

CHEM2230A and 2207A - Summer 2026

Organic Chemistry I

We, the people of the Faculty of Science at Carleton University, acknowledge that our campus is located on the traditional, unceded territories of the Algonquin Anishinabeg people. Miigwetch for your hospitality and stewardship of this territory and the teachings that come from it. We are grateful for this land, the air that we breathe, and the water that sustains us all as well as for the animals, plants and other living beings: these enable us to research, teach, mentor, support, study, and learn. We recognize our responsibility to our natural environment and to reconciliation with Indigenous peoples.

Course Instructor: Julia Mandato

How to address me: Julia or Prof. Mandato

Gender Pronouns: (she/her/hers)

Email: juliamandato@cunet.carleton.ca

Note: If you have a question or would like to talk with me, you can send an email, visit me during student hours (see below), or approach me after lecture. I am happy to chat!

Student Hours: Thursdays 12:30pm -2:00pm in SC115

Class Location: Please check Carleton Central for the room location

Class Times: Tuesdays and Thursdays, 8:35am-11:25pm

Prerequisites: CHEM 1006 (no longer offered) with a minimum grade of B-, or CHEM 1002 or CHEM 1012.

Preclusions: CHEM 2207 or CHEM 2203

Department/Unit: Faculty of Chemistry

TA: Ben Warnes
(BenWarnes@cmail.carleton.ca)

In this course, all students are welcome, including all races, colours, cultures, ethnicities, genders, and sexualities. This course is a space for respect for each other, including students, teaching assistants, staff, and professors. I am happy to work with students to implement approved academic accommodations. I am committed to fostering a supportive learning environment for all students. It is my hope that our class will support a diversity of experiences, thoughts, and perspectives. If you have any



questions, concerns, or suggestions, please feel free to contact me. I am excited to work with you all and deliver an engaging, informative, and fun semester of chemistry!

Course Information and Materials

Course Description:

Introduction to stereochemistry, spectroscopy and chemical reactions of alkanes, alkenes, alkynes, and alkyl halides. Reaction mechanisms and the interpretation of IR, NMR and mass spectra is explored. Training in the handling and purification of organic compounds, organic chemical reactions, and the use of infrared spectroscopy.

Course Textbook:

The text for the course is "Organic Chemistry" 5th Edition by David Klein published by Wiley. The book is available from Carleton's bookstore, bundled with a single or multi-term access code to WileyPlus, a homework management system you will be using. There are multiple purchasing options:

Option	Cost	Details
1	\$98.95 + tax	e-text and WileyPlus for a single term. Best choice if you only need to take CHEM2203/07.
2	\$153.95 + tax	e-text and WileyPlus for multiple terms. Best choice if you need to take CHEM2203/07 and CHEM2204/08.
3	If you are retaking CHEM2203/07 and already purchased WileyPlus in a past semester , please follow the instructions on Brightspace to restore your access.	

Technology Checklist:

To access Brightspace content, you will need:

- ✓ An internet-enabled computer (laptop/desktop)
- ✓ Access to reliable internet

Note: If you do not have access to some or all of these resources, there are several options to consider. (1) You can apply for [financial aid](#), (2) there are some inexpensive options for purchasing technology (Best Buy refurbished products, Kijiji), & (3) single workspaces are available for student use on campus. Every student has free access to [Zoom](#) and internet access on campus using your [MyCarleton1 credentials](#).

Course Format:

As a summary, each topic of the course includes the following resources:

- Lecture slides, presented during in person and pre-recorded classes

To improve equity in the course, classes will be recorded through Zoom and automatically uploaded to Brightspace with closed captioning. Please keep the class recordings private.

Recordings are only a partial substitute for the learning that occurs in class, so it is in your best interest to make every effort to attend class, to avoid procrastination and falling behind in the course.

