

<b>Course ID:</b>	<b>Course Title:</b>	<b>Fall 2022</b>
<b>CHE 251</b>	<b>Organic Chemistry I</b>	<b>Prerequisite:CHE101/CHE103</b>
		<b>Credits: 3</b>

Class Information		Instructor Information		Important Dates	
<b>Delivery:</b>	In-class	<b>Instructor:</b>	Kristian Caldo Ph.D. (lecture and lab)	<b>First Day of Classes:</b>	Sept. 7, 2022
<b>Days:</b>	W/F	<b>Email:</b>	kristian.caldo@ambrose.edu	<b>Last Day to Add/Drop:</b>	Sept. 18, 2022
<b>Time:</b>	11:15 – 12:30 pm	<b>Phone:</b>		<b>Last Day to Withdraw:</b>	Nov. 21, 2022
<b>Room:</b>	A 2133	<b>Office:</b>	A2156	<b>Last Day to Apply for Extension:</b>	Nov. 23, 2022
<b>Lab/Tutorial:</b>	F: 1:00-4:00 pm A2141	<b>Office Hours:</b>	TTh; 3 pm to 5 pm Please e-mail to book an appointment.	<b>Last Day of Classes:</b>	Dec. 12, 2022 (Dec 9 for CHE 251)
<b>Final Exam:</b>	Sat, 17 Dec 2022 9:00 am-12:00 nn in A 2133				

### Important Dates and Information

For a list of all important dates and information regarding participating in classes at Ambrose University, please refer to the Academic Calendar at <https://ambrose.edu/undergrad-academic-calendar/academic-schedule>.

### Course Description

This course reviews the basic principles of chemical bonding as they apply to organic molecules and are introduced to the concept of stereochemistry, spectroscopy and reaction mechanisms.

### Expected Learning Outcomes

- Alkanes- Naming Alkanes and Cycloalkanes, Conformations of Acyclic Alkanes, Conformations of cyclohexane
- Stereochemistry- Chiral and Achiral Molecules, Labeling chiral Centers with R or S, Diastereomers, Meso Compounds, R and S Assignments in Compounds with Two or More Chiral Centers and Disubstituted Cycloalkanes
- Spectroscopy-Mass spectroscopy: Mass Spectrometry and Fragmentation  
Infrared Spectroscopy: IR Absorptions, IR and Structure Determination

Nuclear Magnetic Resonance Spectroscopy Number of Signals Position of Signals, The Chemical Shift of Protons Intensity of Signals, Spin–Spin Splitting and Using  $^1\text{H}$  NMR to Identify an Unknown  $^{13}\text{C}$  NMR Spectroscopy

- Acidity and Basicity - Brønsted–Lowry Acids and Bases and their Reactions, Acid Strength and pKa, Predicting the Outcome of Acid–Base Reactions, Factors That Determine Acid Strength, Common Acids and Bases
- Nucleophilic Substitution — General Features, Leaving Group, Nucleophile, The  $\text{S}_{\text{N}}2$  Mechanism, The  $\text{S}_{\text{N}}1$  Mechanism, Carbocation Stability, When Is the Mechanism  $\text{S}_{\text{N}}1$  or  $\text{S}_{\text{N}}2$ ? And Organic Synthesis
- Elimination Reactions- General Features of Elimination, The E2 Mechanism, The Zaitsev Rule, The E1 Mechanism,  $\text{S}_{\text{N}}1$  and E1 Reactions, Stereochemistry of the E2 Reaction, When Is the Mechanism E1 or E2?, E2 Reactions and Alkyne Synthesis and When Is the Reaction  $\text{S}_{\text{N}}1$ ,  $\text{S}_{\text{N}}2$ , E1, or E2?

