Biochemistry II Lecture & Lab Schedule

Spring 2026

BB 422/622

Policies and Course Information on Website*

version 7

Lectures: **A1** 9:05 – 9:55 am **MWF** **SCI-113**
Exams: 7:00 – 9:00 pm **T** **MORSE**

Professor Dean Tolan
email: tolan@bu.edu
Room: 702, LSE (24 Cummington)

Office hours: Tuesday 4:30-5:30 pm and Friday 11 am -12 pm in LSE-704, and by appointment

Pre-lab Discussions:

Hushka	C1 12:20 pm – 2:05 pm	**Wed**	CAS 216
Hushka	C2 12:30 am – 1:45 pm	**Thr**	CAS 203
Hushka	C3 3:30 pm – 4:45 pm	**Thr**	CAS 315

Laboratory Coordinator:

Dr. Tony Hushka
email: ahushka@bu.edu
Room: SCI 344

Office hours: Monday 11-12 in SCI 530B, 3-4 in SCI 344 and Friday 2:30-3:30 in SCI 270D, and by appointment

Laboratory Sections:

S#	Time	Day	Room	Instructors
B1	5:00 pm - 9:00 pm	Wed	SCI 427	Takumi & Brendan
B2	8:00 am - 12:00 pm	Thr	SCI 427	Rebecca & Ethan
B3	10:10 am - 2:10 pm	Fri	SCI 427	Brett & Patryk
B4	3:35 pm - 7:35 pm	Fri	SCI 427	Patryk & Brendan
B5	5:00 am – 9:00 pm	Mon	SCI 427	Ethan & Brett

Laboratory Teaching Fellows:	Sections	email	Office hours	Room
Takumi Hawes	B1	thawes@bu.edu	Tuesday 3-4	SCI 344
Ethan Howell	B2 & B5	efhowell@bu.edu	Monday 1-2 pm	LSE 704
Brett Kahmann	B3 & B5	bkahmann@bu.edu	Tuesday 2-3 pm	LSE 207
Patryk Kalinowski	B3 & B4	patryk@bu.edu	Wednesday 2-3 pm	SCI 344
Brendan Kosztyo	B1 & B4	bkosztyo@bu.edu	Monday 2-3	LSE 704
Rebecca Koweek	B2	rkoweek@bu.edu	Wednesday 1-2 pm	SCI 344

Project Help:

	Time	Day	Room	Instructors
(starting 2/20)	4:00-5:00 pm	Fri	LSE-704	Tolan

Required texts:

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

***Biochemistry-II Home Page**: http://www.bu.edu/aldolase/biochemistry2/

Pre-requisites: Students are REQUIRED to have passed BB 421/621, or equivalent, which has a prerequisite of four semesters of chemistry, **AND** First Year Writing Seminar (e.g., WR 100 or WR 120).

GRADING:

BB 422: Lab: 30%; Project: 7%; Homework: 7%; Lecture: 56% (Best 4/5; each worth 14%).
BB 622: Lab: 25%; Grad Project: 12%; Homework: 7%; Lecture: 56% (Best 4/5; each worth 14%)

Homework Policy: Using the *ACHIEVE* website, there will be 33-34 problem-sets assigned as weekly homework. Most will come from the end-of-chapter questions, which are mostly due weekly on Sundays. In addition, there will be about 17-18 chapter Adaptive Quizzes designed to help study for each exam, which are due at 4 PM on the day of each exam. These will be hard deadlines, there will be no makeup opportunities on the homework or quizzes regardless of any reason (see Policy on Introduction).
The entire set of 50-52 assignments of homework and quizzes will comprise 7% of your overall grade, mostly as incentive to help prepare yourself for the exams. Because no makeups are allowed, your ~25% quarter of all the homework and quizzes will not count. In other words, only your top 24-25 homework scores and top 13 quiz scores will be used for calculating your overall homework score.

SYLLABUS DETAILS: The rest of the syllabus is posted on the Web site and contains important information about grades, lab, behavior, well-being, etc.

Academic Conduct:

Unauthorized downloading, uploading, sharing, and/or duplicating course materials including, but not limited to, assignments, exams, quizzes, slides, videos, and any other material created and/or provided by the instructor without the instructor's express permission. Other academic misconduct and their consequences are given in the Syllabus Policies.

*If you only have available Lehninger's Principles of Biochemistry, **7th edition**, note that the problems might not have the same numbers as those suggested for this year. Also, there is no 8th edition of the study guide; those problems are not listed this year. McMillan published a conversion guide, including what was changed with the problems at the end of the chapter. It's a large file, but also available on *Achieve*.

