CHEM 2500: Organic Chemistry I (Spring 2024)

Course Overview

CHEM 2500 is the first half of a full year course in organic chemistry. In this course, you will be introduced to the chemistry of carbon. Topics include nomenclature, structure and bonding, stereochemistry, reaction mechanisms, acids and bases, reactivity of nucleophiles and electrophiles, and conjugation and aromaticity.

Prerequisite

- CHEM 2000 or equivalent with a mark of C- or higher.

Logistics

- Section A meets on Mondays, Wednesdays and Fridays at 9:00-9:50am in SA6012.
- Tests are in person on Thursday evenings (see page 2). We arrange alternative times for students with conflicts.

Instructor and Contact Information

		email	office	phone	office hours
Instructor	Susan Findlay	susan.lait@uleth.ca	SA 8458	317-5044	open door
Lab Coordinator	Kris Fischer	fiscke@uleth.ca	SA 8428	329-2343	open door

To avoid missing important announcements, please check your uleth.ca email daily.

Online Resources

- http://moodle.uleth.ca has lecture notes and links to many of the resources listed below. It also contains all the video lectures and associated slides, in-class activities, etc.
- https://scholar.ulethbridge.ca/susanfindlay/book/chem-2500 has practice questions, practice tests, etc.
- https://campuswire.com/c/G7816FD79/feed is a message board for questions, answers, discussions, etc. Access via web browser or the free phone app. We have chosen CampusWire because it allows the option of posting anonymously, and it allows us to type chemical formulas and equations within posts. Whenever possible, posting questions on CampusWire allows the whole class to benefit from your questions (and answers). The more you use it, the more useful it will be!
- https://achieve.macmillanlearning.com/courses/mundsv is where the weekly online assignments are found.
- https://www.ulethbridge.ca/accessible-learning-centre/content/exam-accommodations is the website for the University of Lethbridge's Accommodated Learning Centre.

Textbook

Required: ***Organic Chemistry Mechanistic Patterns*** by Ogilvie *et al.* (published by TopHat).

There are 3 options to choose from:

- A physical copy of the 1st edition (full text)
- A digital copy of the 2nd edition (full text)
- A digital custom textbook for CHEM 2500 (Chapters 1-10 of the 2nd edition).

Chemistry 2500 covers the first half of the text (chapters 1-10). If you are only taking CHEM 2500, we recommend the digital custom textbook. If you are planning on also taking CHEM 2600, we recommend a copy of the full text (physical or digital). Print-on-demand physical copies of the 2nd edition can be added on for an additional fee.

Recommended: ***The Organic Chem Lab Survival Manual, A Student's Guide to Techniques*** by Zubrick (published by John Wiley & Sons). The Bookstore sells the e-book for about half the price of a print copy.

Recommended: **Molecular model kit**. You will be allowed to use your model kit on all assessments. These can be purchased from the University Book Store.

Topics to Be Covered and Approximate Schedule[§]

Chapter	Topic	Approx. Week
1	Carbon and its Compounds	1 - 2
2	Anatomy of an Organic Molecule	2
3	Molecules in Motion: Conformations by Rotations	3
4	Stereochemistry: 3D Structures in Molecules	3 – 4
5	Organic Reaction Mechanisms	5 – 6
6	Acids and Bases	6 – 7
7	π Bonds as Electrophiles: Reactions of Carbonyls and Related Functional Groups	7 – 8
8	π Bonds as Nucleophiles: Reactions of Alkenes, Alkynes, Dienes and Enols	8 – 10
9	Conjugation and Aromaticity	11
10	Synthesis Using Organic Materials	11 – 12

[§] We reserve the right to alter this schedule as required. You will be informed of any major deviations.