### Textbooks

**Organic Chemistry**, 4<sup>th</sup> Edition, Dr. David Klein

Students can gain access to WileyPlus assignments and textbook readings by registering at the following class section URL: [www.wileyplus.com/go/login](http://www.wileyplus.com/go/login) Course ID: B83970

### Course Schedule (Tentative)

Week of	Lecture	Activity	WileyPlus Readings	WileyPlus Assignments
9/7	Introduction to the Course; Fundamentals of Organic Chemistry	No lab		
9/12	Fundamentals of Organic Chemistry	Tutorial	Chapter 2; Due on Sept.15	Assignment 1 Due: Sept.17, 8:00 pm
9/19	Alkanes ,Cycloalkanes and Configurational Stereochemistry	Lab 1: Separation of Organic Compounds by Solvent Extraction	Chapter 4; Sept. 23	Assignment 2 Oct.1; 8:00 pm
9/26	Functional groups  Sept. 30: National Day for Truth and Reconciliation; No class	No Lab		
10/3	Stereochemistry (Conformational)  Oct. 5: Deeper Life Conference; No daytime classes	Lab 2: Thin Layer Chromatography	Chapter 5; Oct. 7	Assignment 3 Oct. 14; 8:00 pm
10/10	Spectroscopy  Oct. 10: Thanksgiving	Lab 3: Isolation of Caffeine from tea		

10/17	IR Spectroscopy Term Test 1: Oct. 21	Term Test 1: Oct. 21	Chapter 14; Oct. 21	
10/24	Mass Spectrometry	No Class.		Assignment 4 Oct. 29; 8:00 pm
10/31	NMR Spectroscopy	Lab 4: Spectroscopy Worksheet due in the lab	Chapter 15; Nov. 4	Assignment 5 Nov. 5; 8:00 pm
11/7	Reading Week: Nov. 7 – 12; no classes	No Lab		
11/14	Acidity and Basicity Nucleophilic Substitution Reactions	Lab 5: Column chromatography	Chapter 3; Nov 14	Assignment 6 Nov. 20; 8:00 pm
11/21	Nucleophilic Substitution Reactions Term Test 2: Nov. 25	Term Test 2: Nov. 25	Chapter 7.1 to 7.4; Nov 25	
11/28	Elimination Reactions	Tutorial	Chapter 7.5 to 7.11; Dec 2	Assignment 7 Dec. 3; 8:00 pm
12/5	Elimination Reactions	Tutorial		
12/12	Last Day of Classes: Mon., Dec. 12 Final Exam: S, Dec. 17; 9:00-12:00 in A2133	Tutorial		

## Requirements:

### WHMIS Quiz

All students registered in CHE 251 are expected to take the *WHMIS 2015* quiz and pass with a percentage of at least 80 before engaging in lab activities. Students who have not passed a version of this quiz by the time of their first lab will not be allowed to participate in the lab activity and will take a zero for anything from that marked lab. Students need to complete the quiz by **Sunday, September 11**. Here is the link to the Moodle site: <https://moodle.ambrose.edu/course/view.php?id=2576>

### Labs

- Labs are mandatory. In addition, you must provide a doctor's note if you need to miss one for health reasons.
- Pre-lab quizzes will help you to perform the necessary calculations to make the lab quicker and easier. Pre-lab quizzes will be available on Moodle for you to print and make a copy of it. Complete it and hand it to the Lab Instructor before the start of each lab.

- Students wearing inappropriate laboratory attire or incomplete pre-laboratory assignments will not be permitted to conduct experiments for safety reasons. In addition, you will not be permitted in the lab if you miss the pre-lab talk ((the first 20 minutes of the lab)..
- You must have a laboratory notebook. Include everything in your notebook. Write legibly in pen (no erasing or white-out). Draw a line through any mistakes; do not scribble them out. At the top of each page, write the date and title of the experiment. Then, attach the pages to worksheets and reports for grading.
- You will have five labs to perform; three of them require filling in worksheets and two to submit formal lab reports. Worksheets are due at the end of the lab. Formal lab reports are due next week at the beginning of the tutorial. Each lab is out of 20 marks. Each worksheet or lab reports are worth 15 marks. Pre-lab quizzes for each lab count to 5 marks.
- The grade for each experiment will be based on your pre-laboratory assignment, maintaining a lab notebook, your performance in the laboratory, and the required experimental report.
- A mark of less than 50% in the laboratory component and submission of fewer than three laboratory experiments will result in a final grade of no greater than D. A grade of D does not satisfy the pre-requisite requirements for further chemistry courses or admission to programs in Biology.

