

COURSE OUTLINE		
<b>TERM:</b> Summer 2022	<b>COURSE NO:</b> BIOL 109	
<b>INSTRUCTOR:</b>	<b>COURSE TITLE:</b> INTRODUCTORY BIOLOGY	
<b>OFFICE:</b> LOCAL:	<b>SECTION NO(S):</b>	<b>CREDITS:</b> 5.5
<b>E-MAIL:</b>		
<b>OFFICE HOURS:</b> See course eLearn site		

Capilano University acknowledges with respect the Lil'wat, Musqueam, Squamish, Sechelt, and Tsleil-Waututh people on whose territories our campuses are located.

### COURSE FORMAT

Each week there are 4.5 hours of class time, three lab hours plus an additional 1.5 hours of supplemental activity delivered through on-line or other activities for a 15 week semester, which includes two weeks for final exams.

### COURSE PREREQUISITES/COREQUISITES

None

### CALENDAR DESCRIPTION

This course is intended for students planning to continue in biology or related disciplines, but who do not have appropriate chemistry pre-requisites for BIOL 110. This course also provides additional in-class assignments and exercises to support students with limited experience in the biological sciences, or those seeking additional learning support. Topics are the same as in BIOL 110, with additional coverage of basic chemistry, cell biology and the scientific method. Students should note that BIOL 109 laboratory classes will be identical and shared with BIOL 110 laboratory courses.

### COURSE NOTES

BIOL 109 is an approved Science course.

BIOL 109 is an approved Laboratory Science course.

BIOL 109 is an approved Science and Technology Course for Cap Core requirements.

BIOL 109 is equivalent to BIOL 110 and BIOL 106/107. Duplicate credit will not be granted for this course and BIOL 110 or BIOL 106/107.

### REQUIRED TEXTS AND/OR RESOURCES

**Textbook:** Urry, L., M. Cain, et al. 2019. *Campbell Biology in Focus*. (3rd ed.) USA: Pearson Education  
 Etext and Mastering Biology are **required**.

The access codes for these digital resources can be purchased via the Capilano University Bookstore or via the bookstore's website <https://books.capilanou.ca/>

\*Should students wish to also acquire a print loose-leaf textbook they can order and purchase this additional resource via the Mastering Biology component for an additional \$20.00

**Lab Manual:** Capilano University (2021). *Biology 110: General Biology I Lab Manual (required)*.

**Technology:** Students require access to an electronic learning device and reliable internet connection for the duration of this course.

## COURSE STUDENT LEARNING OUTCOMES

**On successful completion of this course, students will be able to do the following:**

- Apply the scientific method in experimental design to address hypotheses.
- Use an understanding of atoms and bond formation to predict the properties of biomolecules.
- Describe how evolution by natural selection can generate structures related to their function.
- Summarize and explain the origin and function of the cell and cellular structures.
- Apply an understanding of genetics and the central dogma to explain information flow in cells and the process of gene expression.
- Explain the importance of energy transformations and energy coupling in living systems.
- Analyse and solve problems involving Mendelian and non-Mendelian inheritance.
- Plot and interpret experimental data to derive reasoned conclusions.
- Critically evaluate statements concerning the biological sciences made by scientists and the popular media.
- Behave safely in a laboratory environment and show proper technique when handling microscopes and other equipment.

**Students who complete this Science and Technology course will be able to do the following:**

- Apply numerical and computational strategies to solve problems.
- Assess the cultural, economic, and political effects of technology.
- Evaluate scientific information (e.g., distinguish primary and secondary sources, assess credibility and validity of information).
- Demonstrate how a problem, concept, or process can be modelled numerically, graphically, or algorithmically.
- Explain how scientific inquiry is based on investigation of evidence and evolves based on new findings.
- Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results.

## COURSE CONTENT

Topics for detailed discussion will be selected from the textbook chapters listed below.

