

Biochemistry I Lecture & Lab Schedule

BB 421/621 – Section A1

Fall 2024 (version 9)

Staff	Phone	Office	E-mail	Office Hours
Dr. Dean R. Tolan	3-5310	Rm 704, 24 Cummington (LSE)	tolan@bu.edu	Mon 2-3, Fri 3:30-4:30, or by arrangement
Dr. Pinghua Liu (A2 Professor)		SCI-453, 590 Commonwealth (SCI)	pinghua@bu.edu	Tue 5:30 – 6:30, Fri 5:30 – 6:30, or by arrangement
Dr. Blair Szymczyna (Lab Coordinator)		SCI-161 (T/R) or SCI-294 (W)	bszymcz@bu.edu	Tue 5:30–6:30, Wed 5:30–6:30, Thu 12–1

Teaching Fellows:

Christina Alcaro	SCI 161	cnalcaro@bu.edu	Wed 12:00 - 1:00
Hailey Curtis	SCI 344	hcurtis@bu.edu	Thur 10:00 - 11:00 am
Xufeng (Francis) Fang	SCI 161	fangxf@bu.edu	Fri 10:00 - 11:00
Pavle Gajic	SCI 161	pavleg@bu.edu	Thur 1:00 - 2:00
Jackson Ho	SCI 161	jvho3@bu.edu	Mon 3:30 - 4:30
Chenxi Liu	SCI 161	charliuu@bu.edu	Mon 2:30 - 3:30
Favian Liu	SCI 161	faliu@bu.edu	Fri 12:00 - 1:00
Emma Mortara	SCI 161	emortara@bu.edu	Mon 5:30 - 6:30
Daniel Nartey	SCI 161	dnartey@bu.edu	Fri 11:00 - 12:00
Karisma Verma	SCI 161	kverma@bu.edu	Thur 3:00 - 4:00
Yinze Wu	SCI 161	yinzewu@bu.edu	Tue 6:30 - 7:30

Sections	Times	Places
Lecture	M 8:00 AM; W 9:05 AM; & F 9:05 AM (all end at 9:55 AM) (A1)	CAS 313
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 & 3:30 (B4, B5, B6); F 1:25 & 3:30 (B8, B9); M 10:10 & 3:35 (BA, BB)	SCI 162
621 Discussion (Grad students)	W 11:15 AM	LSE 1004

Day-Date	*Lecture #	Topic	Reading in Lehninger	Homework**	Laboratory
M-Sept 2		HOLIDAY – Labor Day			
T-Sept 3		MUST ATTEND!!!!			<i>Discussions begin</i>
W-Sept 4	0	Organization & Introduction	Ch1, 1-3, 10-12	review gen & orgo	
F-Sept 6	1	- Introduction, thermodynamics	Ch1, 6-9, 13-14, 19-25		
		- Water & Hydrogen Bonds	Ch13, 466-469	1	
			Ch2, 43		
M-Sept 9	2	- Molecular Forces	Ch2, 43-53	2	
		- pH	Ch2, 53-64	3	
W-Sept 11	3	- <i>National Patriot Day</i>			<i>LAB STARTS/Lab 1</i>
		- <u>Proteins</u> ; Introduction	Ch3, 70		
			Ch1, 13-19		
			Ch4, 106-107	4	
F-Sept 13	4	- Amino Acids I-structure & properties	Ch3, 70-76		
M-Sept 16	5	- Amino Acids II pH	Ch3, 76-82; 87-89		
		- Amino Acids III pI	Ch2	5	
‡ADD deadline					
W-Sept 18	6	- Protein Purification	Ch3, 83-87, 89-90	6	<i>Lab 2a</i>
			Ch1, Fig 1-7		
			Ch9, 313-314		
F-Sept 20		- <i>Review Session</i>		Q1-3	
M-Sept 23		HOURLY EXAM I (8:00-10:00 AM at MOR101) [Lectures 1-6] (8)			
W-Sept 25	7	- Protein Structure I: Primary Structure (1°)	Ch3, Fig 3-23	7	<i>NO LABS</i>
			Ch4, 106-110		
F-Sept 27	8	- Protein Structure II: Determination of 1°	Ch3, 90-93, Box 3-2	8	
M-Sept 30	9	- Protein Structure III: 2° the α -helix	Ch4, 119-122, 125-127, 131-133	9	
		- Protein Structure IV: 2° the β -sheet;	Ch4, 114-115, 120-121, 123-124		
W-Oct 2	10	- Protein Structure V: 3° & 4°	Ch4, 116-117, 126-128	10	<i>Lab 2b</i>
F-Oct 4	11	- Protein Structure VI: Characterization of Proteins; Determination of 2°, 3°, 4°	Ch4, 116, 138-142	11	
M-Oct 7	12	- Protein Structure VII: Collagen	Ch4, 118-120		
		- <u>Enzymes I</u> ; intro., binding & catalysis;	Ch1, 25-27		
			Ch5, 147-148, 150-152, 157	12	
			Ch6, 177, 209-210		
‡T-Oct 8, DROP deadline					
W-Oct 9*	13	- <u>Enzymes II</u> ; enzyme nomenclature; mechanism nomenclature (Cleland)	Ch6, 178-179		<i>Lab 2c</i>
		transition-state theory, catalytic strategies	Ch6, 194-195		
		mechanistic strategies	Ch6, 179-181, 184-185		
			Ch6, 186-188		
F-Oct 11		- <i>Review Session</i>		Q4-6	
M-Oct 14		HOLIDAY – Columbus Day			
T-Oct 15 (Mon Sched)		HOURLY EXAM II (8:00-10:00 AM at MOR 101) [Lectures 7-13; 1†] (9)			<i>M-lab 2-3; Disc prerecorded</i>