### **Tutorials**

- Tutorials are held during lab class.
- Tutorials are opportunities to apply lessons learned in the lecture on answering sample problems and assignments. Quizzes will also be administered during tutorials.

### **WileyPlus Assignments and Readings**

- There are WileyPlus assignments and readings to be completed for this course. Assignments and readings will be made available to you on the WileyPlus site. It is your responsibility to register for the WileyPlus in the first week of the course.

### **Exams**

- Examinations are a combination of multiple-choice and written answer questions. Students can only bring pencils, pens, erasers, model kits, ID cards, and non-programmable calculators during exams. The final exam is cumulative.

### **Other Important requirements**

- You cannot use your phone as your calculator; you must use a calculator to do all your work.
- In respect to the professor and to your fellow students, we ask that you:

- a) Turn your phone off during class and that you do not use it for texting during lecture or lab;
- b) Not have conversations with the people beside you during lecture – it is very distracting to the people around you;
- c) Use your laptops for lecture material and assignments only – that you are not using the internet or social media during class time;
- d) Arrive to lecture, lab and tutorial on time; you will not be permitted in the lab if you miss the pre-lab talk
- e) Don't listen to music in class or lab. These will help to maximize the learning experience for you and your fellow students.

**Attendance:**

Class participation is critical to your learning in this course. Therefore, if you miss any class, please make sure to complete the notes from your peers.

**Grade Summary:**

The available letters for course grades are as follows:

Grade	Interpretation	Grade Points
A+	Excellent	4.00
A		4.00
A-		3.70
B+	Good	3.30
B		3.00
B-		2.70
C+	Satisfactory	2.30
C		2.00
C-		1.70
D+	Poor	1.30
D		1.0
F	Failure	0.00
P	Pass	No Grade Points

## Grading Assessments:

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

Laboratory Experiments	25%
Tutorial Quizzes (5 of them)	10%
Assignments	10%
Term Test 1	15%
Term test 2	15%
Final Examination	25%

A+	A	A-	B+	B	B-
95% - 100%	87% - 94.99%	82% - 86.99%	77% - 81.99%	72% -76.99%	66% - 71.99%

C+	C	C-	D+	D	F
62% - 65.99%	58% - 61.99%	54% - 57.99%	50% - 53.99%	45% - 49.99%	< 44.99%

Because of the nature of the Alpha 4.00 system, there can be no uniform University-wide conversion scale. The relationship between raw scores (e.g. percentages) and the resultant letter grade will depend on the nature of the course and the instructor's assessment of the level of each class, compared to similar classes taught previously.

Please note that final grades will be available on the student registration system. Printed grade sheets are not mailed out.

## Ambrose University Important Information:

### Communication

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (cancelled class sessions, extensions, requested appointments, etc.) between class sessions.

### Exam Scheduling

Students who find a conflict in their exam schedule must submit a Revised Examination Request form to the Registrar's Office by the deadline date; please consult the Academic Calendar. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) the student has three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

### Standards of Behaviour in the Classroom Setting

Learning is an active and interactive process, a joint venture between student and instructor and between student and student. Some topics covered within a class may lead to strong reactions and opinions. It is important that Students understand that they are entitled to hold contradictory beliefs and that they should be encouraged to engage with these topics in a critical manner. Committing to this type of "active learning" significantly increases the learning experience for both teacher and student, and reflects the Christian imperative to pursue truth, which lies at the heart of the Ambrose educational experience. However, active discussion of controversial topics will be undertaken with respect and empathy, which are the foundations of civil discourse in the Classroom Setting. Primary responsibility for managing the classroom rests with the instructor. The instructor may direct a student to leave the class if the student engages in any behaviour that disrupts the classroom setting. If necessary, Ambrose security will be contacted to escort the student from class. Please refer to your professor regarding their electronic etiquette expectations.

### Academic Integrity

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Academic dishonesty is taken seriously at Ambrose University as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to acknowledge to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university. Students are expected to be familiar with the policies in the current Academic Calendar that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic

dishonesty are reported to the Academic Dean and become part of the student's permanent record.

### Academic Policies

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Academic Calendar. The academic calendar can be found at <https://ambrose.edu/content/academic-calendar-2>.

