



## **BIO 169 Cells and Biomolecules**

**Summer 2023**

**Course Credits:** 4

**Contact Hours:** 55 hours

**Instructor:** TBA

**Email:** TBA

### **COURSE OBJECTIVES**

The course introduces students to the fundamentals of biochemistry, including the principles of biomolecules and metabolism. Topics covered include the structure, function, and regulation of biomolecules such as proteins, carbohydrates, lipids, and nucleic acids. The course will also cover the metabolic pathways and processes involved in energy production, biosynthesis, and cellular regulation. Students will gain hands-on experience and develop essential laboratory skills, including performing calculations, analyzing experimental results and effectively communicating findings through lab reports.

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

1. Appreciate the fundamental importance of cellular and biochemical processes;
2. Understand the structure, properties, and functions of biomolecules, including proteins, carbohydrates, lipids, and nucleic acids;
3. Understand the functional roles of biomolecules in cellular processes and metabolism;
4. Examine the various metabolic pathways and their interconnections;
5. Explore the regulation and control mechanisms of cellular metabolism;
6. Gain hands-on experience with laboratory techniques commonly used in biochemistry;
7. Develop their communication skills by effectively conveying findings through written reports and group discussions.

### **PREREQUISITES**



BIO 101 Introduction to Biology I

**GRADING**

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

ITEM	POINTS
4 Lab Assignments and Reports	40 Points
Midterm 1	15 Points
Midterm 2	15 Points
Final Exam	30 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:**

Jeremy M. Berg, John L. Tymoczko, Gregory J. Gatto, Jr, Lubert Stryer, Biochemistry, 9th Edition, W. H. Freeman, 2019.

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

None

**COURSE TOPICS**

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MODULE	TASKS
Module 1	<b>Topics:</b> Topic 1: Introduction to Biochemistry Topic 2: Review of Basic Chemical Principles Topic 3: Biochemical Calculations Topic 4: Amino Acids/Peptides Lab Assignment and Report#1



Module 2	<b>Topics:</b> Topic 5: Protein Composition and Structure Topic 6: Proteins as Structural Molecules and as Enzymes Topic 7: Catalytic Strategies Topic 8: Regulatory Strategies Lab Assignment and Report#2
Module 3	<b>Topics:</b> Topic 9: Carbohydrates Topic 10: Nucleotides and Nucleic Acids Topic 11: Lipids and Cell Membranes Topic 12: Signal-Transduction Pathways Lab Assignment and Report#3 <b>Assessments:</b> Midterm#1
Module 4	<b>Topics:</b> Topic 13: Metabolism: Basic Concepts and Design Topic 14: Metabolic Processes, Cellular Energy Topic 15: Glycolysis and Gluconeogenesis Topic 16: The Light Reactions of Photosynthesis Lab Assignment and Report#4 <b>Assessments:</b> Midterm#2
Module 5	<b>Topics:</b> Topic 17: The Calvin Cycle and the Pentose Phosphate Pathway Topic 18: Glycogen Metabolism Topic 19: Fatty Acid Metabolism Topic 20: Final Exam Review, Q&A <b>Assessments:</b> Final Exam

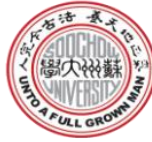
## ATTENDANCE

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**



蘇州大學  
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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.