



UBC's Point Grey Campus is located on the unceded, traditional and ancestral territory of the x^wməθk^wəyəm (Musqueam).

This syllabus is a general representation of the course as previously offered and is subject to change.

BIOL 200 – Fundamentals of Cell Biology

General Course Syllabus (as of October 2023)

Course Description: Structure and function of plant and animal cells; membrane models, cytoplasmic organelles, biological information from gene to protein, the endomembrane system, secretion, intracellular digestion, endocytosis, transport processes, cytoskeleton and cell motility.

Course Format: Lecture and Tutorial

Credits: 3 credits

Prerequisites: Either (a) BIOL 112 and one of CHEM 123, CHEM 130; or (b) SCIE 001 or (c) 8 transfer credits of first-year BIOL and 6 credits of first-year CHEM or (d) one of BIOL 112 or BIOL 121 and a corequisite of one of CHEM 203 or CHEM 223.

Course Goals:

It is the goal of this course to teach you the basic principles of cell biology, experimental design, scientific logic, and problem solving. More specifically, we hope that by the end of the course you will be able to:

- Demonstrate understanding of the relationship between structure and function, at every level of cell biology (from individual macromolecules, to the cellular level).
- Recognize that all aspects of protein function (expression, regulation, modification, transport, activation, destruction) are ultimately encoded in its sequence, which itself is encoded in the DNA of the organism.
- Describe and interpret experimental data based on conceptual knowledge of cell biology.
- Formulate a scientific argument and defend it using logical reasoning and experimental evidence.
- Interpret current primary literature in cell biology and communicate key findings in writing.
- Articulate the importance of cell biology within the context of the 'bigger picture' of everyday life.

Course Materials:

Course Website: URL <http://www.canvas.ubc.ca>. For Canvas help, please see: <https://students.canvas.ubc.ca/help/>. Be advised that you are expected to check Canvas regularly. BIOL200 may make use of several features in Canvas that can push notifications to your inbox or mobile device. Turning these off may result in you missing important information. This will not be an acceptable excuse for missing important course communications.

eBook: BIOL200 has a set of free(!) online course notes which are available to you. You can find these as part of the BIOL200 Canvas site. These notes are sufficient for your success in BIOL200. If you wish, you may purchase an optional recommended textbook (below) to supplement your readings.

Optional Recommended Textbook: Alberts, Bray, Hopkins, Johnson, Lewis, Raff, Roberts & Walter – [ESSENTIAL CELL BIOLOGY](#), 6th ed., W. W. Norton (OR 5th ed.).

There are several options available to you for accessing this textbook. You may wish to purchase them secondhand directly from the UBC bookstore. There is also an equivalent electronic version sold by Norton (<https://wnorton.com/books/9781324033356>). Please note that we DO NOT require an access code for this textbook.

iClicker Cloud: You will need to set up an iClicker Cloud account (free!) to help you participate in in-lecture questions. For more information visit: <https://lthub.ubc.ca/guides/iclicker-cloud-student-guide/>.

Course Evaluation:

The breakdown of your BIOL200 grade will be as follows:

Examination Component*		
(Students must achieve 50% = 35/70 on this component to pass the course)		
Midterm	20%	(90 min)
Final	50%	2.5h during final exam period in December
Other Learning Activities		
(These scores will only be applied to the final grade once a 50% is achieved on the examination component)		
Pre-Readings (6 x 0.5%)	3%	Online quizzes for each unit, due before class, based on re-readings. Best 6 of 9.
Post-Unit Worksheets	5%	Worksheets due at the end of each unit. Best 6 of 9.
Tutorial Component	22%	See Tutorial Canvas Page for details

****IMPORTANT NOTES REGARDING FINAL GRADE CALCULATIONS:***

- In order to pass this course, you must achieve a passing grade on the Examination Component of the course. If you do not, your Other Learning Activity scores will not be applied to your final grade.
- No final grades between 45 and 50% will be awarded. The highest failing grade will be 45%.
- **'Hard work pays off' Policy:**
 - o If the student receives a grade on the final exam that is 20% higher than that which they received on their midterm, then the final exam will count for 60% of their final grade, and the midterm will only be worth 10%.
 - o You must write the midterm exam to apply this clause to your final mark.
 - o This alternate weighting only applies to exams that are written with academic integrity. We will not be applying this to any '0's as received as penalty for academic dishonesty.

Course and Examination Policies:

1) IN-CLASS POLICIES

Classes will be conducted in-class.

- During lecture time, students are expected to be prepared and take notes. Personal recordings of any kind (audio OR video, including photographs or videos on your phone) are not allowed, unless you have express permission beforehand from your instructor.
- Lectures will be recorded and posted to the Canvas course site. However we encourage that you attend and participate in the live lectures to help you stay on top of the BIOL 200 material.
- Your instructor may ask you to participate in various in-lecture activities, such as worksheets, iClicker questions, and discussion questions.
- We encourage you to register for iClicker Cloud (free!) to answer in-class questions.

2) EXAMINATION POLICIES

Exam format:

- The exams are common to all sections, and is **written in person**. The midterm and final exam will contain a combination of data analysis, short answer and synthesis questions.
- The final exam is cumulative, but there will be a strong emphasis on previously untested material and the remaining units of the course.

