Biochemistry I - CH 580

School of Engineering and Science
Fall 2022

Meeting Times:	Thursday 06:30 PM to 09:00 PM
Classroom Location:	Gateway South, GS 216
Instructor:	Dr. Sunil Paliwal and Dr. Kenny Wong
Contact Info:	spaliwal@stevens.edu, kwong2@stevens.edu
Office Hours:	Dr. Paliwal, Monday 5:00 PM to 6:00 PM or by appointment, Dr. Wong, Monday 1-3 PM or by appointment
Course Web Address:	`https://sit.instructure.com/courses/61627`
Prerequisite(s):	CH-243, Organic Chemistry I & CH-244, Organic Chemistry II
Corequisite(s):	None
Cross-listed with:	All sections merged to CH -580-A

COURSE DESCRIPTION

This lecture course is one-semester introduction to the field of biochemistry. In this course, essential biological processes are explored in molecular level from thermodynamic and regulatory perspectives, covering lipids, carbohydrates but focusing on protein chemistry including the structures, biological activities, kinetics, and regulatory mechanisms.

LEARNING OBJECTIVES

After successful completion of this course, students will be able to…

- Describe biological process in molecular levels.
- Understand lipids and carbohydrates.
- Understand protein structures and biological activities.
- Understand kinetics and regulatory mechanism.

FORMAT AND STRUCTURE

This course consists of one lecture per week.

COURSE MATERIALS

Textbook(s): David L. Nelson, Michael M.Cox, and Albert L. Lehninger. "Principles of Biochemistry, 7th Ed." W.H. Freeman and Co.: New York. ISBN-13: 9781464126116

ISBN-10: 1464126119

Other Readings: Available online through Canvas course shell and/or handouts provided in the class

COURSE REQUIREMENTS

Class Participation Attendance will be taken at the start of the lecture. Attendance and participation is strongly encouraged. The only way to earn In-class participation points is by **attending and participating**.

Homework Assignment There will be homework assignments throughout this course. All homework assignments must be submitted by the assigned date. Late assignments will not be accepted and will not be given any points.

In-Class activity There will be assignments given in the class for nearly each lecture. There will be no make-up for in-class activity.

Exams Total four exams will be given in this course. The final exam is cumulative. Final exam is ACS exam or our exam. Exam dates are listed in the tentative course schedule below.

Make-up Policy Make-up is only available with a school official's written permission. Make-up work must be completed within a week from the day excused.

GRADING PROCEDURES

Grades will be based on:

Exam I	(20%)
Exam II	(20%)
Exam III	(20%)
Final	(15%)
In-Class activity	(15%)
Class Participation	(5%)
Homework Assignment	(5%)

ACADEMIC INTEGRITY

Undergraduate Honor System

Enrollment into the undergraduate class of Stevens Institute of Technology signifies a student's commitment to the Honor System. Accordingly, the provisions of the Stevens Honor System apply to all undergraduate students in coursework and Honor Board proceedings. It is the responsibility of each student to become acquainted with and to uphold the ideals set forth in the Honor System Constitution. More information about the Honor System including the constitution, bylaws, investigative procedures, and the penalty matrix can be found online at http://web.stevens.edu/honor/

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

"*I pledge my honor that I have abided by the Stevens Honor System*."

Reporting Honor System Violations

Students who believe a violation of the Honor System has been committed should report it within ten business days of the suspected violation. Students have the option to remain anonymous and can report violations online at www.stevens.edu/honor.

Graduate Student Code of Academic Integrity

All Stevens graduate students promise to be fully truthful and avoid dishonesty, fraud, misrepresentation, and deceit of any type in relation to their academic work. A student's submission of work for academic credit indicates that the work is the student's own. All outside assistance must be acknowledged. Any student who violates this code or who knowingly assists another student in violating this code shall be subject to discipline.

All graduate students are bound to the Graduate Student Code of Academic Integrity by enrollment in graduate coursework at Stevens. It is the responsibility of each graduate student to understand and adhere to the Graduate Student Code of Academic Integrity. More information including types of violations, the process for handling perceived violations, and types of sanctions can be found at www.stevens.edu/provost/graduate-academics.

