

Branch Name:	B.Sc. Chemistry
Program Code:	SC103
Course Name:	ORGANIC CHEMISTRY-II
Course Code:	2SC1030602
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	Electrophilic and free radical addition reaction ❖ Addition to carbon-carbon double bond ❖ Markovnikov's rule ❖ Electrophilic addition, Orientation, ❖ Reactivity, Rearrangement, Dimerization, Alkylation ❖ Peroxide effect (Anti-markovnikov's rule) ❖ Free radical addition, mechanism of peroxide-initiated addition of HBr ❖ Synantanti-addition mechanism for addition of halogens ❖ Electrophilic addition to conjugated dienes(1,2 vs 1,4-addition)	18	35%
2	Nucleophilic Aromatic Substitutions ❖ Nucleophilic aromatic substitution [Bimolecular displacement(SN²) mechanism] ❖ Elimination-Addition mechanism [Benzyne mechanism] ❖ Stability and properties of benzyne ❖ Evidences of Benzyne intermediate	18	35%
3	Organic Name Reactions-II ❖ Reimer-Tiemen reaction, Chichibabin reaction, Diels-alder reaction, Dieckmann condensation, Hunsdiecker reaction, Strecker amino acid synthesis, Hantzsch pyridine synthesis, Biginelli dihydropyrimidine synthesis, Fries rearrangement. ❖ 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 upto 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. Text book 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 electrophilic and free radical addition reactions	Understanding & Applying
CLO2	Understand basic concepts in nucleophilic aromatic substitution reactions	Understanding & Applying
CLO3	Understand the different organic name reactions for the synthesis of various chemical compounds and implement this knowledge in organic laboratory experiments.	Applying & Evaluating
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

Mapping of CLOs with Pos & PSOs

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

H: High, M: Medium, L: Low