



COURSE OUTLINE
CHEM-3271/BIOL-3272 Biochemistry II
Department of Chemistry
WINTER 2026

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

Lab instructor: Qurat Baig
Email: gbaig@lakeheadu.ca
Labs: Mon 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 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: (recommended) *Biochemistry*, 9th edition by Stryer/Berg/Tymoczko, ISBN: 9781319114671 (hard cover, \$150, price may change) or ISBN: 9781319234362 (ebook, \$92.99, price may change). Other editions or textbooks are acceptable.

Lecture notes: will be posted on mycourselink

Lab Manual: CHEM 3271 & BIOL 3272 – 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 | 5%* |
| Total: | 100% |

(*) 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> | 20% |
| <i>Final Exam</i> | 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.*

Midterms and Final Exam (50%):

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 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. *The use of any AI tools when writing lab report or doing homework, assignments or quizzes is considered cheating and must be avoided.*

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)

| Week Dates | Chapter (9 th Ed) | Topics | Lab | Lab report |
|---------------|--|---|--------------------|------------|
| (Jan 5-9) | 8.0-8.3 8.4 | Enzymes: Basic concepts Enzyme kinetics | | |
| (Jan 12-16) | 8.5, 8.1, 15.4, 18.3 9.0-9.2 | Enzyme inhibition Enzyme cofactors Enzyme catalytic strategy | Check in/ Lab 1 | |
| (Jan 19-23) | 10.1-10.4 10.4, 18.3, 20.5, 24.4, 26.4 | Enzyme regulator strategy Enzyme protective mechanisms | Lab 2 | Lab 1 |
| (Jan 26-30) | 7 | Protein-ligand binding | Lab 3 | |
| (Feb 2-6) | 14.0-14.5, 33.3 | Signal transduction: Overview Signal transduction: G-protein-associated pathways | Lab 4 | Lab 2,3 |
| Feb 10 | | Mini review | No lab | Lab 4 |
| Feb 12 | | Midterm | | |
| Feb 16-20 | | Winter study week | | |
| (Feb 23-27) | 14.0-14.5, 33.3 | Signal transduction: Tyrosine kinase receptor pathways | Lab 5 | |
| (Mar 2-6) | 25 | Chemical synthesis of polynucleotides | Lab 6 | Lab 5 |
| (Mar 9-13) | 29 | DNA replication | Lab 7 | Lab 6 |
| (Mar 16-20) | 23.0-23.6 | Protein turnover & amino acids degradation | No lab | Lab 7 |
| (Mar 23-27) | 24.0-24.2 | Biosynthesis of amino acids | Lab presentation | |
| Mar 31 | 27 | Integration of metabolism | | |
| Apr 2 | | Review | | |
| TBA | | Final Exam | | |

Lab schedule: will be posted on mycourseslink

Important Dates

| | |
|-------------------------------|--|
| First Day of Classes | Monday, January 05, 2026 |
| Final Day of Classes | Tuesday, April 07, 2026 (makeup for Fri, Apr 3) |
| Final Date to Register (Add) | Friday, January 16, 2026 |
| Final Date to Withdraw (Drop) | Friday, March 06, 2026 |
| Examination Period | Friday, April 10, 2026 - Sunday, April 19, 2026 (11 Days) |
| Exam Contingency Date | Monday, April 20, 2026 |
| Marks Due | Thursday, April 23, 2026 |

University Closures and No Classes

| <u>Occurrence</u> | <u>Date</u> | <u>Closes/No Classes</u> |
|-------------------------|---|--------------------------|
| Family Day | Monday, February 16, 2026 | University Closed |
| Winter Study Week | Mon, February 16, 2026 - Fri, February 20, 2026 | No Classes |
| Winter Exam Study Break | Wed, April 08, 2026 - Thu, April 09, 2026 | No Classes |
| Good Friday | Friday, April 03, 2026 | University Closed |
| Easter Monday | Monday, April 06, 2026 | 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)."

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.***