

Chem 3393B: Medicinal Chemistry 2017–18 Course Outline

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 the combination of Chem 2273A and 2283G, or Chem 2213A and 2223B.

Accessibility

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 Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Support Services

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.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>.

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

Course Website

News and updates will be posted on OWL (<http://owl.uwo.ca>). 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 OWL on a regular basis.

Class and Instructor Information

Section	Time (MWF)	Room	Instructor	Office	Email
001	9:30–10:20 am	AHB 1R40	Dr. Felix Lee	MSA 1202	flee32@uwo.ca

If you find yourself not understanding the lectures, assigned readings, or problems, please set up an appointment with me by sending me an email **from your Western email account**. Questions related to course material can also be posted on the OWL discussion board.

Anticipated Topics

Medicinal chemistry is a broad topic that spans many disciplines. Because this is a chemistry course, we will focus primarily on the chemical aspects of drugs and less on the biological aspects. The approximate topic coverage is listed below, although it may change if there are new developments in the field that are worth discussing.

- Drugs and the body (textbook chapters 1 to 11)
 - What are drugs?
 - What are the common drug targets?
 - Why do they work?
 - How are drugs transported and metabolized?
- Discovery and optimization (textbook chapters 12–16 and 18)
 - Generation of lead compounds
 - Optimization of pharmacodynamics and pharmacokinetics
 - Importance of metabolic studies and chemical & process development
 - Combinatorial chemistry
 - Structure-activity relationships
- Selected topics (time-permitting; various textbook chapters and supplemental information)
 - Natural products as inspiration: opioids (*e.g.* morphine, heroin, fentanyl)
 - Pesticides, chemical weapons, acetylcholine, and Alzheimer's Disease
 - One family, two classes of drugs: tropane alkaloids (*e.g.* cocaine, atropine)
 - Serendipity in drug discovery: sildenafil

A small amount of time is allocated to the discussion of biological and biochemical topics that are essential to the understanding of medicinal chemistry.

Course Materials

The required textbook is *An Introduction to Medicinal Chemistry*, 5th edition, by Graham Patrick. Copies are available at the Western Bookstore. The textbook's website, which has a collection of resources, including 3D structures and practice questions, is <http://global.oup.com/uk/orc/chemistry/patrick5e/>. No access code is required for the site, so used copies of the textbook are perfectly acceptable.

Learning Outcomes

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

- Describe the role of medicinal chemists and chemistry in drug design.
- Think critically about, explain, integrate, and apply chemical principles, laws, and theories.
- Solve a variety of novel problems, both qualitative and quantitative.
- Draw scientific conclusions from experimental results or data.
- Examine, integrate, and assess any provided or collected chemical data.
- Communicate scientific thoughts and ideas in writing.
- Obtain, evaluate, and integrate information from various sources, and determine its relevance.
- Analyze and critically assess problems, and take a systematic approach to solving them.
- Prioritize a set of tasks and manage the use of his or her time.

Evaluation

Components

Tests and exams are necessary to assess your mastery of core concepts. The overall course grade, out of 100, will be calculated as listed below. Listed next to the respective components are their maximum contributions toward the course grade.

Component	Notes	Normal Value	Test 1 Missed	Test 2 Missed	Tests 1+2 Missed
Test #1	Saturday, Feb. 10, 7:00–8:00 pm	25	--	25	--
Test #2	Friday, Mar. 16, 6:00–7:00 pm	25	37.5	--	--
Final Exam	Cumulative three-hour exam scheduled by the Registrar	50	62.5	75	100

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 they were legitimately missed.

No electronic devices may be in your possession during tests and exams.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Computer-marked, 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.

Missed Test or Final Exam

If you are seeking academic accommodation because of a medical (physical or mental) illness, please begin by contacting the Academic Counselling Office of your home faculty (or affiliated college). Western's policy on academic accommodation for illnesses can be found at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf.

All requests for academic accommodation must go through your faculty's Academic Counselling Office, so please contact them and *not* your instructor.

If you are a science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at 519-661-3040 or scibmsac@uwo.ca. Their website is http://www.uwo.ca/sci/undergrad/academic_counselling/index.html.

A student requiring academic accommodation due to illness must use the Student Medical Certificate (http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf) when visiting an off-campus medical facility.

Please note that there are no make-up tests. If your faculty's Academic Counselling Office has approved your circumstances, the value of the missed test will be reallocated as described on the previous page.

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 in May.

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).