EXAM ROOM CONDITIONS

The following procedures apply to quizzes and exams for this course. As the instructor, I reserve the right to modify any conditions set forth below by printing revised Exam Room Conditions on the quiz or exam.

1. Students may use the following devices during quizzes and/or exams. Any electronic devices that are not mentioned in the list below are not permitted.

Device	**Permitted?**	
	Yes	No
Laptops		X
Cell Phones		X
Tablets		X
Smart Watches		X
Google Glass		X
Other (Nonprogrammable calculator)	X	

2. The following materials are not allowed during exams. Any materials that are not mentioned in the list below are also not permitted.

Material	**Permitted ?**	
	Yes	No
Handwritten Notes		X
Typed Notes		X
Textbooks		X
Readings		X

3. Students are/are not allowed to work with or talk to other students during exams.

LEARNING ACCOMODATIONS

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. Student Counseling and Disability Services works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, and psychiatric disorders in order to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from SCDS staff. The SCDS staff will facilitate the provision of accommodations on a case-by-case basis. These academic accommodations are provided at no cost to the student.

Disability Services Confidentiality Policy

Student Disability Files are kept separate from academic files and are stored in a secure location within the office of Student Counseling, Psychological & Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

For more information about Disability Services and the process to receive accommodations, visit https://www.stevens.edu/sit/counseling/disability-services. If you have any questions please contact: Lauren Poleyeff, Psy.M., LCSW - Disability Services Coordinator and Staff Clinician in Student Counseling and Disability Services at Stevens Institute of Technology at lpoleyef@stevens.edu or by phone (201) 216-8728.

INCLUSIVITY STATEMENT

Stevens Institute of Technology believes that diversity and inclusiveness are essential to excellence in education and innovation. Our community represents a rich variety of backgrounds, experiences, demographics and perspectives and Stevens is committed to fostering a learning environment where every individual is respected and engaged. To facilitate a dynamic and inclusive educational experience, we ask all members of the community to:

- be open to the perspectives of others
- appreciate the uniqueness their colleagues
- take advantage of the opportunity to learn from each other
- exchange experiences, values and beliefs
- communicate in a respectful manner
- be aware of individuals who are marginalized and involve them
- keep confidential discussions private

TENTATIVE COURSE SCHEDULE (CH 580)

The following is a tentative course schedule. Any and all changes to this schedule will be communicated to you 1) in class and 2) via email. The Canvas shell for this course will always be kept up-to-date so you can always reference the "Assignments" tab for accurate due dates.

Date	Chapters: Topics	Readings
September 01	1. Structure & Function of Cell: Macromolecules, Energy Coupling, Metabolism 2. Water: Hydrophilic & Hydrophobic, Micelles	Chapter 1, 2
September 08	3. Amino Acids, Peptides, & Proteins	Chapter 3
September 15	4. 3-D Structure of Proteins	Chapter 4
September 22	**Exam I (Chapter 1-4)**	**(Chapter 1-4)**
September 29	5. Protein Function: Sigmoidal binding curve	Chapter 5
October 06	6. Enzyme: Binding Energy, Michaelis-Menten Equation, Reversible inhibition	Chapter 6
October 13	7. Carbohydrates & Glycobiology	Chapter 7
October 20	**Exam II (Chapter 5-7)**	**(Chapter 5-7)**
October 27	8. Nucleotides & Nucleic Acids 9. DNA Technologies	Chapter 8, 9
November 03	10. Lipids 11. Biological Membranes & Transport	Chapter 10, 11
November 10	**Exam III (Chapter 8-11)**	**(Chapter 8-11)**
November 17	12. Biosignaling 13. Bioenergetics & Biochemical Reactions 15. Principles of Metabolic Regulation	Chapter 12, 13, 15
November 24	*No class (Thanksgivings holiday)*	
December 01	14. Glycolysis, Gluconeogenesis & Pentose Phosphate Pathway. 16. Citric acid cycle	Chapter 14, 16
December 08	Final Exam Review	
December 15 (tentative)	**Final Exam (ACS, Comprehensive)**	**(Chapter 1-16)**