COURSE OUTLINE
CHEM-3251/BIOL-3252 Biochemistry I
Department of Chemistry
FALL 2025

Instructor: Dr. Van Nguyen
Email: tknguyen@lakeheadu.ca
Lectures: MW 1:00 pm-2:30 pm
Location: OA2017
Office Hours: 10 am- 11 am Thursdays via Zoom (Other times by appointment)

Lab instructor: Qurat Baig
Email: qbaig@lakeheadu.ca
Labs: M 8:30am-11:30am,
Location: OA3001
Lab Instructor office hours: Please email the Lab instructor to schedule appointments as needed.

Course info

CHEM-3251-FAO/BIOL-3252-FAO in Fall 2025 is expected to be an in-person/on-campus course. There is a mycourselink page of this course to provide course materials as well as for posting announcements. Students will attend in-person classes and labs AND follow the mycourselink page closely for learning materials as well as for quizzes/tests if any. More info will be posted on mycourselink. When you need to contact us, please make sure to use your **@lakeheadu.ca** email.

Prerequisites: Chemistry 2231

Course Description

Chemistry and metabolism of monosaccharides, disaccharides and polysaccharides. Chemistry of amino acids and proteins. Structure and reaction of fatty acids, triacylglycerols and phospholipids. Structure and properties of nucleotides and polynucleotides of DNA and RNA.

Important: Please don't hesitate to join my office hours or email for appointment IMMEDIATELY if you need help or have a question; don't wait until the end of the semester to seek for help.

Course Learning Objectives

By the end of this course, the student is expected to

- know the chemical structures of the four major classes of biomacromolecules and how they are related to their properties and functions.
- understand metabolism
- obtain some biochemical techniques/skills and know how to write a scientific report
- relate biochemistry to daily life

Delivery mode and course resources

This course is planned to be in-person on Orillia campus. Material is covered through textbook readings, in-person lectures, poster and/or presentation activities and practice exercises. In case of need, the in-person lectures can be changed to online via Zoom. There may be pre-lab and/or post-lab quizzes. Course materials and quizzes are posted to the "mycourselink" course site https://mycourselink.lakeheadu.ca

Materials

Textbook: *Biochemistry*, 9th edition by Stryer/Berg/Tymoczko, ISBN: 9781319234362 (ebook - $92.99), or ISBN: 9781319114671 (hard cover). The cost may change.

Lecture notes: will be posted on mycourselink

Lab Manual: CHEM3251 & BIOL3252 – Biochemistry I Laboratory Manual, Department of Chemistry, Lakehead University; will be provided by the lab instructor and posted in "mycourselink".

Evaluations

You earn your grade by the time and effort you put into your work. Please don't ask for extra-credit assignments or bonus work or grade bumping as there are already several chances for you to improve your grade. Please let me know asap though, if you have any special circumstance so I can help in finding a solution.
Grade protest: if you find any grade mistake or have any questions on the grading, you must inform the instructor **within 1 week** after the grade is posted. After that, no change can be made.

Grade Components	*Percentages*
Quizzes/Assignments	25%
Laboratory	25%
Term Exam	20%*
Final Exam	25%*
Flexible distribution	5%*
Total:	**100%**

(*) For the Term Exam and Final Exam, the higher grade you get will be added with the flexible distribution (aka will weight 5% higher). For example, *IF* your higher score is the Final, the weighting will be as follows:

Term Exam	*20%*
Final Exam	***30%***

Note: All quizzes, tests and exams in this course are CLOSED BOOK.

Quizzes/Assignments (25%): include Homework (5%), Regular quizzes (15%) & Attendance (5%)

Homework: will be assigned after each chapter.

Regular quizzes: There will be quizzes and/or other assignments. A quiz can be online via mycourselink or in-class depending on each chapter; but will be announced ahead of time on mycourselink. *The lowest quiz will be dropped.* There can also be other assignment activities such as presentations and/or short projects. Details will be announced later if any.

Attendance quizzes: There will also be random attendance quizzes. *One lowest will be dropped*.

Midterm and Final Exam (50%):

Midterm and Final Exam include everything up to the lecture prior to the exam, unless otherwise noted. However, emphasis is given to content not covered in the previous exam(s).

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.

The test time and date for each exam is fixed. Any student who has conflicts with these schedules need to email me no later than 1 week before the exam date for an arrangement.

Laboratory (25%):

You are expected to complete **1) the WHMIS training, 2) the Chem. Dept. safety quiz and 3) the academic integrity pledge** in the myChemistry course on mycourselink (due time and date to be announced by the lab instructor). No laboratory reports will be graded (and will be assigned a grade of 0) until these modules are completed.

Should you need to miss a lab you are still responsible for the material contained in this lab, even if you are excused (an excused lab will not count against your grade).

The lab instructor will give you more details and their specific requirements.

Late Submission and Alternate/Make-up Assessments

If an unexpected event happens causing conflicts with your test/exam time, please contact me by email as soon as possible. I will follow the guidelines below in general but will consider individual circumstance on a case-by-case basis.

- Quizzes (or assignments, if any) often have a long time-window to work on.
  Late submission is accepted within 48 hours from the due time, with a **penalty of 20%**.
- For fixed-schedule exams like Midterm and Final, if I am not noticed ahead of time, make-up/alternate assessments will only be provided in extenuating circumstances and only if *you contact me within 24 hours of the event to make arrangements if applicable*, following with an appropriate documentation (doctor's note, university official's letter, etc.) afterward.
- Lab-related late/miss policy will be announced by the lab instructor.

Cheating

Students are expected to complete all aspects of the course individually unless instructed differently. No communication of any kind is allowed between students during quizzes, Midterms and Final Exam.