- An annotated copy of lecture slides will be posted after class, including examples and extra notes from in-person classes

- WileyPlus Homework Assignments, due throughout the term
- Additional practice problems/recourses in the form of worksheets, multiple choice problems, videos and readings for extra practice and studying

All the details and information for the course are located on **Brightspace**. I send announcements with key information. Please check it regularly. The specific learning outcomes for this course located below.

Topics Covered and Learning Outcomes

Learning outcomes describe the knowledge, skills, and values that you as the learner should be able to demonstrate by the end of the learning period, in this case, by the end of each module or the course. The course is designed so that each learning outcome has associated instruction (e.g., videos, text, or class time), practice opportunities (e.g., class questions, practice problems), and assessment (e.g., assignments, midterm, final exam). Please feel free to ask questions anytime!

Module	Topics Covered*
1: Structure, Properties and Acidity	Ch 1: General Chemistry Review Ch 2: Molecular Representations Ch 3: Acids and Bases
2: Spectroscopy	Ch 14: Infrared and Mass Spectroscopy Ch 15: Nuclear Magnetic Resonance Spectroscopy
3: Stereochemistry and Conformation	Ch 4: Alkanes and Cycloalkanes Ch 5: Stereoisomerism
4: Nucleophilic Substitution and Elimination	Ch 6: Chemical Reactivity and Mechanisms Ch 7: Alkyl Halides: Nucleophilic Substitution and Elimination Reactions
5: Electrophilic Addition	Ch 8: Addition Reactions of Alkenes Ch 9: Alkynes

*A detailed list of topics covered can be found in the Content Checklist Document on Brightspace.

Assessments and Key Course Details

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and analyzing. Learning happens best when people actively engage material on a consistent basis, and that is why we have high standards in this course. We are confident that, with appropriate effort, you all can meet those standards.

We also make an effort to reduce unintentional bias in grading by using methods such as grading assignments one question at a time (i.e., grading all of question 1 before grading any of question 2), grading anonymously, and using rubrics.

Grade Breakdown:

CHEM2203:	OPTION 1	OPTION 2	OPTION 3	OPTION 4
LABORATORY	30%	30%	30%	30%
WILEYPLUS HOMEWORK	10%	10%	0%	0%
MIDTERM	20%	12.5%	25%	12.5%
FINAL EXAM	40%	52.5%	45%	57.5%
BONUS PARTICIPATION	+ 5%	+ 5%	+ 5%	+ 5%

To obtain credit for CHEM2203, all three requirements below must be met:

1. Obtain a minimum of 50% on the overall course grade, as calculated using the option above **that gives the highest grade.**
2. All laboratory experiments **MUST** be completed.
3. All lab reports **MUST** be submitted by the last day of classes (August 14th 2026)

Students who fail to meet the above requirements will receive a course grade of F and will not receive credit for the course.

CHEM2207:	OPTION 1	OPTION 2	OPTION 3	OPTION 4
WILEYPLUS HOMEWORK	10%	10%	0%	0%
MIDTERM	30%	17.5%	35%	17.5%
FINAL EXAM	60%	72.5%	65%	82.5%
BONUS PARTICIPATION	+ 5%	+ 5%	+ 5%	+ 5%

To obtain credit for CHEM2207, students must obtain a minimum of 50% on the overall course grade, as calculated using the option above **that gives the highest grade.**

Students who fail to meet the above requirements will receive a course grade of F and will not receive credit for the course.

Academic integrity is of paramount importance in this course. There is more information further down in the syllabus. Be sure to check the specific academic integrity instructions for each assessment.

Laboratory:

Details of the laboratory portions of this course can be found on the **separate Brightspace site**. Students are required to wear protective goggles (\$6.50+tax), a lab coat (\$30.75+tax) and use a lab notebook (\$11.95+tax) which can all be purchased from Campus Store (<https://carleton.bookware3000.ca/>)

An important detail is that you must complete all lab activities

If you have any concerns related to the lab after reviewing the material on the Brightspace site, please contact the Lab Coordinator, Spencer Ng (SpencerNgCheongChung@cunet.carleton.ca)

Another important detail is that you must complete all activities of the laboratory portion before the last day of classes (August 14th, 2026) to receive a passing grade in this course.