Weeks	Topics	Chapters
1	Introduction <ul style="list-style-type: none"> <li>▪ Themes in biology</li> <li>▪ Scientific method</li> </ul>	1
2-3	Biochemistry <ul style="list-style-type: none"> <li>▪ Atoms and Bonding</li> <li>▪ pH and Equilibria</li> <li>▪ Organic chemistry</li> <li>▪ Macromolecules</li> </ul>	2-3
4	Cell Biology <ul style="list-style-type: none"> <li>▪ Microscopy</li> </ul>	4

Weeks	Topics	Chapters
	<ul style="list-style-type: none"> <li>▪ Cell structure</li> </ul>	
5-6	Molecular Biology <ul style="list-style-type: none"> <li>▪ DNA structure and replication</li> <li>▪ Gene expression</li> </ul>	13-14
6-7	Membranes <ul style="list-style-type: none"> <li>▪ Plasma membrane</li> <li>▪ Diffusion and electrochemical gradients</li> <li>▪ Transport and signalling</li> </ul>	5
8-9	Metabolic processes <ul style="list-style-type: none"> <li>▪ Introduction to metabolism</li> <li>▪ Cellular respiration</li> <li>▪ Photosynthesis</li> </ul>	6-8
10-11	Cell Division <ul style="list-style-type: none"> <li>▪ Cell cycle and cellular reproduction</li> <li>▪ Meiosis and sexual life cycles</li> </ul>	9-10
12-13	Heredity <ul style="list-style-type: none"> <li>▪ Mendel's laws</li> <li>▪ Extensions of classical genetics</li> </ul>	11-12
14-15	Final Exam Period	

## EVALUATION PROFILE

Final grades for the course will be computed based on the following schedule:

Term Work (Quizzes, Midterm)	*30%
Comprehensive Final Exam	30%
Lab	**30%
Participation and Assignments	***10%
<b>TOTAL</b>	<b>100%</b>

- \* A graded assessment will be returned to students prior to the withdrawal date. Weighting of grades and dropping of lowest quiz marks will be consistent across all sections of the course.
- \*\* **In order to pass the course, students must receive at least 50% on both the lecture and laboratory portions of the course.**
- \*\*\* The participation grade will be based on attendance and completion of in-class and/or out-of-class assignments.

Specific dates and details regarding the Evaluation Component will be provided by the instructor.

## GRADING PROFILE

Letter grades will be assigned according to the following guidelines:

A+ 90 - 100%	B+ 77 - 79%	C+ 67 - 69%	D 50 - 59%
A 85 - 89%	B 73 - 76%	C 63 - 66%	F 0 - 49%
A- 80 - 84%	B- 70 - 72%	C- 60 - 62%	

Students should refer to the University Calendar for the effect of the above grades on grade point average.

### **INCOMPLETE GRADES**

Grades of Incomplete "I" are assigned only in exceptional circumstances when a student requests extra time to complete their coursework. Such agreements are made only at the request of the student, who is responsible to determine from the instructor the outstanding requirements of the course.

### **LATE ASSIGNMENTS**

Assignments are due at the beginning of the class on the due date listed. If you anticipate handing in an assignment late, please consult with your instructor beforehand.

### **MISSED EXAMS/QUIZZES/LABS, ETC.**

Make-up work is given at the discretion of the instructor. Normally, a score of zero will be given for a missed exam, test, quiz, lab, etc. In certain exceptional situations, the student will be permitted to write a make-up test, defer the lab to a later date or to replace the score by other marks (see below). The date and timing of any make-up option is at the discretion of the instructor. It may not be possible to reschedule certain labs, tests or other activities.

