

**CHEMISTRY 263 – Organic Chemistry II**

3 credits, 3 hours lecture, 3 hours lab

Chemistry 263 continues the study of molecular structure and reactivity of organic compounds with oxygen containing functional groups, aromatic compounds, amines and molecules of biological importance. The use of organic spectroscopy in the determination of molecular structure is introduced.

*Prerequisite: CHEM 164 or CHEM 261*

**Instructor**

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**Office Hours**

Monday	10:00 AM – 12:00 PM
Thursday	2:00 PM – 4:00 PM
Friday	11:00 AM – 12:00 PM

**Hours of Instruction**

Lecture:	Monday	9:00 AM – 10:00 AM	Room S110
	Thursday	9:00 AM – 10:00 AM	Room S110
	Friday	2:00 PM – 3:00 PM	Room S110
Laboratory:	Tuesday	9:00 AM – 12:00 PM	Lab 236

**Required Resources**

1. **Organic Chemistry**; Solomons, T.W.G.; Fryhle, C.B.; Snyder, S.A.; John Wiley & Sons, Inc., 2016, 12<sup>th</sup> edition, ISBN 978-1-118-87576-6.  
*The 11<sup>th</sup> edition of this textbook is also acceptable.*
2. **Chemistry 263 Laboratory Manual**; Keyano College, 2018/2019 edition.  
*The old editions of the lab manual are not acceptable.*
3. **Student Lab Notebook with Permanent Binding**; Hayden-McNeil, Plymouth, Michigan, ISBN 978-1-930882-00-3
4. A non-programmable scientific calculator (Sharp EL-531, used for exams, is recommended).
5. Extra long lab coat.

### Course Outcomes

Upon successful completion of this course, the student shall be able to:

- Perform many organic chemistry laboratory techniques, such as refluxing, distillation, recrystallization, melting point determination, and use safety procedures to ensure a safe working environment for all students.
- Understand organic spectroscopy (with an emphasis on proton NMR) and correlate organic structures with spectroscopic features.
- Create organic synthesis pathways of obtaining one compound from another, by applying a logical understanding of organic reactions and mechanisms.
- Understand important organic chemistry mechanisms, such as allylic/benzylic radicalic substitution, electrophilic aromatic substitution, nucleophilic addition for carbonylic compounds (aldehydes and ketones), nucleophilic addition - elimination for carboxylic acids and derivatives.
- Correlate typical mechanisms that appear in organic chemistry with the reactivity of biochemical compounds (carbohydrates, lipids, and proteins).

### Evaluation

Assignments	15%
Laboratory	25%
Midterm Exam	25%
Final Exam	35%
Total	100%

*A grade of C- is required for progression or transfer.*

**Students are required to attend and complete all labs.** Unexcused absence from any lab period or failure to submit a lab report may result in a failing grade in the course.

### Grading System

Descriptor	Alpha Grade	4.0 Scale	Percent	Rubric for Letter Grades
Excellent	A+	4.0	> 92.9	Work shows in-depth and critical analysis, well developed ideas, creativity, excellent writing, clarity and proper format.
	A	4.0	85 – 92.9	
	A-	3.7	80 – 84.9	
Good	B+	3.3	77 – 79.9	Work is generally of high quality, well developed, well written, has clarity, and uses proper format.
	B	3.0	74 – 76.9	
	B-	2.7	70 – 73.9	
Satisfactory Progression	C+	2.3	67 – 69.9	Work has some developed ideas but needs more attention to clarity, style and formatting.
	C	2.0	64 – 66.9	
	C-	1.7	60 – 63.9	
Poor Minimum Pass	D+	1.3	55 – 59.9	Work is completed in a general way with minimal support, or is poorly written or did not use proper format.
	D	1.0	50 – 54.9	
Failure	F	0.0	< 50	Responses fail to demonstrate appropriate understanding or are fundamentally incomplete.

