



COURSE OUTLINE

1. **Course:** CHEM 453, Advanced Organic Chemistry - Fall 2021

Lecture 01: MWF 13:00 - 13:50 in ENA 103

Instructor	Email	Phone	Office	Hours
Dr Thomas Back	tgback@ucalgary.ca	403 220-6256	SB 217	TBA

In Person Delivery Details:

Both lectures and labs will be delivered in-person.

Lectures will not be repeated online for students who miss them. However, PowerPoint slides of all lectures will be made available to the class on D2L.

Laboratory Deferral (medical or other accommodations requests). Any student who is unable to attend the in-person laboratory because of COVID-19 or related concerns should connect with the instructor prior to the drop date (September 16, 2021) and/or with Student Accessibility Services. In such circumstances, it may be possible to apply for Deferral of Term Work to postpone the laboratory component of the course until Fall 2022.

Laboratory Exemptions (if repeating the course). Students repeating the course within the last two years can be exempted from the Laboratory Component of the course if a grade of 75% or higher was obtained. Students choosing to exempt from the lab should be aware that,

- the material covered in labs may be integrated into non-lab-based course assessments; and,
- the lab grade achieved on the previous attempt will be carried forward.

Prior to applying for an exemption, students are encouraged to connect with their course instructor or coordinator to better understand the risks and benefits in their specific course. Instructors can tell you what access you will have (or not have) to lab materials as an exempt student, and how the lab materials may be integrated.

Applications for lab exemptions must be emailed to the Undergraduate Science Center (science.advising@ucalgary.ca) no later than Monday September 13, 2021.

Re-Entry Protocol for Labs and Classrooms:

To limit the spread of COVID-19 on campus, the University of Calgary has implemented safety measures to ensure the campus is a safe and welcoming space for students, faculty and staff. The most current safety information for campus can be found [here](#).

Course Site:

D2L: CHEM 453 L01-(Fall 2021)-Advanced Organic Chemistry

Note: Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

Prerequisite(s):

Chemistry 351; Chemistry 353, or 355.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar.

In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Midterm exam*	25	Wednesday, November 3, 2021 at 7:00 pm, 2 hours
Laboratory**	30	Start on Sept. 13, 2021
Final exam*	45	registrar scheduled

*All examinations will be conducted in-person.

** There will be 12 weeks of laboratories with 7 graded reports. The % weight of each report and the dates when reports are due are found in the Chem 453 lab manual. Students can submit reports during the lab sessions or outside the lab sections directly to their TA before the due date.

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	A+	A	A-	B+	B	B-	C+	C	C-	D+	D
Minimum % Required	95 %	85 %	80 %	77%	71%	69 %	67 %	60%	56%	54 %	50 %

This course will have a final exam that will be scheduled by the Registrar. [The Final Examination Schedule](#) will be published by the Registrar's Office approximately one month after the start of the term. The final exam for this course will be designed to be completed within 2 hours.

Students will be expected to understand at every stage the material covered in all components of the course. In order to satisfy prerequisite requirements (i.e., C-) for further Chemistry courses, a student must meet the following requirements: (1) achieve a minimum 50% in the laboratory grading, and (2) achieve either a minimum 50% on the final examination, or a minimum 50% weighted average on the midterm and final examinations. This means that if a student scores below 50% in either the laboratory component or the examinations, then the maximum course letter grade they can obtain in CHEM 453 is a D+.

There will be twelve weeks of laboratories, with seven graded reports. The % weight of each report and the dates when reports are due are found in the laboratory manual. Students should submit their reports to their TA prior to or on the due date to avoid penalties for late submission.

The University of Calgary offers a [flexible grade option](#), Credit Granted (CG) to support student's breadth of learning and student wellness. Faculty units may have additional requirements or restrictions for the use of the CG grade at the faculty, degree or program level. To see the full list of Faculty of Science courses where CG is not eligible, please visit the following website: <https://science.ucalgary.ca/current-students/undergraduate/program-advising/flexible-grading-option-cg-grade>

4. Missed Components Of Term Work:

The university has suspended the requirement for students to provide evidence for absences. Please do not attend medical clinics for medical notes or Commissioners for Oaths for statutory declarations.

In the event that a student legitimately fails to submit any online assessment on time (e.g. due to illness etc...), please contact the course coordinator, or the course instructor if this course does not have a coordinator to arrange for a re-adjustment of a submission date. Absences not reported within 48 hours will not be accommodated. If an excused absence is approved, one possible arrangement is that the percentage weight of the legitimately missed assignment could also be pro-rated among the components of the course. This option is at the discretion of the coordinator and may not be a viable option based on the design of this course.

Lectures will not be repeated online for students who miss them. However, PowerPoint slides of all lectures will be made available to the class on D2L.

There will be no make-up midterm exam; if a student misses the exam for legitimate reasons, the final exam will count for 70% of the final grade.