SCHEDULE OF EVENTS

Date	Day	Lect. Num.	Topic	Reading	HW/ Quiz	Lab/Proj
Jan 21	W	1	What's Metabolism about? – *An overview of how nutrients yield both energy and building blocks for cell syntheses.*	*Chapter 13.1 & 13.3*		**Disc starts**
Jan 23	F	2	Bioenergetics	*Chapter 13.2 & 13.4*	**1**	
Jan 26	M	3	Bioenergetics (snow day)	*Chapter 11.1-2(review)*	**2**	
Jan 28	W	4	Crossing the Berlin Wall of the cell – Membrane Transport *How does food get from outside into the cell?*	*Chapter 11.3*		**Lab Starts**
Jan 30	F	5	**CATABOLISM I: Digestion and utilization of carbohydrates** Glycogen metabolism – *From glycogen to glucose*	*Chapter 15.2 & Chapter 14.2*	**3**	**Ch 7**
Feb 2*	M	6	Glycolysis (1) – *From C_6 to 2 x C_3*	*Chapter 14.1*		
Feb 2	M	–	*Review Session for Exam 1 (10:00-11:00 (SOC-B57) & 4:00-5:00 (PSY B51)*			
Feb 3	**T 7pm**	–	**Exam #1** (covers 1-6; Jan 21 to Feb 2) (6:3:3) 7:00-9:00 PM in MORSE		**Q: 1,2,3**	
Feb 4	W	7	Glycolysis (2) – *From triose-P to pyruvate (NAD^+ to $NADH+H^+$)*	*Chapter 14.1*		**Ch 6a/8ab**
Feb 6	F	8	How do sucrose, fructose, and lactose enter glycolysis? Anaerobic fates of pyruvate*: from C_3 to C_2 + CO_2*	*Chapter 14.2-14.3*	**4**	*Ch 7 due*
Feb 9	M	9	Anaerobic fates of pyruvate*: from C_3 to C_2 + CO_2* Aerobic fate of pyruvate: formation of acetyl-S-CoA	*Chapter 16.1 Chapter 19*		
Feb 11	W	10	Tricarboxylic acid cycle (1) – Evidence for the cycle	*Chapter 16.2*	**5**	
Feb 13	F	11	Tricarboxylic acid cycle (2) – Burning 2C's to CO_2	*Chapter 16.2 Chapter 19*	**6**	
Feb 16	M		**HOLIDAY**			
Feb 17	T(M schd)	12	Tricarboxylic acid cycle (3) – regenerating the C_4 acceptor	*Chapter 16.2 & 16.4*	**7**	
Feb 18	W	13	Oxidative phosphorylation (1) – *Electron Transport*	*Chapter 19.1*	**8**	
Feb 20	F	14	Oxidative phosphorylation (2) – *Electron Transport*	*Chapter 19.1*	**9**	
Feb23/24	M/T	–	Snow Days – Lectures canceled			
Feb 23	M	–	*Review Sessions for Exam 2 cancelled due to Snow Day*			
Feb 25	W	15	Oxidative phosphorylation (3) – *The chemiosmotic theory and ATP synthesis.*	*Chapter 19.2 & 19.3*	**10**	**Ch 9AB**
Feb 26	R 8pm		**Exam #2** (covers 7-15; Feb 4 to Feb 20) (8:6:3) 8:00-10:00 PM in MORSE		**Q:4,5, 6**	
Feb 27	F	16	**CATABOLISM II: Digestion and utilization of fat** Lipids; fatty acid degradation (1) – *How are fats broken down to intermediates of glycolysis and the TCA cycle?*	*Chapter 17.1-17.2*	**11**	*Ch 8 due*
Mar 2	M	17	Lipids; fatty acid degradation (2) – *saturated, unsaturated, and other fatty acids*	*Chapter 17.2*	**12**	***Proj-1 due***
Mar 4	W	18	Lipid degradation (3) – *ketone bodies and acidosis* **CATABOLISM III: Digestion and utilization of proteins and nucleic acids** – Protein degradation (1)	*Chapter 17.3 Chapter 27.3*	**13**	
Mar 6	F	19	Protein degradation (2) – the Ubiquitin pathway *How is the N of amino acids liberated and eliminated?*	*Chapter 27.3 Chapter 18.1*		
Mar 8 – Mar 16			**SPRING BREAK**			
Mar 16	M	20	Protein degradation (3) – The transaminase reaction; Urea cycle; bi-cycle; Elimination of Ammonia-N by fish, flesh and fowl; control of Urea Cycle	*Chapter 18.2*	**14**(due F) **15**	
Mar 18	W	21	Protein degradation (4) – Amino-acid degradation I *How are Carbon Skeletons of Amino acids metabolized?*	*Chapter 18.2*	**16**	**Ch 10 A-D**
Mar 21	F	22	Protein degradation (5) – Amino-acid degradation II	*Chapter 18.3 Chapter 17.2*	**17, 18**	
Mar 23	M	23	Protein degradation (6) – Amino-acid degradation III Nucleic acid degradation – uric-acid formation	*Chapter 22.4*	**19**	

