Chem3271 & Biol3272 – Biochemistry II
Course Outline Winter 2018

Prerequisite Chem3251 / Biol3252 – Biochemistry I

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

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

Lecture Wednesday & Friday 11:30 AM – 1:00 PM; Location: ATAC2015

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 Monday 8:30 – 11:30 & Thursday 2:30 – 5:30; Location: CB2050 / 2051

Lab Manual

- *Chem3271 & Biol3272 – Biochemistry II Laboratory Manual*, Department of Chemistry, Lakehead University, Revised 2018.
- The manual is available on D2L. Lab starts in the second week.

Mark Distribution:

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

- Although the lab component is worth 25% of the final grade, 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 10 am and closes Monday 10 am.

Exams (including midterms)

- Midterm exams 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 midterms.
- No phones, tablets, or other gadgets allowed at the desk or with the student during the exams.
- 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 bathroom 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. 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	Wed Jan 10	Review pKa, Buffer and Amino Acids	chapter 1.3 chapter 2.1, 2.2	No lab
	2	Fri Jan 12	Enzymes: Basic Concepts	chapter 8.0 – 8.3	
2 Quiz 1	3	Wed Jan 17	Enzyme Kinetics	chapter 8: 8.4	Lab 1: Buffers, buffering capacity and the Henderson-Hasselbalch equation (3.5%)
	4	Fri Jan 19	Enzyme Inhibition I	chapter 8: 8.5	
3	5	Wed Jan 24	Enzyme Cofactors	Ch 8.1; Ch 15.4; Ch 18.3	Lab 2: Superoxide-scavenging capacity of different beverages (3.5%)
	6	Fri Jan 26	Enzyme Catalytic Strategy	chapter 9.0 – 9.2	
4	7	Wed Jan 31	Enzyme Regulatory Strategy	chapter 10.1 – 10.4	Lab 3: Michaelis-Menten kinetics of alkaline phosphatase (6%)
	8	Fri Feb 02	Enzyme Inhibition II	chapter 8: 8.5	
5 Quiz 2	9	Wed Feb 07	Enzymic Protective Mechanisms	Ch 10.4; Ch 18.3 Ch 20.5; Ch 24.4 Ch 26.4	No lab
	10	Fri Feb 09	Introduction to Glycobiology	chapter 11	
6	11	Wed Feb 14	Mini Review		Lab 4: Inhibition studies of alkaline phosphatase (3.5%)
		Fri Feb16	**Midterm Exam** (25%)		
7		Feb 29 – 23	Study week / No Class		No lab
8	12	Wed Feb 28	Protein–Ligand Binding Signal Transduction 1: Overview	chapter 7 chapter 14.0 – 14.5	No Lab
	13	Fri Mar 02	Signal Transduction 2: G-protein-associated Pathways	chapter 14.0 – 14.5 chapter 33.3	
9 Quiz 3	14	Wed Mar 07	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	Fri Mar 09	Innate Immune Defense	chapter 34.0	
10	16	Wed Mar 14	Glycogen Metabolism 1	chapter 21.1 – 21.5	No Lab
	17	Fri Mar 16	Glycogen Metabolism 2	chapter 21.1 – 21.5	
11 Quiz 4	18	Wed Mar 21	Protein Turnover & Amino Acid Degradation 1	chapter 23.0 – 23.6	No Lab
	19	Fri Mar 23	Amino Acid Degradation 2	chapter 23.4 – 23.6	
12	20	Wed Mar 28	Biosynthesis of Amino Acids	chapter 24.0 – 24.2	No Lab
	21	Fri Mar 30	Good Friday / No Class		
13	22	Wed Apr 04	Integration of Metabolism	chapter 27	Lab 6: Computer-based biochemical research of an assigned disease (4.5%)
	23	Fri Apr 06	Drug Discovery and Development	chapter 36.0 – 36.4	
14	24	Mon Apr 08	Review (Make-up class for Good Friday)		
14-16	Apr 13-24		**Final Exam** (40%)		