If a student misses a lab for legitimate reasons, attempts will be made to enable the student to make up the lab in another section. However, since lab sections will likely be full and occupancy limits must be strictly enforced, such arrangements will be made on a case-by-case basis. If make-up labs cannot be arranged for students who have missed labs for legitimate reasons, their lab grade will be determined by prorating the other lab reports to compensate for the missed lab. However, if for any reason students miss more than 30% of the labs, based on their indicated value in the Chem 453 lab manual, the entire lab component of the course will be deferred to a future term.

5. Scheduled Out-of-Class Activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm	On-Campus, room to be announced	Wednesday, November 3, 2021 at 7:00 pm	2 Hours

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY. If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

6. Course Materials:

Recommended Textbook(s):

Bernard Miller, *Advanced Organic Chemistry - Reactions and Mechanisms* (available from Bound & Copied, not from the Bookstore): Pearson.

Students are advised to keep whichever book they used in their Introductory Organic Chemistry course for background information. A molecular model kit may also be useful.

In order to successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security, and malware updates;
- A current and updated web browser;
- Webcam/Camera (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Stable internet connection.

For more information please refer to the UofC [ELearning](#) online website.

7. Examination Policy:

No aids are allowed at midterm and final examinations, except for a molecular modeling kit. This includes notes, books and electronic and communications devices of any kind.

Students should also read the Calendar, [Section G](#), on Examinations.

8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course. Breakage fees will apply to broken, damaged or lost lab glassware and other equipment. These will be set by the Department of Chemistry.

9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also Section [E.2](#) of the University Calendar.

10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **ten business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall submit the Reappraisal of Graded Term work form to the department in which the course is offered within 2 business days of

receiving the decision from the instructor. The Department will arrange for a reappraisal of the work within the next ten business days. The reappraisal will only be considered if the student provides a detailed rationale that outlines where and for what reason an error is suspected. See sections [I.1](#) and [I.2](#) of the University Calendar

- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Services:** For more information, see www.ucalgary.ca/wellnesscentre or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email (syva@ucalgary.ca) or phone at [403-220-2208](tel:403-220-2208). The complete University of Calgary policy on sexual violence can be viewed at (<https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Sexual-and-Gender-Based-Violence-Policy.pdf>)
- d. **Misconduct:** Academic integrity is the foundation of the development and acquisition of knowledge and is based on values of honesty, trust, responsibility, and respect. We expect members of our community to act with integrity. Research integrity, ethics, and principles of conduct are key to academic integrity. Members of our campus community are required to abide by our institutional [Code of Conduct](#) and promote academic integrity in upholding the University of Calgary's reputation of excellence. Some examples of academic misconduct include but are not limited to: posting course material to online platforms or file sharing without the course instructor's consent; submitting or presenting work as if it were the student's own work; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; borrowing experimental values from others without the instructor's approval; falsification/fabrication of experimental values in a report. Please read the following to inform yourself more on academic integrity:

[Student Handbook on Academic Integrity](#)
Student Academic Misconduct [Policy](#) and [Procedure](#)
[Research Integrity Policy](#)

Additional information is available on the [Student Success Centre Academic Integrity page](#)

e. Academic Accommodation Policy:

It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The student accommodation policy can be found at: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Student-Accommodation-Policy.pdf>

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities: <https://www.ucalgary.ca/legal-services/sites/default/files/teams/1/Policies-Accommodation-for-Students-with-Disabilities-Procedure.pdf>.

Students needing an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, by filling out the [Request for Academic Accommodation Form](#) and sending it to Dr. Yuen-Ying Carpenter by email yyscarpe@ucalgary.ca preferably 10 business days before the due date of an assessment or scheduled absence.

- f. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.
- g. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: suvpaca@ucalgary.ca. SU Faculty Rep., Phone: [403-220-3913](tel:403-220-3913) Email: sciencerep@su.ucalgary.ca. [Student Ombudsman](#), Email:

- h. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- i. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

Course Outcomes:

- Rationalize the properties of organic molecules and the outcome of organic reactions by using molecular orbital (MO) interactions as a unifying concept.
- Understand how frontier MO interactions and related stereoelectronic effects can affect the rates, regio- and stereochemistry of organic reactions.
- Understand the origin of the Woodward-Hoffman rules and how to apply them to the prediction and rationalization of a broad range of pericyclic reactions.
- Perform basic MO and molecular mechanics calculations and apply them to problems involving the structure and behaviour of organic molecules in a computer modelling laboratory.
- Re-examine concepts such as aromaticity and resonance from an MO perspective and apply these basic principles to a deeper understanding of a broad range of molecules, their properties and reactions.
- Understand how short-lived reactive intermediates govern the outcome of numerous types of organic reactions.
- Comprehend the basic principles of photochemistry and their application to organic reactions.
- Employ more advanced synthetic skills in the “wet” lab, as well as in recording and analyzing spectra for structure elucidation. Learn how to perform computer molecular modeling to predict structure and properties. Safety protocols will be emphasized throughout the laboratory component of the course.

Electronically Approved - Sep 07 2021 14:55

Department Approval

Electronically Approved - Sep 07 2021 16:06

Associate Dean's Approval