A score of zero may be avoided when the student meets all of the following conditions:

1. Circumstances are beyond the control of the student which resulted in the exam, test, quiz, lab, etc. to be missed. Such circumstances include serious illness or injury or severe personal crises. They do not include forgetting about the test, lack of preparation for the test, or work-related or social obligations. The student has notified the instructor (or the School of STEM office staff, if the instructor is not available) about the missed exam, test, quiz, lab, etc. Such notification must occur in advance or, at the latest, on the day of the exam, test, quiz, lab, etc.
2. Evidence of the circumstances may be requested. Proper medical documentation of illness or injury may be required from a doctor.
3. The student has been fully participating in the course up until the circumstances that prevented the writing of the exam, test, quiz, lab, etc. Fully participating means regularly attending labs and lectures and turning in assignments in the course.

### **FINAL EXAM PERIOD**

Students should note that the final exam period is from **[insert final exam period dates here]**, and that they can expect to write exams at any time during this period. Individual exam times will not normally be rescheduled because of holidays, work, or other commitments. While efforts are made to spread exams throughout the exam period, an individual's particular course combination may result in exams being scheduled close together, or spread widely through the entire exam period.

### **ATTENDANCE**

Regular attendance is essential in online classes. If classes are missed, it is the student's responsibility to become aware of all information given in the lectures and laboratories, including times of examinations and assignment deadlines.

## ENGLISH USAGE

Students are expected to use correct standard English in their written and oral assignments, exams, presentations and discussions. Failure to do so may result in reduced grades in any part of the Evaluation Profile.

## ELECTRONIC DEVICES

Students may use electronic devices during class for note-taking, calculations and in-class research.

## ON-LINE COMMUNICATION

Outside of the classroom, instructors will (if necessary) communicate with students using their official Capilano University email, eLearn, WebEx, and/or Zoom; please check all platforms regularly. Official communication between Capilano University and students is delivered to students' Capilano University email addresses only.

## UNIVERSITY OPERATIONAL DETAILS:

### Tools for Success

Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: <https://www.capilanou.ca/student-life/>

**Capilano University Security: download the CapU Mobile Safety App**

### Policy Statement (S2009-06)

Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Cheating and Plagiarism, Academic Probation and other educational issues. These and other policies are available on the University website.

### Academic Integrity (S2017-05)

Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy S2017-05 for more information: <https://www.capilanou.ca/about-capu/governance/policies/>

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

**Academic dishonesty** is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

**Cheating:** Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:

- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

**Fraud:** Creation or use of falsified documents.

**Misuse or misrepresentation of sources:** Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

**Plagiarism:** Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

**Self-Plagiarism:** Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

**Prohibited Conduct:** The following are examples of other conduct specifically prohibited:

- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

### **Sexual Violence and Misconduct**

All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence and Misconduct Policy and B.401.1 Sexual Violence and Misconduct Procedure (found on Policy page <https://www.capilanou.ca/about-capu/governance/policies/>)

### **Emergency Procedures**

Students are expected to familiarize themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.

**DEPARTMENT OR PROGRAM OPERATIONAL DETAILS:****PROFESSIONALISM**

Students should be able to demonstrate a professional attitude and behaviour: reliability, respect for and cooperation with colleagues, willingness to work calmly and courteously, respect for equipment and systems, and constructive response to criticism. The use of cellphones for non-academic purposes during lecture and lab sessions is prohibited. Students using cell phones inappropriately could be asked to leave the lecture hall or laboratory room by the instructor.

**LAB EXEMPTION POLICY FOR STUDENTS REPEATING COURSE**

If a student repeating the course has received 65% or better for the laboratory component of the course within the past three terms, they may apply for exemption from the lab. Students must obtain an exemption form from the Biology Laboratory Convenor or from the Coordinator of Biology. The exemption form should be completed with appropriate signatures and returned to the Biology Laboratory Convenor within the first week of classes. If students are exempted, their previous lab mark will be carried over in calculating their final mark for the course in the current term.

**TOOLS FOR SUCCESS**

For success in this course, students are expected to attend all lectures and laboratory sessions; come prepared to address topics presented; pre-read laboratory exercises; and complete assigned text book readings. For every one hour of lecture material presented, students should expect to spend at least two hours reviewing material and engaging with the study tools provided.