WileyPlus Homework:

Although there are grading scheme options that exclude WileyPLUS, **you are strongly encouraged to complete the assignments! Evidence from previous years shows that those who scored well on their homework assignments typically also scored well in the course.** Assignments will be due **Sundays at 11:59pm throughout the term.** Specific deadlines can be found below.

Assignment	Content	Due Date (at 11:59pm)
1	Module 1	Sunday July 12 th
2	Module 2	Sunday July 12 th
3	Module 3	Sunday July 19 th

4	Module 4	Sunday August 2 nd
5	Module 5	Sunday August 9 th

Midterm:

The Midterm will cover Module 1, 2, 3 and chapter 6 from Module 4, about 60% of the course content. Exact details of content cutoff will be provided closer to the date.

The midterm will be handwritten on paper during class time on **Tuesday July 28th**. It will be closed-book, however, a periodic table will be provided. Students will also be permitted a molecular model kit and a **crib sheet (one double sided 8.5 x 11 sheet of paper of notes. Students must prepare themselves)** More details will be provided closer to the midterm exam.

The midterm answers and grades will be returned to you – about 1 week after they are written. I encourage you to check what you did right and wrong to prepare you for the final exam.

Final Exam:

The Final Exam will focus on Module 4 and 5. Technically, the exam is cumulative, concepts from the first half of the course will not be as explicitly tested as they were on the midterm, but Module 4/5 rely on understanding of Module 1-3!

It will be closed-book exam; however, a periodic table will be provided as needed. Students will also be permitted a molecular model kit and a **crib sheet (one double sided 8.5 x 11 sheet of paper of notes. Students must prepare themselves)**. More details will be provided closer to the Final Exam.

The exam will take place in person, with the time, date and location set by university examination services. The exam period is listed in the [university calendar](#). **You must be available to write the exam on campus at any time during that period. Distance Exam requests may require documentation and will be only considered as a last resort. Students will not be permitted to write the Final Exam early.** If you miss the exam for any reason, you'll have to apply to the University Registrar's Office to [request a deferred exam](#).

Bonus Participation:

Being an active participant in your learning has been shown to have many benefits such as improved course grades (and decreased course failures), increased retention and transfer of new information, increased motivation, and improved critical thinking skills. You will actively participate (synchronously) in class through problem-solving, asking and answering questions, and having discussions with your peers to count towards a bonus 5% of your overall grade. This will be in the form of Wooclap questions and in class activities. **You do not need to study or prepare for this participation, simply show up to class!**

Submissions are marked for completion, not correctness. You need to participate in 90% of classes to receive the full participation mark. If you miss 1 or 2 questions during class, it is alright, but you need to participate **throughout** the class to be counted (The instructor will use their discretion). If you participate in at least 50% of the classes you will receive 2% bonus as a participation mark. There's no need to tell me if/why you miss a class.

Late and Missed Work Policies:

Labs: Students have 4-5 business days (see the lab schedule for due dates) to complete and submit their lab reports for each lab, and multiple submissions are permitted up until the due date. As a result, lab reports that are submitted late for any reason will be subject to the late penalty of 10% per day, for up to 4 days. A mark of 0 will be assigned if an assignment is submitted more than 4 days late.

Therefore, you are encouraged to submit your lab report a day or two early, and update it if necessary, to ensure that you have no issues with your lab submission. There is a **single makeup lab opportunity** available to students in the event that they have received a lab deferral. Therefore, missing more than one lab, deferred or not, will result in an F in the course as the course/department requirement that “All laboratory experiments MUST be completed and all lab reports MUST be submitted by the last day of classes (August 14th, 2026)” would not be fulfilled.

