
**Chem3271 & Biol3272 – Biochemistry II
Course Outline Winter 2017**

Prerequisite Chem3251 / Biol3252 – Biochemistry I

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

Instructor Dr. Justin Jiang
Phone 766-7171
Email zjiang@lakeheadu.ca
Office CB 4021
Office Hours Tuesday & Thursday 4:00 – 5:00 PM; or by appointment

Lecture Wednesday & Friday 1:00 AM – 2:30 PM; Location: ATAC1007

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, cricar3@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 2017.
- The manual is available on D2L. Lab starts in the second week.

Mark Distribution

Midterm Exam	25%
Quizzes	10%
Labs	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.

Quizzes

- Online on D2L. Opens Friday 10 am and closes Sunday 10 am.

Reading references

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

Schedule and Lecture Topics

Week	Lec	Date	Topic	Textbook Chapter	Lab
1	1	Wed Jan 11	Review pKa, Buffer and Amino Acids	chapter 1.3 chapter 2.1, 2.2	No lab
	2	Fri Jan 13	Enzymes: Basic Concepts	chapter 8.0 – 8.3	
2 Quiz 1	3	Wed Jan 18	Enzyme Kinetics	chapter 8: 8.4	Lab 1: Buffers, buffering capacity and the Henderson-Hasselbalch equation (2%)
	4	Fri Jan 20	Enzyme Inhibition I	chapter 8: 8.5	
3	5	Wed Jan 25	Enzyme Cofactors	Ch 8.1; Ch 15.4; Ch 18.3	Lab 2: Superoxide-scavenging capacity of different beverages (3.5%)
	6	Fri Jan 27	Enzyme Catalytic Strategy	chapter 9.0 – 9.2	
4	7	Wed Feb 01	Enzyme Regulatory Strategy	chapter 10.1 – 10.4	Lab 3: Michaelis-Menten kinetics of mushroom tyrosinase (6%)
	8	Fri Feb 03	Enzyme Inhibition II	chapter 8: 8.5	
5 Quiz 2	9	Wed Feb 08	Enzymic Protective Mechanisms	Ch 10.4; Ch 18.3 Ch 20.5; Ch 24.4 Ch 26.4	No lab
	10	Fri Feb 10	Introduction to Glycobiology	chapter 11	
6	11	Wed Feb 15	Mini Review		Lab 4: Inhibition studies of mushroom tyrosinase (5%)
		Fri Feb 17	Midterm Exam (Lecture 1 – 11) (25%)		
7		Feb 20 – 24	Study week / No Lecture		No lab
8	12	Wed Mar 01	Protein–Ligand Binding Signal Transduction 1: Overview	chapter 7 chapter 14.0 – 14.5	No Lab
	13	Fri Mar 03	Signal Transduction 2: G-protein-associated Pathways	chapter 14.0 – 14.5 chapter 33.3	
9 Quiz 3	14	Wed Mar 08	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 (4.5%)
	15	Fri Mar 10	Innate Immune Defense	chapter 34.0	
10	16	Wed Mar 15	Glycogen Metabolism 1	chapter 21.1 – 21.5	No Lab
	17	Fri Mar 17	Glycogen Metabolism 2	chapter 21.1 – 21.5	
11 Quiz 4	18	Wed Mar 22	Protein Turnover & Amino Acid Degradation 1	chapter 23.0 – 23.6	No Lab
	19	Fri Mar 24	Amino Acid Degradation 2	chapter 23.4 – 23.6	
12	20	Wed Mar 29	Biosynthesis of Amino Acids	chapter 24.0 – 24.2	No Lab
	21	Fri Mar 31	Drug Discovery and Development	chapter 36.0 – 36.4	
13	22	Wed Apr 05	Drug Metabolism & Drug Resistance	Ch 26.4, Ch 36.1 Ch 13.2	Lab 6: Computer-based biochemical research of an assigned disease (4%)
	23	Fri Apr 07	Review		
14-15		Apr 10-13, 15, 18-21	Final Exam (lecture 1 – 23) (40%)		