

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

BIOL 362 – Cellular Physiology

General Course Syllabus (as of November 2020)

About the Course:

Course Description: BIOL 362 covers the cytoskeleton, cell dynamics, and regulation of cellular activities within multicellular organisms. The course combines content lectures, technology lectures, Canvas quizzes, and case studies. This content allows students to develop knowledge and skills in understanding both conceptual and practical cell biology-related problems. Students actively participate in in-class and/or Canvas discussions that count towards their participation.

Course Format: Lecture

Credits: 2

Pre-requisites: BIOL 200 and one of APBI 312, APBI 351, BIOL 260, BIOL 351, BIOL 352, BIOL 361, FRST 311.

Course Learning Objectives:

By the end of this course, students will be able to:

- Develop deep understanding of how molecules and organelles regulate cellular function (content lectures).
- Gain insights into how research technology is employed to study cellular function (technical modules).
- Integrate concepts and data to develop an ability to evaluate experimental results critically (case studies).
- Develop teamwork skills through discussion (case studies).

Textbooks and Additional Resources:

- Textbook: Alberts et al. Molecular Biology of the Cell, 6th ed, 2014, Garland Publishing. (Optional. Highly recommended for those who consider graduate study in the field of cell biology and developmental biology).
- Canvas: Course materials will be provided on-line using UBC's Canvas interface: canvas.ubc.ca (required)

Evaluation:

Assessment	Weight
Participation	10%
Canvas quizzes	10%
In-class case studies	15%
Midterm Exam	25%

Final Exam	40%
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Participation (10%):

Participation marks will be assessed based on the contributions to Canvas discussion, in-class discussion, Canvas quizzes.

Canvas Quizzes (10%):

Assignments to assess understanding of the lectures.

Case Studies (15%): Case studies are group assignments that will be conducted at the end of each module. Groups will be assigned by us by the week before the first case study. You will work in groups to interpret data in a scientific paper related to the current module. The best three of four marks will be used for the grade calculation.

Midterm exam (25%): The exam will be a combination of multiple choice and short answers (1 hour 15 minutes). Questions are based on the content lectures and technical lectures from the modules 1 and 2.

Final exam (40%): The final exam is during the exam period. The exam will test analytical skills based on provided data and learned concepts, as well as methodology. Questions will include multiple choice, short answer, and data analysis (2.5 hours). We will review critically important parts in the last lecture.

Course Policies:

Classroom Policy: We will have four case studies as group work, as described above. Please be aware that your classmates may be depending on your input for their grades. It is essential to be on time and prepared to work. If something comes up that forces you to be late or miss classes that are built around group work, please advise both your group mates and us as soon as possible.

Exam Policies:

- Students who anticipate missing the midterm for legitimate reasons must contact one of us as soon as possible.
- For the midterm and final exams, one hand written information sheet of 8.5 x 11" paper, double-sided, will be allowed. Memorizing facts is not the goal of this course, you must be able to use information to solve problems and defend your point of view using appropriate scientific evidence.
- If you miss the final exam you must apply for a deferred exam through your faculty's Dean's Office.

Schedule of Topics:

Lecture	Topic
1	Course introduction, Review of basic cell biology
2	Module 1-1: Cytoskeletal dynamics I
3	Module 1-2: Cytoskeletal dynamics II
4	Module 1-3: Motor proteins
5	Module 1-4: Cell Biology Techniques I (microscopy and digital data)
6	Module 1-5: Case study I
7	Module 2-1: Mitosis/meiosis and cytokinesis
8	Module 2-2: Cell cycle and checkpoint I
9	Module 2-3: Cell cycle and checkpoint II
10	Module 2-4: Cell Biology Techniques II (fluorescent reporters)
11	Module 2-5: Case study II and Review
12	Mid-term exam on Canvas
13	Module 3-1: Cell polarity
14	Module 3-2: Cell migration
15	Module 3-3: Mechanobiology I
16	Module 3-4: Extracellular matrix and Plant cell wall
17	Module 3-5: Cell Biology Techniques III (cell manipulation)
18	Module 3-6: Case study III
19	Module 4-1: Cell-cell junction
20	Module 4-2: Mechanobiology II
21	Module 4-3: Cell Biology Techniques IV (TBD)
22	Module 4-4: Morphogenesis
23	Module 4-5: Stem cell and regeneration
24	Module 4-6: Case study IV
25	Review
26	Review

Final Exam during exam period

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