

Biochemistry I Lecture & Lab Schedule

BB 421/621 – Section A1

Fall 2025 (version 2)

Staff	Phone	Office	E-mail	Office Hours
Dr. Dean R. Tolan	3-5310	Rm 704, 24 Cummington (LSE)	tolan@bu.edu	TBA, or by arrangement
Dr. Pinghua Liu (A2 Professor)		SCI-453, 590 Commonwealth (SCI)	pinghua@bu.edu	TBA, or by arrangement
Dr. Blair Szymczyna (Lab Coordinator)		SCI-TBA	bszymcz@bu.edu	TBA
Teaching Fellows: TBD				

Sections	Times	Places
Lecture	M 8:00 AM; W 9:05 AM; & F 9:05 AM (all end at 9:55 AM) (A1)	CAS 224
Pre-lab Disc.	T 12:30-1:45 PM (C1) T 2:00-3:15 PM (C2)	SCI 109 COM 101
Laboratory	W 8:00, 1:25 & 6:30 (B1, B2, B3); R 8:00, 1:25 & 6:30 (B4, B5, B6); F 8:00, 1:25 & 6:30 (B7, B8, B9); M 10:10 & 3:35 (BA, BB)	SCI 162
621 Discussion (Grad students)	TBA	TBA

Day-Date	*Lecture #	Topic	Reading in Lehninger	Homework**	Laboratory
M-Sept 1		HOLIDAY – Labor Day			
T-Sept 2		Pre-lab Discussions - MUST ATTEND!!!!			Discussions begin
W-Sept 3	0	Organization & Introduction	Ch1, 1-3, 10-12		
F-Sept 5	1	- Introduction, thermodynamics	Ch1, 6-9, 13-14, 19-25 Ch13, 466-469	1	
		- Water & Hydrogen Bonds	Ch2, 43		
M-Sept 8	2	- Molecular Forces	Ch2, 43-53	2	
		- pH	Ch2, 53-64	3	
W-Sept 10	3	- Proteins; Introduction	Ch3, 70 Ch1, 13-19 Ch4, 106-107	4	LAB STARTS/Lab 1 (Intro)
R-Sept 11		– National Patriot Day			
F-Sept 12	4	- Amino Acids I-structure & properties	Ch3, 70-76		
M-Sept 15	5	- Amino Acids II pH - Amino Acids III pI	Ch3, 76-82; 87-89 Ch2	5	
‡ADD deadline		DUE: Molecular Biology Review	Ch1,28-30; Ch8,263-271; Ch27,1006-1009		
W-Sept 17	6	- Protein Purification	Ch3, 83-87, 89-90 Ch1, Fig 1-7 Ch9, 313-314	6	Lab 2 (Crude extract)
F-Sept 19		- Review Session		Q1-3	
M-Sept 22		HOUR EXAM I (8:00-10:00 AM at TBA) [Lectures 1-6] (8)			
W-Sept 24	7	- Protein Structure I: Primary Structure (1°)	Ch3, Fig 3-23 Ch4, 106-110	7	Lab 3 (Chromatography)
F-Sept 26	8	- Protein Structure II: Determination of 1°	Ch3, 90-93, Box 3-2	8	
M- Sept 29	9	- Protein Structure III: 2° the α -helix - Protein Structure IV: 2° the β -sheet;	Ch4, 119-122,125-127,131-133 Ch4, 114-115,120-121,123-124	9	
W- Oct 1	10	- Protein Structure V: 3° & 4°	Ch4, 116-117,126-128	10	Lab 4 (Assays)
F- Oct 3	11	- Protein Structure VI: Characterization of Proteins; Determination of 2°, 3°, 4°	Ch4, 116, 138-142	11	
M-Oct 6	12	- Protein Structure VII: Collagen - Enzymes I: intro., binding & catalysis;	Ch4, 118-120 Ch1, 25-27 Ch5, 147-148, 150-152, 157 Ch6, 177, 209-210	12	
‡DROP deadline					
W-Oct 8	13	- Enzymes II; enzyme nomenclature; mechanism nomenclature (Cleland) transition-state theory, catalytic strategies mechanistic strategies	Ch6, 178-179 Ch6, 194-195 Ch6, 179-181,184-185 Ch6, 186-188		Lab 5 (SDS-PAGE)
F-Oct 10		- Review Session		Q4-6	
M-Oct 13		HOLIDAY – Columbus Day			
T-Oct 14 (Mon Sched)		HOUR EXAM II (8:00-10:00 AM at TBA) [Lectures 7-13] (9)			