Grade Composition

	Dates	Method 1	Method 2 [1]
Laboratory	*see laboratory schedule*	25%	25%
Assignments [2]	*due each Tuesday at 11:59 pm* [3]	10%	10%
Midterm Tests [4]	Thursdays: Feb. 8th and Mar. 14th from 6:30-8:30 pm [5] in SA6012	2 × 15% = 30%	0%
Final Exam [6]	*scheduled by Registrar's Office after Add/Drop deadline*	35%	65%
	Total	100%	100%

YOU MUST PASS BOTH THE LAB (12.5/25) AND LECTURE (37.5/75) SEPARATELY IN ORDER TO PASS THE COURSE.

[1] **As long as the final exam is held in-person**, two methods will be used to calculate your final mark in the course, and you will automatically be assigned the better of the two marks. To qualify for Method 2, you must attempt both midterms. **If final exams are moved online, all marks will be calculated using Method 1 only.**

[2] Online assignments are a required course component. To complete these assignments, sign up for CHEM 2500 on Achieve (https://achieve.macmillanlearning.com/courses/mundsv). The free "grace period" for Achieve lasts until Tuesday, January 16th. After that, Achieve can be accessed at no cost on the desktop computers in the public computer labs in Anderson Hall and in University Hall as well as on most desktop computers in the University Library. Students who want to access Achieve from elsewhere can do so for a cost of $42US ($64US/2 courses) or by purchasing an access code from the University Bookstore.

[3] The late penalty for online assignment answers submitted after the deadline is 10% per day (assessed on a question-by-question basis). Students who are unable to complete an assignment on time due to illness, family emergency, etc. should email Susan as soon as possible (preferably before the deadline) to arrange for an extension.

[4] Tests will cover all course material including videos, activities, practice problems and assigned readings up to the end of the preceding lecture unless otherwise stated. Failure to attend a test without a valid reason (illness, family emergency, etc.) will result in a score of 0 for that test. If you are excused from a test, your final exam will be pro-rated to reflect the missed test weighting, and you will retain eligibility for both Method 1 and Method 2 of scoring.

[5] Midterm tests are scheduled for Thursday evenings. If you have a direct conflict with a test, you must email your class schedule to Susan Findlay at susan.lait@uleth.ca at least one week before the test so that she can arrange for you to write at an alternative time. **Please do NOT skip another class to write a test!**

[6] The final exam for this course is cumulative covering all material presented in lecture, assignments, etc. throughout the semester. The exam will test your comprehension and your ability to problem solve. Only under extraordinary circumstances may students request to write an equivalent invigilated Final Examination at a time and place other than that scheduled. Students must make a written request to the Dean should the need arise.

Academic Integrity

- All students enrolled in this course are expected to behave ethically and act with integrity. **It is your responsibility to behave in the ways that you would want your fellow students to behave.** That is the only way to create an environment that is fair to everyone. Because our students are so important to us, we are passionate about defending your right to a fair learning environment. As such, **any student caught cheating will be reported to the Dean's Office; the minimum penalty will be a grade of 0 on the test or lab report in question or for their overall online assignment mark**. Under the University's Student Discipline Policy, repeated academic offenses trigger progressively more severe forms of discipline over and above those imposed by the instructor.
- In this course, the following behaviours are allowed (and encouraged):
    - Asking your instructor for clarification. You're writing a test and you think the question is missing an essential piece of data. It's completely acceptable to ask your instructor if you're right about that.
    - Studying in groups. Asking and answering each other's questions. Any course-related discussion that you would be comfortable having in front of your instructor.
    - Using CampusWire to ask questions about the assignments/lab/etc. Your instructors aren't going to do your assignment/report for you, but we will certainly help you find your way to the answer.
    - Working on practice questions or online assignments with friends – provided that you are all contributing ideas for the majority of questions. Explaining a concept is actually one of the best ways to solidify your understanding of it. Teaching is a fantastic way to learn!
- In this course, the following behaviours are forbidden:
    - Collaborating on tests. In this course, tests are individual. You may NOT work with others on them.
    - Using any resource not explicitly listed as "allowed" on a test. For example, if we specified that you were allowed to use your textbook, that would NOT permit you to use Google; it would permit you to use your textbook. Google is NOT a textbook. Wikipedia is NOT a textbook.
    - Sharing information about any test you have already written with any other student who has not yet written it. This includes lab quizzes and exams, and it includes ALL methods of communication.
    - Finding a way to access questions (or answers to questions) before you would normally be able to see them is cheating. This includes finding ways to see the answers to assignment questions without having to work through the normal process of figuring out the answers yourself. Doing this also robs you of the learning that is supposed to happen when doing the assignments and tends to result in significantly lower test scores compared to students who do them properly.
    - Copying another student's assignment/lab report/etc. This is very different from "working on online assignments with friends" because, here, the learning is lost and all that's "gained" is an inaccurate mark for the student doing the copying. Please note that, since we have no way of knowing who copied from whom, both students are held equally responsible. ("Working together" should never result in identical answers. "Working together" means discussing concepts and approaches. Students who work together on a lab report should still write the actual lab report independently so that they each express their understanding of the material IN THEIR OWN WORDS.)
    - Submitting work done by somebody else. This is called "contract cheating". It doesn't matter whether the other person is your friend, your roommate, your tutor, a family member or somebody on the internet. It's still cheating if they give you an answer and you copy it. It's still cheating if they give you an answer and you rephrase it.
    - Use of any website that allows students to submit questions to "tutors" who provide worked solutions for a fee. These websites tend to market themselves as "study resources"; they are actually "cheating websites". Given that we'll help you for free with any task on which help is permitted, there is no excuse for ever using any cheating website.

