



蘇州大學
Soochow University

BIO 347 Advanced Cell Biology

Summer 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

This course explore the molecular complexities of cellular biology. The emphasis is on fundamental processes, including membrane dynamics, signal transduction pathways, cytoskeleton dynamics, protein sorting, cell cycle control, apoptosis, nucleus organization, and research tools. Students obtain a comprehensive grasp of cellular mechanics through lectures and hands-on lab sessions, preparing them for jobs in biomedical research, biotechnology, and related industries.

Upon Completion of this Course, students will be able to:

1. Learn about cell communication, membrane dynamics, cytoskeletal function, protein sorting, and their functions in cellular physiology.
2. Examine cell cycle control, apoptotic mechanisms, and nucleus structure under healthy and diseased conditions.
3. Investigate biological processes using a variety of research tools, including microscopy and molecular biology.
4. Improve critical thinking abilities by synthesizing data, interpreting it, and using scientific reasoning.
5. Communicate findings effectively via written reports and oral presentations, essential for careers in biomedical research and biotechnology.

PREREQUISITES

BIO 145 Cell Biology

GRADING



Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
Quizzes	15 Points
Lab Reports	30 Points
Oral Presentations	15 Points
Midterm	20 Points
Final Exam	20 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Bruce Alberts, *Molecular Biology of the Cell*, 6th Edition, Garland Science, 2014.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Cell Chemistry and Bioenergetics Topic 2: Proteins Topic 3: DNA Replication, Repair, and Recombination Topic 4: How Cells Read the Genome: From DNA to Protein Assessments: Quiz#1 Lab Report#1



Module 2	Topics: Topic 5: Control of Gene Expression Topic 6: Visualizing Cells Topic 7: Internal Organization of the Cell: Membrane Structure Topic 8: Membrane Transport of Small Molecules and the Electrical Properties of Membranes Assessments: Quiz#2 Lab Report#2 Oral Presentation#1
Module 3	Topics: Topic 9: Intracellular Compartments and Protein Sorting Topic 10: Intracellular Membrane Traffic Topic 11: Energy Conversion: Mitochondria and Chloroplasts Topic 12: Cell Signaling Assessments: Midterm
Module 4	Topics: Topic 13: The Cytoskeleton Topic 14: The Cell Cycle Topic 15: Cell Death Topic 16: Cell junctions and the extracellular matrix Assessments: Quiz#3 Lab Report#3 Oral Presentation#2
Module 5	Topics: Topic 17: Development of Multicellular Organisms Topic 18: Stem Cells and Tissue Renewal Topic 19: Pathogens and Infection Topic 20: The Innate and Adaptive Immune Systems Assessments: Final Exam Oral Presentation#3

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.



If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed.



蘇州大學
Soochow University

The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.