W-Oct 15	14	- Enzymes III; Steady-state kinetics; Data analysis;	Ch6, 188-195	13, 14	Lab 6 (Modeling)	
F-Oct 17	15	- Enzymes IV; Inhibition	Ch6, 191, 197-200	15		
M-Oct 20	16	- Enzymes V; Active site; Energetics	Ch6, 181-186, 195-196	16	Lab 7 (Kinetics)	
		- Enzymes VI; Mechanism - chymotrypsin	Ch6, 203-208	17		
W-Oct 22	17	- Enzymes VII; Regulation - Allostery I	Ch5, 157 Ch12, 413-415			
F-Oct 24	18	- Enzymes VIII; Regulation –Allostery II	Ch5, 157-160 Ch6, 213-220	18		
M- Oct 27	19	- Enzymes IX; Regulation – "Hemoglobin"	Ch5, 148-149,152-157,160-164	19	Lab 8 (Gel filtration)	
W- Oct 29	20	- Protein Structure VIII: Stability, folding & dynamics	Ch4, 128-136	20		
F- Oct 31		- Review Session		Q7-10		
M-Nov 3		HOUR EXAM III (8:00-10:00 AM at TBA) [Lectures 14-20] (9)			Lab 9 (Native gels)	
W-Nov 5	21	- Carbohydrates I; - Introduction	Ch7, 229-235			
F-Nov 7	22	- Carbohydrates II; - Mono/Oligosaccharides	Ch7, 236-241		Lab Skills Test	
‡ W/(P-F) deadline						
M-Nov 10	23	- Carbohydrates III; - Mono/Oligosaccharides	Ch7, 251-254,258-260	21		
		- Carbohydrates IV; - Polysaccharides	Ch7, 241-250	22		
T-Nov 11		- Veteran's Day				
W-Nov 12	24	- Nucleic Acids I; - Introduction	Ch8, 294-296,263-269 Ch24, 885-890	23		
F-Nov 14	25	- Nucleic Acids II; - Shape	Ch8, 269-274 Ch24, 891-894	24	NO LABS	
M-Nov 17	26	- Nucleic Acids III; - Stability	Ch8, 278-283 Ch24, 895-897	25		
		- Nucleic Acids IV; -Using the Central Dogma	Ch9, 301-313, 326-327	26		
W-Nov 19	27	- Recombinant DNA in biochemistry	Ch8, 283-286			
F- Nov 21		- Nucleic Acids V; - Replication	Ch25, 916-921	27	Q13-15	
		- Review Session				
M-Nov 24		HOUR EXAM IV (8:00-10:00 AM at TBA) [Lectures 21-27] (9)			NO LABS (Fall Break)	
W–Sun- Nov 26–30		HOLIDAY – FALL BREAK – Happy Thanksgiving				
M-Dec 1	28	- Nucleic Acids VI; - Transcription & Genetic Code	Ch26, 960-964 Ch27, 1006-1013, 1018-1024	28 29	NO LABS	
		- Nucleic Acids VII; - Translation	Ch27, 1015-1018, 1028-1036	30		
W-Dec 3	29	- Lipids & Membranes I; - Introduction	Ch10, 341-348	31		
F-Dec 5	30	- Lipids & Membranes II; - Membrane lipids	Ch10, 352-354, 356 Ch11, 367-369			
		- Bilayers	Ch11, 370-381	32		
M-Dec 8	31	- Lipids & Membranes III; Membranes & Membrane proteins	Ch4,6,8,10,14,16,17,18; 118-119, 178,295,356-359,530-531,534-535,576, 590,613-615,629,641-643	33	Last Day of Classes	
		- Vitamins & Coenzymes	Ch 10, 356-360 Ch17, 613-615			
W-Dec 10	32	- Metabolism; Introduction & Bioenergetics	Ch1, 4-5 Ch13, 465-471,479-485	34		
R-Dec 12		-Review Session Old questions TBA		Q11-12/Q16-20		
Mon-Dec 14		- Review Session TBA				
Wed-Dec 17		FINAL EXAM (8:00–11:00 AM at TBA) [Lectures 28-32(54%) plus Cumulative (46%)] (7)				

*Lecture numbers; underlined numbers are 2-hour-Monday lectures. **Homework assignment number in Achieve (5-10 questions each); Due Sunday nights, no exceptions. ‡Last day to ADD (9/15), DROP without a 'W' (10/6), or WITHDRAW with a 'W' (11/7).

Prerequisites: Students are **REQUIRED** to have passed ($\geq C$) 2 semesters of organic chemistry with labs (CH 204, 214, or 212).

Textbooks (all are available at the BU Bookstore and/or through the FirstDay link in Blackboard):

- 1) "Lehninger's Principles of Biochemistry 8th edition" by Nelson, Cox, and Hoskins.
- 2) "Biochemistry Laboratory Manual, 6th Edition" by Dean R. Tolan, Jose L. Medrano & Wen Yi Low
- 3) Achieve Website

Grading:

421: Lab 30%, Homework 8%, Pre-requisite Quiz 2%, Best 3 of 4 hour exams 36%, Final 24%

621: Lab 25%, Homework 8%, Pre-requisite Quiz 2%, Best 3 of 4 hour exams 30%, Paper/Discussion 15%; Final 20%

Attendance and meeting deadlines of all dates listed above are required. There will be no make-up exams except as allowed by the policy outlined in the **Syllabus: Policies**.

For Lab; lab write-ups turned in late will have points deducted (see **Syllabus: Policies**, and Lab Syllabus, and on the lab Blackboard site).

Biochemistry-A1 Home Page: <http://www.bu.edu/aldolase/biochemistry>

Biochemistry-A2 Home Page: <http://learn.bu.edu/>

Biochemistry-LAB Home Page: <http://learn.bu.edu/>

GENERAL EDUCATION CREDIT (HUB Units): Completion of the course will earn HUB units in Quantitative Reasoning 2 (QR2), Critical Thinking (CRT), and Teamwork and Collaboration (TWC)

Academic Conduct: The Boston University rules and regulations described in the College of Arts and Sciences Academic Conduct Code will be strictly enforced. In particular, this applies to the writing of lab reports. Sharing of data and discussion is encouraged, but all written material, including graphs and tables, must be from your own hand. [Web site: <http://www.bu.edu/academics/policies/academic-conduct-code/>]