WileyPlus: Late WileyPlus homework will not be accepted. **Why am I not accepting WileyPlus work?**

CHEM2230/70 is a compressed, 6-week course. It is important students stay up to date with assessments as the pace moves very quickly. All assessments are available for an extended period of time and students are expected to complete them on time.

Deferred/missed term work (Midterm) for short-term accommodation (5 days or less): If you require accommodations for this course in a 5 days or less period, please email me to discuss potential options for accommodations which may involve reweighing assessments in the course breakdown or potential deferred midterm exam. Situations will be evaluated on a case-by-case basis and discussions of accommodations may involve the Chair of the Department of Chemistry and/or the Office of the Dean of Science.

Deferred/missed term work for longer term incapacitation (5 days or longer): If you require accommodations for this course that are longer than the 5-day (short-term) period, please email me to discuss how/whether accommodation needs could be met for this course in accordance with the policy listed [here](#). You will need to go to the Registrar's office for support, but it is important that the instructor is apprised of the long-term accommodation needs. **If you need to defer your final exam, please complete the form [here](#). All Final Exam accommodations will be handled through the registrar.**

Re-correction Requests:

If there is an error in the correction of an assessment in the course (e.g., midterm), you may request a re-correction by emailing or speaking to the instructor no later than 10 working days from the first day marked work is available for review. Submissions after the deadline will not be considered. The new score could be lower, the same, or higher than your original score.

Academic Accommodations and Regulations

Carleton is committed to providing academic accessibility for all individuals. You may need special arrangements to meet your academic obligations during the term. The accommodation request processes are outlined on the Academic Accommodations website (students.carleton.ca/course-outline)

Statement on Chat GPT/Generative Artificial Intelligence (AI) usage:

AI Use in this course: Students may use AI tools under the following guidelines:

✓ Approved uses of AI tools	✗ Unapproved use of AI tools
- Grammar and spell checking (e.g., Grammarly, Microsoft Word Editor) - Basic formatting and design suggestions (e.g., Microsoft Word's formatting tools, PowerPoint Design editor)	- Writing Lab Reports - Answering WileyPlus Homework - Answering mathematical problems (ChatGPT is a language model, not a calculator. It can easily fumble simple algebra, or be "persuaded" to give inaccurate answers.) Alternatives: If you need help with unit conversions, I recommend using WolframAlpha it is a far better tool for scientists.

Documenting AI Use: It is not necessary to document the use of AI for the permitted purposes listed above. As our understanding of the uses of AI and its relationship to student work and academic integrity continue to evolve, students are required to discuss their use of AI in any circumstance **not** described here with the course instructor to ensure it supports the learning goals for the course.

Why have I adopted this policy? This policy ensures that student voices and ideas are prioritized and authentically represented, maintaining the integrity of the work produced by students while allowing basic support to enhance clarity, correctness, layout, and flow of ideas. The goal of adopting a limited use of AI is to help students develop foundational skills in writing and critical thinking by practicing substantive content creation without the support of AI.

Statement on Academic Integrity:

The University Senate defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own." This can include:

- reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source;
- submitting a take-home examination, essay, laboratory report or other assignment written, in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, or paraphrased material, concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings;
- failing to acknowledge sources through the use of proper citations when using another's works and/or failing to use quotation marks;
- handing in "substantially the same piece of work for academic credit more than once without prior written permission of the course instructor in which the submission occurs.

Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

Misconduct in scholarly activity will not be tolerated and will result in consequences as outlined in [Carleton University's Academic Integrity Policy](#). A list of standard sanctions in the Faculty of Science can be found [here](#).

Additional details about this process can be found on [the Faculty of Science Academic Integrity website](#).

Students are expected to familiarize themselves with and abide by [Carleton University's Academic Integrity Policy](#).

Student Rights & Responsibilities:

Students are expected to act responsibly and engage respectfully with other students and members of the Carleton and the broader community. See the [7 Rights and Responsibilities Policy](#) for details regarding the expectations of non-academic behaviour of students. Those who participate with another student in the commission of an infraction of this Policy will also be held liable for their actions.