Plagiarism is a serious academic offense. To prevent misunderstandings about what it is, the Department of Chemistry has prepared a document that clearly defines plagiarism, gives several examples and lists possible penalties. Students will have to complete the plagiarism certification, located on the "myChemistry" site.

How to e-mail your instructor(s)

This section is provided to help you to effectively communicate with me or your other instructor(s). Your e-mail must be sent from your official **@lakeheadu.ca** address. They must include the course code CHEM-3251-FAO in the subject, a formal greeting, and student number. E-mails missing these details will get a response requesting you to redo the email properly. Please make sure that won't happen to save your own time and the instructor's time.

Normally, I will endeavor to reply to emails promptly (within 1 business day). If you do not get a reply within **2 business days**, you can send me a reminder. Emails sent on evenings/nights or weekends will likely be responded to on the next working day. I highly recommend that you join my office hours for the best help especially when the questions are about solving a problem or need long explanation.

Email format example:

Subject: CHEM-3251-FAO Question about Quiz 3

Dear Dr. Nguyen,
I am a student in your CHEM-3251-FAO class and I have a question about….
…

Sincerely,

Full Name
Student #

COURSE OUTLINE **Lecture:** MW 1:00 pm-2:30 pm. **Room:** OA2017
Lab: M 8:30 am-11:30 am; **Room:** OA3001
(This outline is provisional and may change as the course progresses)

Wk.	Day	Date	Ch.	Topics	Quiz	Lab	Lab Report
1	Wed	Sep 3	1.3	Intro to Biochemistry: Macromolecules – structure, properties, functions		Check in	
2	Mon	8	1.3	Intro to Biochemistry: Buffers			
2	Wed	10	2	Amino acids: structure	HW Ch.1 *Quiz 1*	Lab 1	
3	Mon	15	2	Amino acids: pH			
3	Wed	17	2	Proteins: structure	HW Ch.2	Lab 2	Lab 1
4	Mon	22	4	Nucleic acids: Structure and properties			
4	Wed	24	4	Nucleic acids: Structure and properties	*Quiz 2*	No lab	
5	Mon	29	15	Metabolism: Introduction			
5	Wed	Oct 1	16	Carbohydrates: Glycolysis	HW Ch.4 *Quiz 3*	No lab	
6	Mon	6	16	Carbohydrates: Glycolysis			Lab 2
6	Wed	8	16	Carbohydrates: Gluconeogenesis	HW Ch.15 *Quiz 4*	Lab 3	
7		13-15		Fall study week			
8	Mon	20		Review		**No lab**	
8	Wed	**22**		**Midterm**			
9	Mon	27	20	Carbohydrates: Pentose phosphate pathway	HW Ch.16 *Quiz 5*	Lab 4	Lab 3
9	Wed	29	17	Carbohydrates: TCA cycle			
10	Mon	Nov 3	17	Carbohydrates: TCA cycle		Lab 5	Lab 4
10	Wed	5	18	Carbohydrates: Oxidative phosphorylation			
11	Mon	10	18	Carbohydrates: Oxidative phosphorylation	HW Ch.17 *Quiz 6*	No lab	Lab 5
11	Wed	12	12, 13	Lipids: Membranes			
12	Mon	17	12, 13	Lipids: Membranes	HW Ch.18 *Quiz 7*	Lab 6	
12	Wed	19	22	Lipids: Synthesis			
13	Mon	24	22	Lipids: Synthesis	HW Ch.12 HW Ch.22	No lab	Lab 6
13	Wed	26	22	Lipids: Degradation			
14	Mon	Dec 1		Review			
		TBA		**Final Exam**			

Lab schedule: will be posted on mycourselink and/or announced by the lab instructor.

Important Dates

First Day of Classes	Tuesday, September 2, 2025
Final Day of Classes	Tuesday, December 2, 2025
Final Date to Register (Add)	Monday, September 15, 2025
Final Date to Withdraw (Drop)	Friday, November 7, 2025
Examination Period	**Friday, December 5, 2025 - Sunday, December 14, 2025**
Exam Contingency Date	Monday, December 15, 2025
Marks Due	Thursday, December 18, 2025

University Closures and No Classes

Occurrence	*Date*	*Closes/No Classes*
Labour Day	Monday, September 1, 2025	University Closed
National Day for Truth and Reconciliation	Tuesday, September 30, 2025	No Classes
Thanksgiving Day	Monday, October 13, 2025	University Closed
Fall Study Week	Monday, October 13, 2025 - Friday, October 17, 2025	No Classes
Fall Exam Study Break	Wed & Thursday, December 3 & 4, 2025	No Classes

Accommodations

"Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities and/or medical conditions to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please contact Student Accessibility Services (SC0003, 343-8047 or sas@lakeheadu.ca)."

Academic integrity

"A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students are strongly advised to familiarize themselves with the Student Code of Conduct - Academic Integrity ("The Code") - and, in particular, **sections 26 and 83 through 85**. Non-compliance with the Code will NOT be tolerated in this course and the Code will be adhered to in terms of disciplinary action. The Code provides a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.

Copyright

"Students should be aware that all instructional, reference, and administrative materials prepared for this course are protected in their entirety by copyright. Students are expected to comply with this copyright by only accessing and using the course materials for personal educational use related to the course, and that the materials cannot be shared in any way, without the written authorization of the course instructor. If this copyright is infringed in anyway, students may be prosecuted under the Lakehead University Student Code of Conduct – Academic Integrity, which requires students to act ethically and with integrity in academic matters and to demonstrate behaviours that support the University's academic values."

The instructor reserves the right to revise, alter or amend this course outline as necessary. Students will be notified in writing / email of any such changes.