

Branch Name:	B.Sc. Chemistry
Program Code:	SC103
Course Name:	ORGANIC CHEMISTRY-I
Course Code:	2SC1030502
Pre-requisite Course:	Fundamentals of Organic chemistry (up to S.Y.B.Sc.)

Course Objectives:

1. Provide advanced level knowledge and training in chemistry, awareness of the latest analytical techniques, use of reagents and reactions in the laboratory, synthesis and study of materials, exploration of their properties, and development of ways to utilize mineral life.
2. Comprehension of principles of organic chemistry and learning of current applications.
3. The primary goal of this course is to make students aware of how chemical process can be designed, developed and employed in a sustainable manner.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme(Marks)				
Lecture(L)	Tutorial(T)	Practical(P)	Credit	Theory (Marks)		Practical(Marks)		Total(Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	--	-	3	70	30	-	-	100

Subject Contents:

Sr. No	Topic	Lectures	Weightage
1	Stereochemistry ❖ Concept of Chirality, Chirality and Symmetry, Elements of Chirality including Chiral center, Chiral axis, Chiral plane and Helicity. ❖ CIP Nomenclature, Molecules with more than one Chiral center, Total number of Stereoisomer in such molecules, Enantiomeric and Diastereomeric Relationship	18	35%
2	Nucleophilic substitution at saturated carbon atom ❖ The reaction mechanism ❖ Stereochemistry of nucleophilic substitution ❖ Scope of nucleophilic substitution ❖ Stereochemistry of SN1 and SN2 reaction ❖ Neighboring group participation (NGP) ❖ Elimination reactions: E1, E2 and E1cB	18	35%
3	Organic Name Reactions-I ❖ Wittig reaction, Beckmann rearrangement, Benzilic acid rearrangement, Perkin reaction, Mannich reaction, Cannizzaro reaction, Demjanov rearrangement, Sandmeyer reaction, Gabriel phthalimide synthesis, Michael addition. ❖ Related problems.	12	30%

Course Outcomes:

- ❖ Have solid foundations in the fundamentals of organic chemistry.
- ❖ Are capable to design carryout, record and analyze the results of chemical experiments.
- ❖ Are capable to use this knowledge for designing experiments related to organic chemistry.
- ❖ Are skillful in problems solving, significant thinking and organic chemistry-based reasoning.
- ❖ Are capable to identify chemical problems and explore new areas of research.
- ❖ Are capable to use up to date library searching and retrieval methods to obtain information about novel synthetic chemical methods and issues related to organic chemistry.

Reference Books:

1. Organic Chemistry by Morrison and Boyd. 4th ed. Pearson Education-2003
2. Organic Chemistry by Pine, Hendrickson, Cram and Hammond 4th ed. By P.S. Kalsi.
3. Advance Organic Chemistry by Jerry March.
4. Advance Organic Chemistry by Arun Bahal and B.S. Bahal.
5. Organic Chemistry Vol. I & II by S.M. Mukherji, S.P. Sing, R.P. Kapoor.
6. Reaction mechanism and Reagents in Organic Chemistry by Gurdeep R. Chatwal 4th ed. Himalaya Public House.
7. Textbook of Organic Chemistry by Arun Bahal, B.S. Bhal, S. Chand.
8. Organic Spectroscopy by P.S. Kalsi.
9. Organic Chemistry by I.R. Finar.
10. Organic Reaction Mechanism by V.K. Ahluwalia, R.K. Parashar.

List of Open Source Software/learning website:

1. <https://www.organic-chemistry.org>
2. <https://swayam.gov.in>
3. <https://nptel.ac.in>
4. <http://onlinelibrary.wiley.com>
5. https://en.wikipedia.org/wiki/Main_Page

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Learn fundamentals of stereochemistry	Remembering & applying
CLO2	Learn basic concepts in nucleophilic substitution reactions at saturated carbon atom	Understanding
CLO3	Understand the different organic name reactions for the synthesis of various chemical compounds and implement this knowledge in organic laboratory experiments.	Understanding & applying
CLO4	Working through this course, students are expected to apply their knowledge to problem-solve, deduce structures, and synthesize simple organic molecules using the studied reactions. Relationships between organic chemistry and other Disciplines are noted.	Analyzing & Evaluating
CLO5	Students will demonstrate an advanced level of knowledge in Organic chemistry.	Applying & creating

Mapping of CLOs with POs

Course Learning outcomes	Program Outcomes (POs)								
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CLO1	H	H	M	M	H	M	L	M	L
CLO2	H	M	M	M	L	L	M	M	L
CLO3	H	H	M	H	M	L	L	H	M
CLO4	M	H	M	M	M	M	H	H	M
CLO5	M	H	M	H	M	H	M	H	L

H: High, M:Medium, L:Low