### Privacy

Personal information (information about an individual that may be used to identify that individual) may be required as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at [privacy@ambrose.edu](mailto:privacy@ambrose.edu).

### Coursework Extensions

Should a request for a time extension on coursework exceed the end of the term, a *Coursework Extension Application* must be completed and submitted to the Office of the Registrar. The extension (if granted) will be recorded on the student record. Extensions are granted at the discretion of the instructor and are normally granted for 30 days beyond the last day of the term.

Normally, Course Extension Applications will be considered only when all of the following conditions are met:

- the quality of prior course work has been satisfactory;
- circumstances beyond your control, such as an extended illness or death of a family member, make it impossible for you to complete the course work on time; and
- you submit *Coursework Extension Application* to the Office of the Registrar on or before the deadline specified in the Academic Schedule.

If granted, time extensions do not excuse you from a final examination where one has been scheduled for the course.

A temporary grade of TX will be assigned until a final grade is submitted in accordance with the new deadline. A final grade of F will apply to:

- all course work submitted after the end of the semester unless a coursework extension has been granted; and all course work submitted after the revised due date provided by an approved extension to coursework.

## Academic Success and Supports

### Accessibility Services

Academic accommodation is provided to Ambrose students with disabilities in accordance with the Alberta Human Rights Act and the Canadian Charter of Rights and Freedoms. Provision of academic accommodation does not lower the academic standards of the university nor remove the need for evaluation and the need to meet essential learning outcomes. Reasonable accommodations are tailored to the individual student, are flexible, and are determined by considering the barriers within the unique environment of a

postsecondary institution. It can take time to organize academic accommodations and funding for disability-related services. Students with a disability who wish to have an academic accommodation are encouraged to contact Accessibility Services as early as possible to ensure appropriate planning for any needs that may include accommodations. Staff can then meet with students to determine areas to facilitate success, and if accommodations are required, ensure those accommodations are put in place by working with faculty.

### **Ambrose Writing Services**

Ambrose Writing services provides academic support in the four foundational literacy skills—listening, speaking, reading, and writing. It also assists students with critical thinking and the research process. Throughout the academic year, students can meet with a writing tutor for personalized support, or they can attend a variety of workshops offered by Academic Success. These services are free to students enrolled at Ambrose University. Academic Success serves all students in all disciplines and at all levels, from history to biology and from theatre to theology. To learn more, please visit <https://ambrose.edu/writingcentre>

### **Ambrose Tutoring Services**

Ambrose Tutoring Services provides support in specific disciplinary knowledge, especially in high-demand areas such as chemistry, philosophy, math and statistics, and religious studies. These tutors also coach students in general study skills, including listening and note-taking. During the academic year, Ambrose Tutoring Services offers drop-in tutoring for courses with high demand; for other courses, students can book a one-to-one appointment with a tutor in their discipline. These services are free to students enrolled at Ambrose University. To learn more, please visit <https://ambrose.edu/tutoring>.

### **Mental Health Support**

All of us need a support system. We encourage students to build mental health supports and to reach out when help is needed.

#### On Campus:

- Counselling Services: [ambrose.edu/counselling](https://ambrose.edu/counselling)
- Peer Supportive Listening: One-to-one support in Student Life office. Hours posted at [ambrose.edu/wellness](https://ambrose.edu/wellness).
- For immediate crisis support, there are staff on campus who are trained in Suicide Intervention and Mental Health First Aid. See [ambrose.edu/crisissupport](https://ambrose.edu/crisissupport) for a list of staff members.

#### Off Campus:

- Distress Centre - 403-266-4357
- Sheldon Chumir Health Care Centre - 403-955-6200
- Emergency - 911

### **Sexual Violence Support**

All staff, faculty, and Residence student leaders have received *Sexual Violence Response to Disclosure* training. We will support you and help you find the resources you need. There is a website with on and off campus supports – [ambrose.edu/sexual-violence-response-and-awareness](https://ambrose.edu/sexual-violence-response-and-awareness).

#### Off Campus:

- Clinic: Sheldon Chumir Health Centre - 403-955-6200
- Calgary Communities Against Sexual Abuse - 403-237-5888

**Note:** Students are strongly advised to retain this syllabus for their records.