W-Oct 16	14	- Enzymes III; Steady-state kinetics; Data analysis;	Ch6, 188-195	13, 14	<i>Lab 3</i>
F-Oct 18	15	- Enzymes IV; Inhibition	Ch6, 191, 197-200	15	
M-Oct 21	16	- Enzymes V; Active site; Energetics	Ch6, 181-186, 195-196	16	
		- Enzymes VI; Mechanism - chymotrypsin	Ch6, 203-208	17	
W-Oct 23	17	- Enzymes VII; Regulation - Allosteric I	Ch5, 157 Ch12, 413-415		<i>Lab 2d</i>
F-Oct 25	18	- Enzymes VIII; Regulation - Allosteric II	Ch5, 157-160 Ch6, 213-220	18	
M-Oct 28	19	- Enzymes IX; Regulation - "Hemoglobin"	Ch5, 148-149, 152-157, 160-164	19	
W-Oct 30	20	- Protein Structure VIII: Stability, folding & dynamics	Ch4, 128-136		<i>Lab 4</i>
F-Nov 1		- Review Session		20 Q7-10	
M-Nov 4		HOURLY EXAM III (8:00-10:00 AM at MOR101) [Lectures 14-20; 2a-2b†] (9)			
W-Nov 6	21	- Carbohydrates I; - Introduction	Ch7, 229-235		<i>Lab 5a</i>
F-Nov 8	22	- Carbohydrates II; - Mono/Oligosaccharides	Ch7, 236-241		
M-Nov 11	23	<i>Veteran's Day</i>			
		- Carbohydrates III; - Mono/Oligosaccharides	Ch7, 251-254, 258-260	21	
		- Carbohydrates IV; - Polysaccharides	Ch7, 241-250	22	
‡T-Nov 12		- <i>Molecular Biology Review (see link on line)</i>	Ch1, 28-30; Ch8, 263-271; Ch27, 1006-1009	HW-26¶	
W-Nov 13	24	- Nucleic Acids I; - Introduction	Ch8, 294-296, 263-269 Ch24, 885-890	23	<i>Lab 5b</i>
F-Nov 15	25	- Nucleic Acids II; - Shape	Ch8, 269-274 Ch24, 891-894	24	
M-Nov 18	26	- Nucleic Acids III; - Stability	Ch8, 278-283 Ch24, 895-897	25 27	
		- Nucleic Acids IV; -Using the Central Dogma	Ch9, 301-313, 326-327		
W-Nov 20	27	- Recombinant DNA in biochemistry	Ch8, 283-286		
F-Nov 22		- Nucleic Acids V; - Replication	Ch25, 916-921	28 Q13-15	<i>Lab 5c</i>
M-Nov 25		- Review Session			
R-Sat- Nov 27-30		HOURLY EXAM IV (8:00-10:00 AM at MOR101) [Lectures 21-27; 3, 2c-d†] (9)			
M-Dec 2	28	HOLIDAY – FALL BREAK – Happy Thanksgiving			<i>NO LABS (Fall Break)</i>
		- Nucleic Acids VI; - Transcription & Genetic Code	Ch26, 960-964 Ch27, 1006-1013, 1018-1024	29 30	
		- Nucleic Acids VII; - Translation	Ch27, 1015-1018, 1028-1036	31	
W-Dec 4	29	- Lipids & Membranes I; - Introduction	Ch10, 341-348	32	
		- Lipids & Membranes II; - Membrane lipids Bilayers	Ch10, 352-354, 356 Ch11, 367-369		<i>Lab practicals</i>
F-Dec 6	30	- BB 621 Presentations 11:15-12:00 in LSE 1004			
		- Lipids & Membranes III; Membranes & Membrane proteins	Ch11, 370-381	33	
M-Dec 9	31	- <u>Vitamins & Coenzymes</u>	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 Ch 10, 356-360 Ch17, 613-615	34	<i>Last Labs</i>
		- <u>Metabolism</u> ; Introduction & Bioenergetics	Ch1, 4-5 Ch13, 465-471, 479-485	35	
W-Dec 11		- BB 621 Presentations 11:15-12:00 in LSE 1004			
R-Dec 12		- Review Session 5:00-6:00 for exam 1-4 questions in HAR 208		Q11-12/Q16-20	
Mon-Dec 16		- Review Session 4:00-5:45 pm in HAR 208			
Wed-Dec 18		FINAL EXAM (8:00–11:00 AM at MOR101) [Lectures 28-31(50%) plus Cumulative (50%); 4, 5a-5c†] (6)			
F-Dec 20		BB 621 Papers DUE (5:00 PM)			

§NOTE: Discussion sections (C1-C2) will run about 75 min, usually less than the blocked time. *Underlined lecture numbers are 2-hour Monday lectures; underlined dates are for BB 621 discussion dates.

**Homework assignment number in *Achieve* (5-10 questions each); Due Sunday nights, no exceptions. ¶Not dropped, worth double, Due by Nov 22. ‡Last day to ADD (9/16), DROP without a 'W' (10/8), or WITHDRAW with a 'W' (11/12). †Indicates the lab weeks that are covered on exam.

Prerequisites: Students are **REQUIRED** to have passed ($\geq$ C) 2 semesters of organic chemistry (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) *Achieve* Website

Grading:

421: Lab 30%, Homework 10%, Best 3 of 4 hour exams 36%, Final 24%

621: Lab 25%, Homework 10%, 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/>]