Mar 23	M	–	*Review Session for Exam 3 (10:00-11:00 (SOC-B57) & 4:00-5:00 (PSY B51)*			
Mar 24	**T 7pm**		**Exam #3** (covers 15-23; Feb 25 to Mar 23) (9:10:3) 7:00-9:00 PM in MORSE		**Q:6,7, 8**	
Mar 25	W	24	**ANABOLISM I: Biosynthesis of carbohydrates** **Photosynthesis (1)** – *How does light power anabolism?*	*Chapter 20.1-20.2*	**20**	
Mar 27	F	25	**Photosynthesis (2)** – *How does CO_2 get fixed?* – Calvin cycle – *How is the net formation of glucose from CO_2 achieved?*	*Chapter 20.3-20.4*	**21**	*Ch 9 due*
Mar 30	M	26	**Photosynthesis (3)** – Calvin cycle – completing the cycle; Regulation	*Chapter 20.4-20.5, p735-6*	**22**	***Proj-2 due***
April 1	W	27	**Photosynthesis (4)** – Biomass, C_4 Plants & Kornberg cycle **Carbohydrate Biosynthesis in Animals** – Gluconeogenesis – *From pyruvate to glucose*	*Chapter 14.4*	**23**	
April 3 ***	F	28	– Glycogen metabolism – *From glucose to glycogen* Pentose-Phosphate Pathway –*generation of NADPH & C_5-sugars*	*Ch 15.2* *Chapter 14.5-14.6*	**24**	
April 6	M	29	– Regulation of carbohydrate metabolism in animals	*Chapter 15.3*	**25, 26**	
April 8	W	30	– Anaplerosis – *How can the TCA cycle supply both energy and synthetic precursors?* **ANABOLISM II: Biosynthesis of Fatty Acids & Lipids** – Fatty acid synthesis – *biosynthesis versus catabolism?*	*Ch 16.3* *Chapter 21.1*	**27**	
April 10	F	31	– Fatty acid synthesis & diversification – Eicosanoids & prostaglandins	*Chapter 21.1*	**28**	
April 13	M	32	– Lipid synthesis – *How are phospholipids & fats formed?* – HMG-CoA junction between ketone bodies & isoprenes	*Chapter 21.3-21.4; Chapter 19.4(partial)*		
April 13	M	–	*Review Session for Exam 4 (10:00-11:00 (SOC-B57) & 4:00-5:00 (PSY B51)*			
April 14	**T 7pm**		– **Exam #4** (covers 24-32; Mar 25 to Apr 13) (9:9:5) 7:00-9:00 PM in SLEEPER		**Q:9,10 11,12, 13**	
April 15	W	33	– Cholesterol & Steroid synthesis –*From C_2 units to a complex polycyclic.* – Cholesterol homeostasis and regulation	*Chapter 21.4* *Chapter 19.4(partial)*	**29**	**Ch 11**
April 17	F	34	**ANABOLISM III: Biosynthesis of Nitrogen Compounds** – N_2 Fixation & assimilation – *How is atmospheric N_2 fixed and then assimilated into amino acids?*	*Chapter 22.1*	**30**	*Ch10 due*
April 20	M		– **HOLIDAY – PATRIOT'S DAY** –			
April 22	W(M schd)	35	– Amino-acid biosynthesis – Non-essential Amino acids & – essential Amino acids	*Chapter 22.2*	**31**	*Mon lab*
April 24	F	36	– Nucleoside & nucleotide biosynthesis (1) –*How are the* – *building blocks for Nucleic Acids formed?* Purine *de novo*	*Chapter 22.4*	**32**	
April 27	M	37	– Nucleoside & nucleotide biosynthesis (2) Salvage pathways & pyrimidines *de novo* *How is deoxyribose formed?* Ribonucleotide reductase	*Chapter 22.1-22.4*	**33**	
April 29	W	38	– Nucleoside & nucleotide biosynthesis (3) – Control of nitrogen metabolism; feedback inhibition Other secondary products of amino acid metabolism; Biosynthesis and degradation of heme	*Chapter18* *Chapter 22.3*		
May 1	F	–	*Review Session for Exam 5 (4:00-5:00 PM in SOC B57)*			
May 3	Su	–	– *Final Projects in Metabolism Due by midnight*			***Proj-3 due***
May 4	M	–	– *Review Session for Exam 5 (5:15-6:15 PM in TBA)*			
May 6	**W**	–	– **Exam #5** (covers 33-38; Apr 15 to Apr 29) (6:5:3 + 33% cumulative) 8:00-11:00 AM in TBA		**Q:14, 15,16**	

†See Homework policy (**Bold** indicates HW #). *ADD deadline: **M Feb 2.** **DROP deadline: **T Feb 24.** ***W or P/F deadline: **F Apr 3**

F; Clinical Correlations Fridays