CHEM-UA 881 Biochemistry I

Spring 2017

Lectures: Tuesday, Thursday 4:55-6:10. MEYR 121

Recitations: Sections by registration

Required textbook

Berg, Tymoczko, Gatto, and Stryer; *Biochemistry, 8th Ed.,* Freeman.

Optional additional textbook:

Petsko G and Ringe D Protein Structure and Function, New Science Press.

This primer presents material that we cover with superb pictures and short but very clear text. It is an excellent addition to the main textbook.

Primary Faculty:

Prof. Kent Kirshenbaum, Department of Chemistry, Room 821 Silver

Email: kent@nyu.edu

Prof. Paramjit Arora, Department of Chemistry, Room 360 Brown.

Email: arora@nyu.edu

Recitation Leaders:

Dr. Somdeb Mitra, email: sm7274@nyu.edu
John Kwok, email: jgk298@nyu.edu

Recitation Sections

Section	Instructor	Schedule	Location
101	Somdeb Mitra	Tuesday 2:00 PM to 3:15 PM	7E12_123
102	Somdeb Mitra	Thursday 6:20 PM to 7:35 PM	25W4_C-13
103	Somdeb Mitra	Tuesday 6:20 PM to 7:35 PM	25W4_C-13
106	Somdeb Mitra	Friday 9:30 AM to 10:45 AM	194M_207
107	Jonathan Kwok	Monday 12:30 PM to 1:45 PM	SILV_404

General information. This course is a one-semester introduction to biochemistry suitable for majors and professional school requirements. The course introduces biological macromolecules, including the structure and function of proteins, nucleic acids, carbohydrates, lipids and membranes. Transport, enzyme mechanisms and elements of gene action in prokaryotes are discussed. A brief introduction to metabolism is presented, emphasizing general concepts rather than memorization of pathways. The course and syllabus for this Spring semester course are designed to be consistent with the “on-track” Biochemistry I course offered in Fall.

Grades and Exams: Your course grade will be determined in part by scores on three in-class examinations. Two midterms will each be worth 100 points. The final exam will be cumulative, and will be worth 200 points. Please be aware that an unexcused absence from any exam results in a score of zero for that exam. (Please be sure that your excuses are from NYU student health, explaining specifically what condition prevented you from taking the exam.)

Exam Regrade Policy:

- Do not make any marks on the exam.
- On a separate, hand-signed cover sheet stapled to the exam, list your email address, state the problems that were misgraded, and affirm that no changes to the exam were made after grading.
- Submit the regrade request within **two** days of receiving the graded exam.
- Arithmetic errors in adding up points will be corrected immediately. *Any other regrade request will cause the entire exam to be regraded; therefore, your overall score may increase or decrease.*
- Oral or late requests for regrading will not be accepted.

Recitation Quizzes. An additional 100 points will be awarded for quizzes conducted in recitation sections. Recitations will review the lectures and work on additional problems

in peer-led groups. Please be sure that you have an assigned recitation section. Missing three or more recitations for any reason at all will result in an incomplete for the class.

Activity	**Points**
Midterm 1	100
Midterm 2	100
Final exam	200
Recitation problem sets and quizzes	100
Total	500

Class website: This course is on NYU Classes. Notes, readings, problem sets, study guides, modules and web links as well as answers to problems will all be posted on the web.

Academic Integrity and Plagiarism: The instructors for this course have no tolerance for plagiarism in any manifestation. The NYU policy on plagiarism will be enforced with great vigil. Students who fail to conform to NYU's standards on academic integrity will be subject to stringent disciplinary action. Inform yourself in advance of proper academic conduct. In brief (and quoting from the College of Arts & Science policy), "Academic honesty means that the work you submit – in whatever form – is original." When in doubt, ask. Please consult:

http://cas.nyu.edu/page/academicintegrity

Learning Center Help:

Free peer tutoring, Study Slams, group reviews, workshops, and more.

University Learning Center
www.nyu.edu/ulc
ULC@Academic Resource Center, 18 Washington Place, Lower LevelULC@UHall, 110 East 14th Street, top of stairs by UHall Commons

Soomie Han, J.D.
Assistant Dean
Academic Support Services
Director, University Learning Center
NYU College of Arts & Science

SCHEDULE OF LECTURES

Lecture, Date	Topic	Reading	Recitation
1. Jan. 24 T	Overview & Introduction: Bioenergetics & Water		
2, Jan. 26 R	The Central Dogma, Intro to Nucleic Acids	Sec. 1.1-1.3	
3, Jan. 31 T	Proteins I - Amino Acids & Polypeptides	Sec. 2.1,2.2	Rec. 1
4, Feb. 2 R	Proteins II – Secondary Structures	Ch. 2.3	
5, Feb. 7 T	Proteins III – Tertiary and Quaternary Structure; Protein Folding & Misfolding	Ch. 2.4-2.6	Rec. 2
6. Feb. 9 R	Proteins IV: Purification, Structure Determination; Antibodies	Ch. 3	
7, Feb. 14 T	Proteins V: Function & Allostery; Hemoglobin	Ch. 7	Rec. 3
8, Feb. 16 R	Proteins VI: Enzymes as Catalysts	Sec. 8.1-8.3	
Feb. 17 F	**Midterm 1**	**Lectures 1-7**	
9, Feb. 21 T	Proteins VII: Enzyme Kinetics, Regulation & Inhibition	Sec. 8.4-8.6	Rec. 4
10, Feb. 23 R	Proteins VIII: Enzymatic Mechanisms: Motor Proteins	Ch. 9	
11, Feb. 28 T	Carbohydrates I: Monosaccharides	Sec. 11.1, 11.2	Rec. 5
12, Mar. 2 R	Carbohydrates II: Polysaccharides and Glycoproteins	Sec. 11.3, 11.4	
13, Mar. 7 T	Lipids and Membranes	Ch. 12	Rec. 6
14, Mar. 9 R	Membrane Proteins and Transport	Ch. 13	
Mar 13-19	Spring Break		
15, Mar. 21 T	Signal Transduction	Ch. 14	Rec. 7
16 Mar. 23 R	Metabolism I: Glycolysis	Chap. 15, 16	
Mar 24 F	**Midterm 2**	**Lectures 8-15**	
17, Mar. 28 T	Metabolism II: Oxidative Phosphorylation	Ch. 18	Rec. 8

18 Mar 30 R	Nucleic Acids I: DNA Structure Revisited	Sec. 4.1-4.4	
19 Apr 4 T	Nucleic Acids II: Methods in Nucleic Acid Biochemistry	Ch. 5	Rec. 9
20, Apr 6 R	Nucleic Acids III: DNA Replication & Repair	Ch. 28	
21, Apr. 11, T	Nucleic Acids IV: RNA Structure & Function	Sec. 4.5-4.7	Rec. 10
22 Apr. 13 R	Nucleic Acids V: RNA Synthesis & Processing	Ch. 29	
23 Apr. 18, T	Protein Synthesis I: The Genetic Code	Sec. 30.1, 30.2	Rec. 11
24, Apr. 20 R	Protein Synthesis II: The Ribosome	Sec. 30.3-30.5	
25, Apr. 25 T	Protein Synthesis III: Post-translational modifications & Trafficking	Sec. 30.6	Rec. 12
26 Apr. 27, R	Control of Gene Expression I	Ch. 31	
27, May 2 T	Control of Gene Expression II: Gene Editing and the Future of the Human Species	Ch. 32	
28, May 4 R	Review	All	
May 10-16	**FINAL EXAM - comprehensive Date – subject to verification; check Albert**		

T = Tuesday, R = Thursday, F = Friday