Instructional Hours:

Instructional Activity	Duration
Lecture Hours	45
Seminars / Tutorials	
Laboratory / Studio Hours	45
Practicum / Field Experience Hours	
Other Contact Hours	
<b>Total</b>	<b>90</b>

#### Practicum Hours (if applicable):

Type of Practicum	Duration
On-the-job Experience	N/A
Formal Work Experience	N/A
Other	N/A
<b>Total</b>	

**Course Outline Author or Contact:**

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Signature

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**APPROVAL SIGNATURES:**

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Department Head Signature

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Dean Signature

EDCO

Valid from: January 2021- September 2026

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Education Council Approval Date

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**COURSE PREREQUISITES AND TRANSFER CREDIT:**

**Prerequisites:** Either Biology 12, Anatomy & Physiology 12, or BIOL 090, or equivalent. Life Sciences 11 and Chemistry 12 are Highly recommended

**Corequisites:** None

**Flexible Assessment (FA):**

Credit can be awarded for this course through FA  Yes  No

Learners may request formal recognition for flexible assessment at the College of the Rockies through one or more of the following processes: External Evaluation, Worksite Assessment, Demonstration, Standardized Test, Self-assessment, Interview, Products/Portfolio, Challenge Exam. Contact an Education Advisor for more information.

**Transfer Credit:** For transfer information within British Columbia, Alberta and other institutions, please visit <http://www.cotr.bc.ca/Transfer>.

Students should also contact an academic advisor at the institution where they want transfer credit.

**Prior Course Number:** N/A

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## Textbooks and Required 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:

Raven P, Johnson G, Mason K, and Losos J. 2017. *Biology*. 12<sup>th</sup> ed. McGraw Hill.

Biology 101 Lab Packet (available at the COTR bookstore)

*Please see the instructor's syllabus or check COTR's online text calculator*

<http://go.cotr.bc.ca/tuition/tCalc.asp> for a complete list of the currently required textbooks.

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## LEARNING OUTCOMES:

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

- Conduct basic research and present results using established scientific research methods, including use of relevant databases, interpretation of scientific/technical information, and proper citation techniques;
- Evaluate, validate and discuss research results in a professional manner that adheres to discipline specific processes;
- Recognize and describe the role that biology plays in everyday life;
- Demonstrate knowledge of and follow the steps of the scientific process;
- Demonstrate a basic knowledge of taxonomic groups, origin of species and diversity within each of the taxonomic groups;
- Explain relationships (structural/functional) at cellular and organismal levels of organization;
- Classify and describe the unique structure and function of the four groups of macromolecules and how it is related to their properties within cells;
- Demonstrate a basic understanding of chemical bonds, molecules, compounds and reactions common in living systems;
- Explain the unique properties of water that allow it to support life;
- Demonstrate an understanding of general biochemistry and metabolism in cells;
- Explain the importance of energy transformations and energy coupling in living systems;
- Demonstrate an understanding of general structure and function of the cell and the organelles within cells;
- Demonstrate an understanding of the structure and function of membranes, various mechanisms of transport used to move molecules across cell membranes;
- Outline cellular respiration and photosynthesis pathways and explain why these processes are important to living organisms;
- Describe and explain the role of growth regulators in the control of plant growth, development and physiology;
- Demonstrate an understanding of physiological divisions of tissues and cell types, organ functioning and organ systems in plants and animals, and mechanisms of homeostasis in animals;
- Explain evolutionary relationships among major taxa;
- Recognize and explain challenges of life on land in both plants and animals;

- Demonstrate working knowledge of standard laboratory practices, procedures and safety protocols, including proper use of equipment; observation, measurement and sampling techniques; recording, statistical analysis and presentation of data;
- Identify types of cells from different taxonomic groups;
- Demonstrate correct procedures of microscopy (compound and stereo microscopes). Prepare wet mount slides with live organisms; and
- Conduct experiments and use analytical techniques to demonstrate properties of macromolecules, cellular respiration, photosynthesis, plant control systems.

## **COURSE TOPICS:**

### **Introduction and Scientific Experimentation**

- Diversity of life – overview of taxonomic groups and the origin of species, unifying characteristics and basic knowledge of the diversity within each of the taxonomic groups
- The Scientific Method
- What defines a living organism
- Unifying themes in biology

### **Chemical Basis of Life and Basic Biochemistry**

- Chemistry of water – unique properties of water that allow it to support life
- Biological molecules – structure, function, formation and basic chemical formulas (Proteins, nucleic acids, carbohydrates, lipids)
- Enzymes (functions and mechanisms of action)
- Energy and metabolism (anabolic and catabolic pathways, significance of ATP)

### **Cell Biology**

- Cell structure and function
- Membranes and Cell Physiology
- Metabolism and enzymes
- Location and processes of cellular respiration
- Cellular Respiration

### **Plant Biology**

- Location and processes of photosynthesis
- Plant evolution – evolutionary patterns from non-vascular to seedless vascular to seed plants; evolution and adaptations in angiosperms
- Challenges of life on land
- Plant form and function
- Plant nutrition and transport processes
- Plant hormones and sensory systems
- Plant reproduction and development

### **Animal Biology** - Evolutionary patterns in animals how various organisms accomplish

- Body and regulation
- Nutrition and digestion
- Musculoskeletal systems (support and movement)

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

## EVALUATION AND ASSESSMENT:

Assignments	% Of Total Grade
Lab Assignments and Activities	37%
Midterms	35%
Final Exam	<u>28%</u>
Total	100%

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.

Notes: Retests for failed exams are not available in this course.  
Late assignments are penalized by 10% per each 24-hour period.

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## EXAM POLICY:

Students must attend all required scheduled exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled exam without approval will be given a grade of "0" for the exam.

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## COURSE GRADE:

Course grades are assigned as follows:

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
Mark (Percent)	≥ 90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	< 50

A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

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## ACADEMIC POLICIES:

See [www.cotr.bc.ca/policies](http://www.cotr.bc.ca/policies) for general college policies related to course activities, including grade appeals, cheating and plagiarism.

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**COURSE CHANGES:**

Information contained in course outlines is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational, employment and marketing needs. The instructor will endeavour to provide notice of changes to students as soon as possible. The instructor reserves the right to add or delete material from courses.