Chem3271 & Biol3272 – Biochemistry II
Course Outline Winter 2019

Prerequisite Chem3251 / Biol3252 – Biochemistry I

Course Website Course materials (course outline, lecture notes, lab manual, etc.) are posted at MyCourseLink on D2L.

Instructor Dr. Justin Jiang
Phone 766-7171
Email zjiang@lakeheadu.ca
Office CB 4021
Office Hours Tuesday & Thursday 11:00 – 12:00; or by appointment

Lecture Wednesday & Friday 2:30 pm – 4:00 pm; Location: ATAC2001

Textbook

- *Biochemistry*, 8th edition by Berg / Tymoczko / Gatto / Stryer (ISBN-13: 978-1-4641-2610-9), W.H. Freeman and Company, New York, 2015.
- A *Student Companion* book is also available. This is not required for the course, but contains useful exercises that help reinforce the concepts discussed in the class.

Lab Instructor Christina Richard (CB 2028A, 343-8765, crichar3@lakeheadu.ca)

Lab Sessions Tuesday 2:30 – 5:30 & Thursday 11:30 – 2:30; Location: CB2050 / 2051

Lab Manual

- *Chem3271 & Biol3272 – Biochemistry II Laboratory Manual*, Department of Chemistry, Lakehead University, Revised 2019.
- The manual is available on D2L. Lab starts in the second week. There is no need to do a lab check-in in the first week of classes.

Lab Safety

- All students must adhere to Department's safety rules and LU's academic integrity rules.
- All students are required to complete the Department of Chemistry's online chemical safety course, which can be accessed through MyCourseLink on D2L, entitled "**Chemistry Department Lab Safety and Administration**". There are three components in this course, all of which must be completed by the due date:
    1) WHMIS and GHS
    2) Chemistry Department Safety Regulations
    3) Academic Integrity

Mark Distribution:

Quizzes	10%
Lab	25%
Midterm Exam	25%
Final Exam	40%

- Although the lab component is worth only 25% towards the final grade of the course, one must obtain a minimum of 50% of the lab mark in order to pass this course.

Reading references

- Lecture notes will be posted on D2L in advance. They are intended as guides. The corresponding chapters in the textbook must be studied for exams.
- Lecture topics are subject to change. Schedules are approximate.

Quizzes

- Online on D2L. Opens Friday 8:00 pm and closes Monday 8:00 pm.

Exams (including midterms)

- Midterm exam include everything up to the lecture prior to the exam, unless otherwise noted.
- Final exam is comprehensive. However emphasis will be given to content not covered in the midterm.
- No phones, tablets, or other gadgets allowed at the desk or with the student during the exam.
- Backpacks, bags, folders and other containers should be placed at the front of the classroom.
- Leave at least one seat empty between you and the next student.
- If you absolutely have to go to washroom in the middle of the exam, leave all your belongings in the classroom.
- Midterm exams are official exams; therefore university exam policies apply to midterm exams as well. If you miss an exam for medical or compassionate reasons, you will be asked to present appropriate documentation in order to schedule a make-up exam during or immediately after the week when the exam is originally scheduled.

Schedule and Lecture Topics

Week	Lec	Date	Topic	Textbook Chapter	Lab
1	1	W Jan 9	Review pKa, Buffer and Amino Acids	chapter 1.3 chapter 2.1, 2.2	No lab
	2	F Jan 11	Enzymes: Basic Concepts	chapter 8.0 – 8.3	
2 Quiz 1	3	W Jan 16	Enzyme Kinetics	chapter 8: 8.4	Lab 1: Buffers, buffering capacity and the Henderson-Hasselbalch equation (3.5%)
	4	F Jan 18 Final date to register Jan 18	Enzyme Inhibition I	chapter 8: 8.5	
3	5	W Jan 23	Enzyme Cofactors	Ch 8.1; Ch 15.4; Ch 18.3	Lab 2: Superoxide-scavenging capacity of different beverages (3.5%)
	6	F Jan 25	Enzyme Catalytic Strategy	chapter 9.0 – 9.2	
4 Quiz 2	7	W Jan 30	Enzyme Regulatory Strategy	chapter 10.1 – 10.4	Lab 3: Michaelis-Menten kinetics of mushroom tyrosinase (6%)
	8	Fr Feb 01	Enzyme Inhibition II	chapter 8: 8.5	
5	9	W Feb 06	Enzymic Protective Mechanisms	Ch 10.4; Ch 18.3 Ch 20.5; Ch 24.4 Ch 26.4	No lab
	10	F Feb 08	Protein–Ligand Binding		
6	11	W Feb 13	Mini Review		Lab 4: Inhibition studies of mushroom tyrosinase (3.5%)
		F Feb 15	**Midterm Exam** (25%)		
7	**Feb 18 – 22**		**Study break**	**Study break**	**Study bread**
8	12	W Feb 27	Signal Transduction 1: Overview	chapter 14.0 – 14.5	No Lab
	13	F Mar 01	Signal Transduction 2: G-protein-associated Pathways	chapter 14.0 – 14.5 chapter 33.3	
9 Quiz 3	14	W Mar 06	Signal Transduction 3: Tyrosine Kinase Receptor Pathways	chapter 14.0 – 14.5 chapter 33.3	Lab 5: Protein/ligand interactions: A competitive protein-binding experiment (4%)
	15	F Mar 08 Final date to withdraw Mar 08	Innate Immune Defense	chapter 34.0	
10	16	W Mar 13	Glycogen Metabolism 1	chapter 21.1 – 21.5	No Lab
	17	F Mar 15	Glycogen Metabolism 2	chapter 21.1 – 21.5	
11 Quiz 4	18	W Mar 20	Protein Turnover & Amino Acid Degradation 1	chapter 23.0 – 23.6	No Lab
	19	F Mar 22	Amino Acid Degradation 2	chapter 23.4 – 23.6	
12	20	W Mar 27	Biosynthesis of Amino Acids	chapter 24.0 – 24.2	No Lab
	21	F Mar 29	Integration of Metabolism & Ketone bodies	chapter 27	
13	22	W Apr 03	Drug Discovery and Development	chapter 36.0 – 36.4	Lab 6: Computer-based biochemical research of an assigned disease (4.5%)
	23	F Apr 05	Review		
14-15	Apr 08-20		**Final Exam** (40%)		