



蘇州大學  
Soochow University

# BIO 169 Cells and Biomolecules

Fall 2023

**Course Credits:** 4

**Contact Hours:** 56 hours

**Instructor:** TBA

**Email:**TBA

## **COURSE OBJECTIVES**

This course will emphasize the study of eukaryotic cell structure and function, including molecular interactions, membrane proteins, cell signaling, intracellular transport, and energy generation. Labs will teach fundamental techniques of molecular biology including a multi-week module where students build and quantify bacterial gene expression system.

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

1. Have a conceptual understanding of the molecular basis of various cellular processes;
2. Describe the role of proteins and their role in regulating cell function, cell division, and cell death;
3. Describe the structure of cell membranes, their role in regulating intracellular environments, and how they interact with the extracellular environment;
4. Identify DNA structure and replication, transcription, translation and gene expression;
5. Gain proficiency in laboratory techniques commonly used in molecular and cell biology research.

## **PREREQUISITES**

None

## **GRADING**



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

ITEM	POINTS
5 Lab Reports	30 Points
3 Quizzes	30 Points
Midterm Exam	15 Points
Final Exam	25 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

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### **Required Texts:**

Alberts et al, *Essential Cell Biology*, 4th Edition, Garland Science, 2011.

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

None.

## COURSE TOPICS

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MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Introduction to biology Topic 2: Basic chemistry and biochemistry Topic 3: Introduction to cell structure and function Topic 4: Structures and functions of prokaryotic and eukaryotic cells <b>Assessments:</b> Lab #1 and Report Quiz #1



Module 2	<b>Topics:</b> Topic 5: Protein composition and structure Topic 6: Proteins as structural molecules and as enzymes Topic 7: Carbohydrates Topic 8: Nucleotides and nucleic acids <b>Assessments:</b> Lab #2 and Report Quiz #2
Module 3	<b>Topics:</b> Topic 9: Lipids and cell membranes Topic 10: Metabolism: basic concepts and design Topic 11: Metabolic processes, cellular energy Topic 12: The light reactions of photosynthesis <b>Assessments:</b> Lab #3 and Report Midterm Exam
Module 4	<b>Topics:</b> Topic 13: Respiration and fermentation Topic 14: Electron transport chain and oxidative phosphorylation Topic 15: Binary fission in prokaryotes Topic 16: Process and function of meiosis and mitosis <b>Assessments:</b> Lab #4 and Report Quiz #3
Module 5	<b>Topics:</b> Topic 17: Patterns of inheritance Topic 18: DNA structure and chromosome Topic 19: Gene regulation Topic 20: Genetic manipulation <b>Assessments:</b> Lab #5 and Report 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**

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- 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**

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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**

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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.



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## **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.