



Vitthalbhai Patel & Rajratna P. T. Patel Science College
(Autonomous)
(Reaccredited with 'A' Grade by NAAC (CGPA 3.13)
Affiliated to SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar, Gujarat
Syllabus effective from the Academic Year 2024-2025



(Bachelor of Science) (Undergraduate) (NEP-2020)
B. Sc. (UG) Semester-I

Course Code	US01SECHE02	Title of the Course	BASIC ORGANIC CHEMISTRY- I
Total Credits of the Course	2	Hours per Week	2

Course Objectives:	To make students familiar with: 1. Chemistry as a subject. 2. Historic development and scope of chemistry 3. Basic concepts related to basic organic chemistry and related aspects.
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Course Content		
Unit	Description	Weightage* (%)
1.	ALKANE, ALKENE AND ALKYNE Hydrocarbons : Physical properties of alkanes, alkene and alkynes, Common and IUPAC nomenclature of alkanes, alkenes and alkynes. Alkanes : Preparation from alkane by hydrogenation, reduction of alkyl halide, The Grignard reagent, Corey-House reaction, Wurtz reaction, Wurtz-Fittig reaction, Mechanism of halogenations, Orientation of halogenations, Ease of formation and stability of free radical. Alkenes : Geometrical isomerism (Cis-Trans and E-Z isomerism), Preparation of alkene from dehydrohalogenation of alkyl halide with Mechanism, dehydration of alcohol. The E ² mechanism, The E ¹ mechanism, Electrophilic addition Mechanism, Mechanism of addition of halogen, Halohydrin formation, Free-radical addition, Hydroxylation, addition of alkene and alkane to alkene, Ozonolysis. Alkynes : Preparation from dehydrohalogenation of alkyl halide, Reaction of metal acetylide with primary alkyl halides, Hydration of alkynes, Acidity of alkynes, Analysis of alkynes.	50%
2.	ALKYL AND ARYL HALIDES Homolytic and Heterolytic chemistry, Classification, Preparation, Reaction: Nucleophilic aliphatic substitution, SN ² Reaction: Mechanism, kinetics, Reactivity and steric hindrance, SN ¹ Reaction:	

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	Mechanism, kinetics, Carbocation, Structure of carbocation, Relative stability of carbocations, Stability of carbocation: polar effect, Rearrangement of carbocation, Reaction, Low reactivity of aryl and vinyl halides, Structure of aryl and vinyl halides, Nucleophilic aromatic substitution, Bimolecular displacement for nucleophilic aromatic substitution, Reactivity in nucleophilic aromatic substitution, Orientation in nucleophilic aromatic substitution.	50%
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Teaching-Learning Methodology	Conventional method (classroom blackboard teaching), ICT. Courses for B. Sc. Chemistry programme are delivered through classroom, laboratory work in a challenging, engaging, and inclusive manner that accommodates a variety of learning styles and tools (PowerPoint presentations, audio visual resources, e-resources, seminars, workshops, models).
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Continuous and compression evaluation : Class test/Internal written test 10 Marks (40%), Quiz 05 Marks (20%), Home Assignments 05 Marks (20%), Attendance 05 Marks (20%), (As per SPU Letter No. E-3/2748 dated 02/02/2024) [Total 25 Marks (100%)].	50 %
2.	Semester End Examination [Total 25 Marks (100%)].	50 %

Course Outcomes: Having completed this course, the learner will be able to	
1.	Gain the knowledge of Chemistry using various fundamental aspects of all four major branches of chemical sciences.
2.	Explain nomenclature, stereochemistry, structures, reactivity, and mechanism of the several chemical reactions.
3.	To have knowledge of basic aspects of inorganic chemistry comprising of various aspects of periodic table.



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4	Gain knowledge about various acid-base theory and their applications.
5	Know about use of various theoretical analytical methods and their applications.

Suggested References:	
Sr. No.	References
1.	Morrison, R. T. & Boyd, R. N., <i>Organic chemistry</i> (6 th edition). (unit- 1)
2.	Clayden, J., Greeves, N., Warren, S., <i>Organic Chemistry</i> 2 nd Edition, Oxford University Press. (unit- 1)

On-line resources to be used if available as reference material
On-line Resources : Google books, INFLIBNET, Google Web
