

Chem 3393B: Medicinal Chemistry

2024–2025 Course Outline

Course and Instructor Information

Your Professor for CHEM 3393B is [REDACTED]

CHEM 3393B is an in-person course that in addition to in-person lectures and tutorials, follows lesson plans and learning activities using the OWL Brightspace class page (westernu.brightspace.com).

Success in CHEM 3393B requires the student to follow lesson plans and complete learning activities, in addition to attending in-person sessions.

Questions related to course material can be posted on the CHEM 3393B OWL Discussion Forums. Administrative questions of a general nature may be posted in the 'Administration' forum. Resource room hours will be available through CHEM 3393B OWL Zoom or in-person and will be announced in advance. If these approaches to answering your question are unsuccessful, please email the course instructor **from your Western email account** with "CHEM 3393B" in the subject line. Email sent from accounts other than Western will not be responded to.

News and updates will be posted on OWL Brightspace. This is the primary method by which information will be disseminated to everyone in the class. Please remember that it is your responsibility to check the class page on a regular basis.

Anticipated Topics

Medicinal chemistry is a broad topic that spans many disciplines. Since this is a chemistry course, we will focus primarily on the chemical aspects of drugs and less on the biological and clinical aspects. Topics covered will include:

- Drugs and the body (textbook chapters 1-4 and 6-11)
 - What are drugs?
 - What are the common drug targets?
 - How are drugs transported and metabolized?

- Discovery and optimization (textbook chapters 12–18)
 - Generation of lead compounds
 - Optimization of pharmacodynamics and pharmacokinetics
 - Chemical & process development, synthesis methods
 - Computational approaches to drug discovery
- Selected topics (time-permitting; various textbook chapters and supplemental information)
 - Antibiotics (*e.g.* β -lactams, macrolides)
 - Opioids (*e.g.* morphine, heroin, fentanyl)
 - Cholinergic system and chemical weapons
 - The discovery of sorafenib
 - Peptide drugs for diabetes

Course Materials

The required textbook is *An Introduction to Medicinal Chemistry*, 7th edition, by Graham L. Patrick. You may either rent the e-book or you may purchase the print version.

By purchasing the 7th edition e-book or print version, you will receive access to additional student resources such as multiple choice questions. The 6th edition is still acceptable for the course content but you will not have access to the additional resources.

https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2024B&courses%5B0%5D=001_UW/CHE3393B

The textbook's website, which has a collection of student resources such as additional practice questions, is available at the Oxford Learning Link. All additional course material will be posted to OWL Brightspace. **You are required to follow the course content pages on a weekly basis.**

Learning Outcomes

Broadly speaking, a student receiving credit for the course will be expected to demonstrate competence in their ability to:

- Describe the role of medicinal chemists and chemistry in drug design.
- Explain and apply chemical principles, laws and theories.
- Critically analyze and solve Medicinal Chemistry problems.
- Draw scientific conclusions from experimental results or data.
- Synthesize and evaluate information from various sources.
- Communicate scientific thoughts and ideas in writing.
- Develop time management and organization skills.

Evaluation

The overall course grade, out of 100, will be calculated as listed below. Listed next to the respective components are their maximum contribution towards the course grade.

Component	Notes	Value
Assignments	Three assignments throughout the course	30
Participation	Attending and participating in discussions during in-class learning sessions and online forums.	10
Test #1	Friday January 31, 2025 starting at 9:30 am	10
Test #2	Friday March 7, 2025 starting at 9:30 am	10
Final Exam	Cumulative. Scheduled by the Registrar.	40

Assignments are to be submitted through OWL Gradescope. Marks will be deducted for assignments handed in late, at 10% deducted per day. If not submitted within three days of the deadline, the assignment is considered incomplete and a mark of zero is assigned. In the event of academic consideration being granted for a delayed assignment deadline, the latest the assignment can be submitted is three days late. Academic consideration that extends beyond three days results in the assignment being “excused” and the marks distributed onto the remaining assignments.

Participation marks will be assigned based upon your attendance and participation in learning activities and group discussions during our regular Friday class time. In some instances, discussion topics will be assigned with details provided as part of the course content on OWL Brightspace and participation will be through contributions to OWL Discussion Forums.

Tests will be held in-person during regular class times.

Final Exam will be held in-person and is scheduled by the Registrar. The final exam covers all material presented in class, in tutorials and material from the assigned learning activities on the OWL class page.

To be fair to everyone in the class, none of the components will be “dropped,” and it is not possible to have the components reweighted unless academic consideration is approved.

In order to obtain credit for the course, all three of the following requirements must be met:

1. Miss no more than one assignment, whether excused or not. In the event of academic considerations reducing the number of assessments completed successfully below this minimum, you will be required to complete the items missed the next time the course is offered.
2. Obtain a minimum weighted average of 50% on the combined grade for Test #1, Test #2 and the Final Exam.
3. Obtain a minimum of 50 out of 100 on the overall course grade. Students who meet this requirement, but fail to meet one or more of the above requirements, will receive a course grade no greater than 40 out of 100 (even if the calculated course grade is higher) and will not receive credit for the course.

Missed Course Components

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf.

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult Accessible Education.

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

https://registrar.uwo.ca/academics/academic_considerations/

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request without supporting documentation. However, the following assessments are excluded from this, and therefore always require formal supporting documentation: Examinations scheduled during official examination periods (final examination).

When a student *mistakenly* submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

There are no make-up assignments, and it is not possible to reschedule them. If you miss an assignment for any reason, you will be assigned a mark of zero for that assignment. If you receive academic consideration for the missed assignment, an extension may be arranged based upon the length of the academic consideration. If the academic consideration exceeds three days, then the zero will be replaced by a mark of EXCU (excused), which shifts the weight of the missed assignment onto all of the other assignments.

There are no make-up tests. If you receive academic consideration for the missed test, then the value of the test will be shifted to the Final Exam.

If you miss the Final Exam, contact your faculty's Academic Counselling Office as soon as possible. They will assess your eligibility to write the Special Exam (SPC).

Prerequisite Requirements

Unless you have either the prerequisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from

a course for failing to have the necessary prerequisites. The prerequisite for this class is either Chem 2283G or Chem 2213A. For those who took Chem 2213A it is helpful if you have taken Chem 2223B, but this is not required.

Academic consideration and Accessibility

Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic Accommodation_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

Participants in this course are not permitted to record class sessions, except where recording is an approved academic consideration, or the participant has the prior written permission of the instructor.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

All work submitted for a grade in this course must be your personal work; use of answers obtained externally is prohibited. Multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Use of electronic devices. Only basic scientific calculators are permitted on all tests and exams. All other electronic devices (cell phones, laptops, tablets, cameras, etc.) are prohibited.

Completion of this course will require you to have a reliable internet connection and a device that meets the system and technical requirements for OWL Brightspace, Zoom and Gradescope. Information about the system and technical requirements are available at the following links:

<https://wts.uwo.ca/services/owl.html>

<https://wts.uwo.ca/zoom/index.html>

<https://guides.gradescope.com/hc/en-us/categories/21540043398413-Student-Hub>

Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at: http://academicsupport.uwo.ca/accessible_education/index.html

Learning-skills counsellors at the Student Development Centre (learning.uwo.ca) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help. Additional student-run support services are offered by the USC, <http://westernusc.ca/services>