Exam guidelines:

- You may bring a single, double-sided page information sheet to the midterm and to the final. These sheets will be handed in with the exam. Please include your student name and number on these sheets.
- This memory aid must be **100% handwritten in your own handwriting, on a US letter-sized paper (8.5 X 11 inches)**. It cannot be a computer image or print-out of any sort, including scans or printouts of your own handwritten work. You may write on both sides of your information sheet, but you may not increase the surface area by adding post-its or other additional notes/pages.
- Students caught with memory aids that do not conform to these criteria will have their memory aid taken away during the exam and may not have it returned to them after the exam. Depending on the severity of the infringement, there may be further penalties.

Missing an exam:

- Students should make every effort to attend the midterm and final exam at the scheduled exam times.
- The **midterm exam** is an evening exam. Students with course conflicts or childcare concerns should identify themselves to their lecturer as soon as possible, in order to plan for exam rescheduling.

- The **final exam** is held during the official exam period at the end of term. Students who miss the final exam must apply to their faculty for a [standing deferral](#), and will write their final exam with the students taking the course in the following term.
- **Note:** Exam Hardship is when students have 3 exams that start AND end in a 24h period. An exam clash is when a student has 2 or more exams scheduled at the exact same time. In both of these cases, the student should first contact their lecturer to try and resolve the issue. For more information [please see the following link](#).

3) COPYRIGHT AND ACADEMIC INTEGRITY

Copyright and other considerations:

- All BIOL200 material that is provided through Canvas and Piazza is for the sole purpose of private study and research by the individual student. It may not be shared or sold for profit to any other individuals, companies, or websites by students (this includes Chegg, etc.). You do not own the copyright to this material, so you do not have the right to distribute it.

Academic honesty and plagiarism:

- A reminder that work that you submit (assignments & tests) **must be your own**. Written work must be in your own words, and sources must be appropriately cited. You may not submit work that has already been submitted elsewhere for credit, even if it is your own work. Your exams must be written individually, using only permitted resources/materials. Usage of any other resources will be investigated.
- Any attempt to pass off someone else's work as your own (including, but not limited to instances listed above) are considered to be acts of [Academic Misconduct](#) by the university. If academic dishonesty is suspected the incident will be reported to the Associate Head of Biology for further investigation, and there is the potential for severe penalties.
- We **do not** allow the use of any generative AI tools (e.g. CHATGPT and similar tools) to complete or help complete any assignments or assessments in this course. Usage of this would fall under academic misconduct.
- The usage of AI tools will hinder your development of essential skills in scientific writing and comprehension. Instead, we want you to practice writing on your own so that you can:
 - o Develop the skills to identify the key points out of a passage or paper
 - o Develop the skills on how to present information in a clear, concise, and pleasing manner to others
 - o Develop the skills to make statements and then support those statements with evidence
 - o Develop the ability to find appropriate references

Course Schedule:

Week	Unit	Lecture Topics	Tutorial Schedule
1		Imagine UBC – No Classes	No tutorials this week
	<u>Unit 1:</u> Introduction & Microscopy	1 - Introduction & Start of Unit 1	
2		2 - 1.2: Microscopy	Tutorial 1: Introduction + Experimental Design
		3 - 2.1: Features of Membranes	
3	<u>Unit 2:</u> Biological Membranes	4 - 2.2: The Lipid Bilayer	Tutorial 2: Problem Solving Unit 1
		5 - 2.2 & 2.3: Membrane Proteins	
4		6 - 2.3: Membrane Proteins	Tutorial 3: Connecting Scientific Ideas from Classroom to Research
		7 - 3.1: Nuclear Structure	
5	<u>Unit 3:</u> Nuclear Structure & Function	8 - 3.1: Protein Import into the Nucleus	Self-directed Tutorial 4: Problem Solving Unit 2 SDS-PAGE Experiments
		9 - 3.2: Chromatin & Chromosomes	
6		10 - 3.3: Gene Expression	Self-directed Tutorial 5: Problem Solving Unit 3 Nuclease Digestion Experiments
		11 - 3.3: Gene Expression	
7	<u>Unit 4:</u> Mitochondria & Chloroplasts	12 - 4.1 & 4.2: Intro & Protein Import, Mitochondria MIDTERM EXAM – Cover Units 1-3**	No tutorials this week Office hours remain scheduled
8		13 - 4.2 & 4.3: Mitochondria & Chloroplasts	Tutorial 6: Sci. Comm Workshop
		14 - 5.1: Intro & Protein Import into ER	
9	<u>Unit 5:</u> Endomembrane System	15 - 5.2: Vesicle Traffic	Tutorial 7: Sci Comm Q & A
		16 - 5.2: Vesicle Traffic & 5.3: Golgi	
10		17 - 5.4: Post-Golgi Traffic, Secretion	Tutorial 8: Problem Solving Unit 5 Golgi Experiments
		18 - 5.4: Lysosomes & 5.5: Endocytosis	
11		Midterm Break (No classes)	No tutorials this week Office hours remains scheduled
	<u>Unit 6:</u> Cytoskeleton	19 - 6.1: Intro & Cytoskeleton, Intermediate Filaments	Tutorial 9: Problem Solving Unit 6 Dynamic Instability
12		20 - 6.2: Microtubules	
		21 - 6.3: Microfilaments	
13	<u>Unit 7:</u> Cell Cycle	22 - 7.1: Cell Cycle & Checkpoints	Tutorial 10: Problem Solving Unit 7 Cell Cycle & Checkpoints
		23 - 7.2: Cell Cycle control	
14		24 - 7.2: Cell Cycle control (cont'd)	No tutorials this week
		25 - 7.3: Mitosis and cytokinesis	
Final Exam period – Cumulative FINAL EXAM TBD			

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University Policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence.

UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom.

UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances.

UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of how to access support are available on [the UBC Senate website](#).