

CHEM 261A – Organic Chemistry I*3 credits, 3 hours lecture, 3 hours lab*

Organic Chemistry I introduces the correlation of structure and chemical bonding in carbon compounds with the physical properties and chemical reactivity of organic molecules. With discussion based on selected functional groups, the course will introduce stereochemistry, three dimensional structure, and reaction mechanisms, especially the mechanisms of addition to double bonds, nucleophilic substitution and elimination reactions. Functional groups covered will emphasize hydrocarbons and derivatives that contain halogens, oxygen, sulphur, and the hydroxyl group.

Prerequisite: CHEM 101 or CHEM 103

Instructor

Dr. Sorin Nita

Office: S209F

Phone: (780) 715-3924

Email: sorin.nita@keyano.ca**Office Hours**

Monday	10:00 AM – 12:00 PM
Wednesday	3:00 PM – 4:00 PM
Thursday	2:00 PM – 4:00 PM

Hours of Instruction

Monday	9:00 AM – 12:00 PM	Lab 236
Tuesday	12:00 PM – 1:00 PM	Room S216
Wednesday	2:00 PM – 3:00 PM	Room S214
Friday	2:00 PM – 3:00 PM	Room S214

Required Resources

1. **Organic Chemistry**; Solomons, T.W.G.; Fryhle, C.B.; Snyder, S.A.; John Wiley & Sons, Inc., 2014, 11th edition, ISBN 978-1-118-13357-6.
The 10th edition of this textbook is also acceptable.
2. **Chemistry 261 Laboratory Manual**; Keyano College, 2016/2017 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. **Molecular Visions Molecular Model Kit (Darling)**, on sale in the bookstore. In case you wish to share costs, one half of a Molecular visions kit will give enough models. Alternate models are acceptable as long as they give ball-&-stick models that can be rotated about the bonds, with plenty of 109° and 120° bond angles.
5. A non-programmable scientific calculator (Sharp EL-531, used for exams, is recommended).
6. Extra long lab coat.

Course Outcomes

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

- Perform typical organic chemistry experiments, with an emphasis on laboratory safety
- Explain the hybridization of carbon atoms in different hydrocarbons, and correlate the hybridization with their chemical properties
- Employ IUPAC nomenclature rules to name hydrocarbons and properly identify their stereoisomers and diastereoisomers
- Use molecular model kits for understanding the conformations of alkanes and cycloalkanes, as well as the stereochemistry in some important organic reactions, such as the bromination of *cis* or *trans* stilbene
- Understand important organic chemistry mechanisms, such as radicalic substitution for alkanes, electrophilic addition for alkenes, and nucleophilic substitution/elimination (SN1, SN2, E1, E2) for alkyl halides and alcohols

Evaluation

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

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

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	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	
Progression	C-	1.7	60 – 63.9	
Poor	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.
Minimum Pass	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. Basis of Organic Chemistry	textbook chapters
• Molecular structure and bonding in organic chemistry	1.1-1.17
• Functional groups and nomenclature	2.1-2.12, 4.3-4.4
• Intermolecular forces	2.13-2.14
• Infrared spectroscopy	2.15-2.16
• Reactivity in organic chemistry; Acids and Bases.	3.1-3.14
2. Isomers and Conformers	
• Conformations of alkanes and cycloalkanes	4.1-4.2, 4.7-4.14
• Stereochemistry: Chiral Molecules	5.1-5.18
3. Nucleophilic Substitutions and Eliminations	
• Nucleophilic Substitutions of alkyl halides	6.1-6.14
• Elimination reactions	6.15-6.19
• Alcohols and ethers	11.1-11.10
4. Chemistry of Hydrocarbons	
• Alkanes: Radical Substitution reactions	4.15, 10.4-10.7
• Alkenes and Alkynes: Preparation by Elimination reactions	7.1-7.11
• Alkenes and Alkynes: Hydrogenation reactions	7.12-7.15
• Alkenes and Alkynes: Electrophilic Addition reactions	8.1-8.13, 8.17-8.18
• Alkenes and Alkynes: Oxidation reactions	8.15-8.16, 8.19

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.

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.

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. 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

Counselling and Accessibility Services

Counselling Services provides a wide range of specialized counselling services to prospective and registered students, including personal, career and academic counselling.

SKILL Centre

The SKILL Centre is a learning space in the Clearwater Campus at Keyano College where students can gather to share ideas, collaborate on projects and get new perspectives on learning from our tutorial staff.

The SKILL Centre, through a variety of delivery methods, provides assistance in skill development to Keyano students. Assistance is provided by instructors, staff and student tutors. Individuals wishing to improve their mathematics, writing, grammar, study, or other skills, can take advantage of this unique service.

Authorization

This course outline has been reviewed and approved by the Program Chair.

Sorin Nita, Instructor

Louis Dingley, Chair

Date Authorized

Vincella Thompson, Dean

Date Authorized

Signed copies to be delivered to:

Instructor

Registrar's Office