



蘇州大學  
Soochow University

## BIO 145 Cell Biology

Fall 2023

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:** TBA

### COURSE OBJECTIVES

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This course is an in-depth exploration of cell biology with an emphasis on the molecular aspects of cell function. Main topics covered include protein structure and synthesis, gene expression and its regulation, cell replication, and the cell cycle. Students will gain a comprehensive understanding of the fundamental processes that govern cellular function and contribute to the growth, development, and maintenance of living organisms.

Upon completion of this course, students will be able to:

1. Describe the structure and function of biomolecules, especially proteins and nucleic acids.
2. Understand the principles of gene expression and its regulation.
3. Explain the processes of cell replication and the cell cycle.
4. Explain the interactions between cells and their environment and communication between cells.
5. Apply genetic concepts to real-world scenarios and problem-solving in biotechnology and research settings.

### PREREQUISITES

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BIO 100 Introduction to Biology

### GRADING

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



ITEM	POINTS
Lab Assignments	20 Points
Quizzes	20 Points
Midterm Exam	25 Points
Final Exam	35 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:

Gerald Karp, Janet Iwasa, Wallace Marshall, *Cell and Molecular Biology: Concepts and Experiments*, 8th Edition, Wiley, 2016.

### Recommended (Optional) Texts or Other Materials:

None

## COURSE TOPICS

MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Introduction and Course Overview Topic 2: Biomolecules and Cells Topic 3: Chemical Foundations Topic 4: Protein Structure and Function <b>Assessments:</b> Lab Assignment#1
Module 2	<b>Topics:</b> Topic 5: Nucleic Acids Topic 6: Structure and function of DNA and RNA Topic 7: Introduction to Carbohydrates Topic 8: Lipid Structure and Function <b>Assessments:</b>



	Quiz#1 Lab Assignment#2
Module 3	<b>Topics:</b> Topic 9: Cell Respiration and the Mitochondrion Topic 10: Photosynthesis and the Chloroplast Topic 11: Cytoplasmic Membrane Systems: Structure, Function, and Membrane Trafficking Topic 12: The Cytoskeleton and Cell Motility <b>Assessments:</b> Midterm Exam Lab Assignment#3
Module 4	<b>Topics:</b> Topic 13: The Nature of the Gene and the Genome Topic 14: Gene Expression: From Transcription to Translation Topic 15: Control of Gene Expression Topic 16: DNA Replication and Repair <b>Assessments:</b> Quiz#2 Lab Assignment#4
Module 5	<b>Topics:</b> Topic 17: Cellular Reproduction Topic 18: Cell Signaling and Signal Transduction: Communication between Cells Topic 19: Cancer Topic 20: Techniques in Cell and Molecular Biology <b>Assessments:</b> Final Exam

## 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. 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



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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.