



**COURSE OUTLINE**  
**CHEM-3271/BIOL-3272 Biochemistry II**  
**Department of Chemistry**  
**WINTER 2025**

**Instructor:** Dr. Van Nguyen  
**Email:** [tknguyen@lakeheadu.ca](mailto:tknguyen@lakeheadu.ca)  
**Lectures:** TTh 11:30 am-1:00 am  
**Location:** OA2017  
**Office Hours:** 3:00 pm-4:00 pm Mondays  
via Zoom (Other times by appointment)

**Lab instructor:** Qurat Baig  
**Email:** [qbaig@lakeheadu.ca](mailto:qbaig@lakeheadu.ca)  
**Labs:** Mon WO2: 11:30 am – 2:30 pm;  
Wed WO1: 11:30 am – 2:30 pm;  
**Location:** OA3001  
**Lab Instructor office hours:** Please email  
the Lab instructor to schedule appointments  
as needed.

### **Course info**

CHEM-3271/BIOL-3272-WAO this semester is 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 classes in-person AND follow the mycourselink page closely for learning materials as well as quizzes/tests (when applied). You will be contacted by the lab instructor and more info will be posted on mycourselink. When you need to contact us, please make sure to use your [@lakeheadu.ca](mailto:@lakeheadu.ca) email.

**Prerequisites:** CHEM 3251/BIOL 3252

### **Course Description**

Enzyme kinetics. Mechanism of enzyme reactions. Biosynthesis of terpenes and steroids. Sequence determination of DNA and RNA using electrophoretic methods. Chemical synthesis of polynucleotides. DNA replication. Protein synthesis.

**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.

### **Delivery mode and course resources**

This course is in-person on Orillia campus. However, when in-person is not allowed or in special circumstances, lectures will be done online via Zoom. Material is covered through textbook readings, lectures, quizzes, and assignments.

Lab materials will be posted by the lab instructor. There may be pre-lab and/or post-lab quizzes. All course's materials will be posted to the "mycourselink" course site <https://mycourselink.lakeheadu.ca>

## Materials

Textbook: *Biochemistry*, 9<sup>th</sup> edition by Stryer/Berg/Tymoczko, ISBN: 9781319114671 (hard cover, \$150, price may change) or ISBN: 9781319234362 (ebook)

Lecture notes: will be posted on mycourselink

Lab Manual: Chem3271 & Biol3272 – Biochemistry II 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 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.

<i>Grade Components</i>	<i>Percentages</i>
Quizzes/Assignments	25%
Laboratory	25%
Midterm Exam	20%*
Final Exam	25%*
Flexible distribution	<u>5%*</u>
<b>Total:</b>	<b>100%</b>

(\*) For the Midterm 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 Final Exam grade is higher than the Midterm Exam grade, the weighting will be as follows:

<i>Midterm Exam</i>	<i>20%</i>
<i>Final Exam</i>	<b><i>30%</i></b>

### Quizzes/Assignments (25%):

Homework Assignment (10%) will be assigned after each chapter. *One lowest will be dropped.*

There will be quizzes and/or other assignments (15%). 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.

### Midterms and Final Exam:

Midterm and Final Exams 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. 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 a week 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-3271-WAO 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-3271-WAO Question about Quiz 3*

*Dear Dr. Nguyen,*

*I am a student in your CHEM-3271-WAO class and I have a question about....*

*...*

*Sincerely,*

*Name*

*Student #*

## COURSE OUTLINE

(This outline is provisional and may change as the course progresses)

Day	Mo.	Date	Chapter (9 <sup>th</sup> Ed)	Topics	Lab	Lab report
Tue	Jan	7	8.0-8.3	Enzymes: Basic concepts		
Thu		9	8.4	Enzyme kinetics		
Tue		14	8.5, 8.1, 15.4, 18.3	Enzyme inhibition Enzyme cofactors	Check in/ Lab 1	
Thu		16	9.0-9.2	Enzyme catalytic strategy		
Tue		21	10.1-10.4 10.4, 18.3, 20.5, 24.4, 26.4	Enzyme regulator strategy Enzyme protective mechanisms	Lab 2	Lab 1
Thu		23	7	Protein-ligand binding		
Tue		28	7	Protein-ligand binding	No lab	Lab 2
Thu		30	14.0-14.5	Signal transduction: Overview		
Tue	Feb	4	14.0-14.5, 33.3	Signal transduction: G-protein-associated pathways	Lab 3	
Thu		6	14.0-14.5, 33.3	Signal transduction: Tyrosine kinase receptor pathways		
Tue		11		Mini review		
Thu		13		<b>Midterm</b>	<b>No lab</b>	
		17-21		<b>Fall study week</b>		
Tue		25	25	Chemical synthesis of polynucleotides	Lab 4	Lab 3
Thu		27	25	Chemical synthesis of polynucleotides		
Tue	Mar	4	29	DNA replication	Lab 5	Lab 4
Thu		6	29	DNA replication		
Tue		11	26	Biosynthesis of terpenes and steroids	Lab 6	Lab 5
Thu		13	26	Biosynthesis of terpenes and steroids		
Tue		18	23.0-23.6	Protein turnover & amino acids degradation	Lab 7	Lab 6
Thu		20	23.0-23.6	Protein turnover & amino acids degradation		
Tue		25	24.0-24.2	Biosynthesis of amino acids	No lab	Lab 7
Thu		27	24.0-24.2	Biosynthesis of amino acids		
Tue	Apr	1	27	Integration of metabolism		
Thu		3		Review		
	<b>TBA</b>	<b>14-24</b>		<b>Final Exam</b>		

**Lab schedule:** will be posted on mycourselink

## Important Dates

First Day of Classes	Monday, January 06, 2025
Final Day of Classes	Friday, April 04, 2025
Final Date to Register (Add)	Friday, January 17, 2025
Final Date to Withdraw (Drop)	Friday, March 07, 2025
<b>Examination Period</b>	<b>Monday, April 07, 2025 - Thursday, April 17, 2025 (11 Days)</b>
Exam Contingency Date	Saturday, April 19, 2025
Marks Due	Friday, April 25, 2025

## University Closures and No Classes

<u>Occurrence</u>	<u>Date</u>	<u>Closes/No Classes</u>
Family Day	Monday, February 17, 2025	University Closed
Winter Study Week	Mon, February 17, 2025 - Fri, February 21, 2025	No Classes
Winter Exam Study Break	Sat, April 05, 2025 - Sun, April 06, 2025	No Classes
Good Friday	Friday, April 18, 2025	University Closed
Easter Monday	Monday, April 21, 2025	University Closed

## 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](mailto: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 should view the Student Code of Conduct – Academic Integrity – for 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.***