Conversion of Overall Percentage Grade to Letter Grade in CHEM 2500 Spring 2024

The normal overall percentage grade to letter grade conversion will take place according to the following table:

A+	90.00% – 100%
A	85.00% – 89.99%
A-	80.00% – 84.99%
B+	76.67% – 79.99%
B	73.34% – 76.66%
B-	70.00% – 73.33%
C+	66.67% – 69.99%
C	63.34% – 66.66%
C-	60.00% – 63.33%
D+	55.00% – 59.99%
D	50.00% – 54.99%
F	0% – 49.99%

However, it should be noted that the instructor reserves the right to adjust the conversion table when there are multiple students who have overall percentage grades close to one another (*i.e.* when overall percentage grades for students are within 0.33% of each other) and those grades span the intended percentage-to-letter grade cut-off.

For example, if the following overall percentage grades were obtained:

80.97%	78.62%
80.25%	78.45%
80.13%	78.11%
79.89%	
79.75%	

the overall percentage-to-letter grade conversion for the bottom end of A– might be lowered from 80.00% to 79.75%.

Similarly, if the following overall percentage grades were obtained:

71.59%	70.32%
71.28%	70.19%
71.00%	70.01%
	69.73%
	69.55%
	69.42%
	69.16%
	68.91%
	68.65%

the overall percentage-to-letter grade conversion for the bottom end of B– might be raised to 71.00%.

The purpose of maintaining such flexibility in overall percentage grade to letter grade conversion is to provide the instructor with an ability to accommodate for “natural breaks” in overall percentage grade distributions that correspond to a meaningful difference in course performance. In the event that the actual overall percentage grade to letter grade conversion deviates from the provided table, that deviation will be limited to a maximum of +/- 3.00%.

Online Assignments for Chemistry 2500

How to Sign Up for Achieve

1. Go to https://achieve.macmillanlearning.com/courses/mundsv You will be redirected to a sign-in page.

2. If you already have an account with MacMillan, skip to step 5.

3. Otherwise, click "Create Account" and fill in the form. Please use your preferred names as registered with the UofL so that your instructor can easily find your work.

4. Check your email (including junk/clutter folders) for a confirmation message. Click on the link provided in the email. You will be redirected back to the sign-in page.

5. Sign in. You will be redirected to Achieve for CHEM 2500. *Spring courses will open on Wednesday, January 3rd.*

6. If you have already purchased access to Achieve from the bookstore **and** have followed their instructions* to convert the "bookstore code" into an "Achieve code", enter the "Achieve code" in the box when you are asked to pay. Otherwise, choose "Start a Grace Period". This gives you access to the course for 14 days at no cost.