**Proposed Schedule of Topics****1. Organic Spectroscopy****textbook chapters**

- The electromagnetic spectrum, Ultraviolet-Visible spectroscopy 9.1, 13.8
- Review of Infrared spectroscopy, Detecting functional groups 2.15-2.16
- Nuclear Magnetic Resonance, Chemical shift 9.2-9.9
- NMR in aromatic compounds 14.11
- Mass Spectrometry, Fragmentation 9.10-9.14
- Spectra for aldehydes, ketones, carboxylic acids, amines 16.14, 17.2J, 20.11B

**2. Conjugated dienes, aromatic compounds.**

- Resonance, Conjugated unsaturated systems 13.1-13.10
- Aromatic compounds 14.1-14.9
- Reactions of aromatic compounds 15.1-15.15

**3. Organic compounds with carbonyl and carboxyl functional groups**

- Alcohols from carbonyl compounds 12.1-12.9
- Aldehydes and Ketones, Nucleophilic addition 16.1-16.15
- Enols and enolates 18.1-18.4
- Carboxylic acids and their derivatives 17.1-17.12

**4. Amines and Biomolecules.**

- Amines 20.1-20.13
- Carbohydrates and lipids 22.1-22.2
- Lipids 23.1-23.2
- Amino acids and proteins 24.1-24.2

**Please Note:**

Date and time allotted to each topic is subject to change.

**Performance Requirements****Student Responsibilities**

It is your responsibility as a student to contact the Office of the Registrar to complete the forms for Withdrawal or Change of Registration, and any other forms. Please refer to the list of important dates as noted in the Academic Schedule in the Keyano College credit calendar.

More specific details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

**Laboratory Safety**

In the science laboratories, safety is important and therefore students must complete the *WHMIS for Students* online training course on Moodle before entering the science laboratories.

Students must comply with the mandatory laboratory safety rules for this course as provided in the laboratory manual. Failure to do so will result in progressive discipline such as a verbal warning, refused entry into the laboratory, or suspension from the College.

Before entering the lab, students are responsible reviewing the lab manual and relevant Safety Data Sheets for the purpose of evaluating risks associated to health. Some hazards used in the laboratory may have additional risks to those with pre-existing medical conditions.

**Student Attendance**

Class attendance is useful for two reasons. First, class attendance maximizes a students' learning experience. Second, attending class is a good way to keep informed of matters relating to the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

It is the responsibility of each student to be prepared for all classes. Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and / or notes that may be due.

**Academic Misconduct**

Students are considered to be responsible adults and should adhere to principles of intellectual integrity. Intellectual dishonesty may take many forms, such as:

- Plagiarism or the submission of another person's work as one's own
- The use of unauthorized aids in assignments or examinations (cheating)
- Collusion or the unauthorized collaboration with others in preparing work
- The deliberate misrepresentation of qualifications
- The willful distortion of results or data
- Substitution in an examination by another person
- Handing in the same unchanged work as submitted for another assignment
- Breach of confidentiality.

The consequences for academic misconduct range from a verbal reprimand to expulsion from the College. More specific descriptions and details are found in the Student Rights and Student Code of Conduct section of the Keyano College credit calendar. It is the responsibility of each student to be aware of the guidelines outlined in the Student Rights and Student Code of Conduct Policies.

In order to ensure your understanding of the concept of plagiarism, you must successfully complete the online tutorial found on [ilearn.keyano.ca](http://ilearn.keyano.ca). Then print the certificate, sign it, and show it to each of your instructors. Your course work will not be graded until you show this signed certificate.

**Specialized Supports**

The Student Academic Support Services (SASS) department: Accessibility Services, Skill Centre and Wellness Services, work together to support student success at Keyano College.

**Accessibility Services (CC167)** supports student success through group and individualized instruction of learning, study and test taking strategies, and adaptive technologies. Students with documented disabilities, or who suspect a disability, can meet with the Learning Strategists to discuss accommodation of the learning barriers that they may be experiencing. Students who have accessed accommodations in the past are encouraged to visit our office at their earliest opportunity to discuss the availability of accommodations in their current courses. Individual appointments can be made by calling 780-791-8934

**Skill Centre (CC119)** provides a learning space where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff. Students visiting the centre have access to one-to-one or group tutoring, facilitated study groups, and assistance in academic writing. The Skill Centre's Peer Tutor program provides paid employment opportunities for students who have demonstrated academic success and want to share what they have learned. Tutoring is available free to any students registered at Keyano College on a drop in basis, from 9:00 am to 5:00 pm Monday through Friday. Additional evening hours are subject to tutor availability and are posted in the Skill Centre.

**Wellness Services (CC260)** offers a caring, inclusive, and respectful environment where students can access free group and individual support to meet academic and life challenges. Mental Health Coordinators offer a safe and confidential environment to seek help with personal concerns. The Mindfulness Room in CC260 is available as a quiet space for students to relax during regular office hours. Wellness Service welcomes students to participate in any of the group sessions offered throughout the academic year addressing such topics as Mindfulness and Text Anxiety. Individual appointments can be made by calling 780-791-8934.

**Please watch your Keyano email for workshop announcements from our Student Academic Support Services team.**