Online Community Expectations for Social Platforms:

Online communities can be highly beneficial to students and can help to facilitate learning within the course. I encourage people to ask questions, learn from one another, and have open discussions about class material on the Brightspace Discussion Board. That said, any acts of academic misconduct (i.e., cheating) will not be tolerated and will result in serious consequences ranging from a grade reduction to expulsion (see [academic integrity violations](#)).

Examples of **appropriate** peer-to-peer sharing/learning vary from course to course. In this course appropriate peer-to-peer sharing includes:

- identifying the proper formula to use
- identifying an incorrect or missing step in a person's work
- brainstorming potential reasons behind a concept
- suggesting helpful sites and videos for learning a concept
- Posting your own work showing only a specific step or process for illustrative purposes (note: this is very different from posting your work and solution for others to simply copy)

Examples of **unacceptable** peer-to-peer sharing includes

- Posting or sharing the answers to quiz or assignment questions
- Indicating which answers are correct on assignments
- Sharing links to solutions
- Posting your own complete work for a question/solution

General Rules & Guidelines

- *No bullying or harassment (towards other students, or teaching assistants)*
- *No encouraging harassment*
- *No personal attacks*
- *No racism, sexism, homophobia or hate speech of any kind*

There may be specific situations not covered by these rules, and there may also be certain cases where a rule does not apply. If you are concerned, confused, or conflicted over something, please reach out to a TA or me through email for help. Let's do our best to support one another in this class and keep the online experience a safe, inclusive, and positive experience for everyone.

Student Concerns

Communication:

Feel free to ask questions about the course concepts, course structure, our career paths, other career options, succeeding in the course, university resources *etc.* **Please allow 2 business days** for a response before emailing me a second time!

If a concern arises regarding this course, **your first point of contact is me.** If I am unable to address your concern, the next points of contact are (in this order):



Note: You can also bring your concerns to [Ombuds services](#).

Student Resources:

Service	Can help with...	Contact Information
Centre for Student Academic Support (CSAS)	Learning support workshops for success in academic writing, study skills, time management and more	613-520-3822 4th Floor MacOdrum Library https://carleton.ca/csas/learning-support/
Science Student Success Centre (SSSC)	Academic support, career connections, community building, health care preparation, science faculty refresher courses, mentoring and research resources.	(613) 520-2600 ext. 3111 3431 Herzberg Laboratories https://sssc.carleton.ca/
Paul Menton Centre (PMC)	Learning disabilities, accommodations and tools.	613-520-6608 501 University Centre www.carleton.ca/pmc
International Student Services Office (ISSO)	International students' needs such as English help, adjustment resources, etc.	613-520-6600 128 University Centre www.carleton.ca/isso

Research help at MacOdrum Library	Library and research help, citation management, account and connection support.	Texting: 613-505-4245 Online chat: https://library.carleton.ca/help Email: askthelibrary@carleton.ca https://library.carleton.ca/services/research-help
Health and Counselling Services	Physical and mental health issues and stress.	613-520-6674 2600 Carleton Technology & Training Centre https://carleton.ca/health/
Departmental Advising	Program specific academic advising	https://carleton.ca/academicadvising/departmental-advisors/

Career Services: <https://carleton.ca/career/>

Writing Services: <https://carleton.ca/csas/support/>

Peer Assisted Study Sessions (PASS): <https://carleton.ca/csas/group-support/pass/>

Math Tutorial Centre: <https://carleton.ca/math/math-tutorial-centre/>

Carleton offers an array of mental health and well-being resources, which can be found [here](#).

University Policies

In accordance with the Carleton University Undergraduate Calendar Regulations, the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59	F = <50
A = 85-89	B = 73-76	C = 63-66	D = 53-56	WDN = Withdraw from the course
A- = 80-84	B- = 70-72	C- = 60-62	D- = 50-52	DEF = Deferred

Copyright

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