7. For technical support, visit https://macmillan.force.com/macmillanlearning/s/achieve. For help with the questions, stop by CampusWire. We won't do your assignment for you, but we'll get you on the right track.

* While you can pay directly on the website, the University Bookstore sells Achieve access codes. Since online prices are in US$, this may be a cheaper option. A 6-month code grants access to a single course. A 12-month code grants access to both courses in a paired set (e.g. CHEM 2500 and 2600). **Note that you have to follow the instructions that the bookstore gives you on how to "cash in" the code you buy for one that you can use in Achieve.**

** Students who completed Sapling for CHEM 2500 in a previous semester can contact MacMillan (see step 7) to have their payment for that course transferred to this semester's course. Old grades will NOT be reused; you must do THIS semester's assignments. The purpose of the assignments is for you to practice and master the material.

*** Achieve can be accessed for free on the desktop computers in the public computer labs in Anderson Hall and in University Hall as well as on most desktop computers in the University Library.

How to Use Achieve

Once you have registered your account, you can get started using the system. Training assignments are available to introduce you to the system if you have not used Achieve before. Because most students completed them in previous courses, they are not for credit. The remaining assignments are due on Tuesday nights at 11:59pm. Each assignment has been calibrated to take approximately an hour for the average student who has watched the videos and completed the in-class activities. If you tend to work slowly, expect the assignments to take a bit longer. They can typically be completed more quickly if you've prepared/studied before starting the assignment.

1. Go to https://achieve.macmillanlearning.com/courses/mundsv
2. Sign in and click on the assignment you want to work on. This will bring up the first question in the assignment. Questions can be done in any order; use the menu at the left to navigate between them. The menu shows your scores on each question so you can easily see which questions you still need to complete. Achieve won't save answers if you jump from one question to another without clicking "check answer" first. To register your answer, click the "Check Answer" button at the top right. Your work is scored immediately; there is no need to submit the assignment as a whole after you've finished all questions.

New assignments will appear approximately once a week. Unless you are otherwise informed, there is one assignment due every Tuesday night. All assignments are weighted equally, and HW7A and HW7B count as separate equally weighted assignments. (The numbering is only to preserve consistency with chapter numbers in the textbook.) The late penalty is 10% per day for work submitted after the deadline.

If you are new to Achieve, please do the training assignments before beginning the for-credit ones. Assignments apply a 5% penalty per incorrect attempt. So, if it takes you five tries to answer a question correctly, you still score 80% on it!

Online Assignment Schedule (Subject to Change)

Assignment	Due Date
Training Assignments *(not for credit)*	
HW1: Drawing and Classifying Organic Molecules	Tues. Jan. 16
HW2: Isomers and Nomenclature	Tues. Jan. 23
HW3: Conformations of Organic Molecules	Tues. Jan. 30
HW4: Stereochemistry	Tues. Feb. 6
HW5: Resonance and Reaction Mechanisms	Tues. Feb. 13
Reading Break – No Assignment Due	Tues. Feb. 20
HW6: Acidity (pK_a values)	Tues. Feb. 27
HW7A: Addition Reactions to Polar Pi Bonds (Aldehydes, Ketones, Nitriles, etc.)	Tues. Mar. 5
HW7B: Addition Reactions to Polar Pi Bonds (Aldehydes, Ketones, Nitriles, etc.)	Tues. Mar. 12
HW8: Addition Reactions to Nonpolar Pi Bonds (Alkenes, Alkynes, etc.)	Tues. Mar. 19
HW9: Molecular Orbital Theory and Aromaticity	Tues. Mar. 26
HW10: Reactions of Aromatic Compounds (Primarily Benzene Derivatives)	Tues. Apr. 2

The deadline for all assignments is 11:59pm Mountain time on the date listed.