

Lecture Plan							
Name of the college: Government College of Arts, Science and Commerce, Sanquelim- Goa							
Name of Faculty: Dr. Sagar Narayan Patil			Subject: Chemistry				
Paper code: CHC-100 ;Fundamentals of Chemistry			Program: FYBSc			Division: -	
Academic year:June 2025- 2026			Semester: I			Total Lectures: 30	
Course Objectives: ● To study the postulates of kinetic theory of gases and understand the deviations of real gases from ideal behaviour. ● To study the surface tension and viscosity of liquids. ● To introduce the concepts of atomic structure. ● To understand the basic concepts in organic chemistry. ● To understand the preparation and reactivity of alkanes, alkenes and alkynes.							
Student Learning Outcome: 1. Identify the properties of liquid and gases. 2. Explain the applications of liquid and gases.. 4. Identify the use of curved arrow notations in organic reaction mechanisms. 5. Understand various methods of preparation and reactions of alkanes, alkenes and alkynes.							
Month	Lecture From	Lecture To	No. of lectures allotted	Topic, Subtopic to be covered	Exercise/ Assignment	ICT Tools	Reference books
June	20/06/2025	30/06/26	2	Introduction Fundamentals of Organic Chemistry Basic Organic Chemistry, Physical chemistry	Structures and problems, theories	PPT/ Smart Board	1. A. Bahl and G. D Tuli Essentials of physical chemistry ,S. Chand Publications 2020 2. 2. Puri, Sharma, Pathania Principles

July	01/07/2025	31/07/2025	10	Gaseous state Postulates of Kinetic Theory of gases and deviation from ideal behaviour, Vander Waal's equation of state. Critical phenomenon; PV isotherms of real gases, continuity of states, the isotherms of Vander Waal's equation relation between critical constants and Vander Waal's constants. Law of corresponding states, reduced equation of state. Molecular velocities: root mean square, average and most probable velocities, Qualitative discussion of Maxwell's distribution of molecular velocities, collision number, mean free path and collision diameter. Numerical problems. .	ISA-I preparation Assignment	Smart Board	- Physical Chemistry , Vishal publishing Co. 2021 3. G. W. Castellan Physical Chemistry 4th Edition Addison-Wesley Publishing Co.2004 15. Finar, I. L. Organic Chemistry (Vol. I & II), E.L.B.S., 5th Edition. 2001. 16. Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010.
August	01/08/2025	31/08/2025	08	Fundamentals of Organic Chemistry Basic Organic Chemistry Curved arrow notation, drawing electron movement with arrows, half and double headed arrows, in organic reaction mechanisms. Physical Effects, Electronic Displacements: Inductive Effect, Mesomeric effect, Resonance and Hyperconjugation. Cleavage of Bonds: Homolysis and Heterolysis. Structure, shape and reactivity of organic molecules: Nucleophiles and electrophiles. Reactive Intermediates: Carbocations, Carbanions and free radicals. Strength of organic acids and bases: Comparative study with emphasis on factors affecting pKa values. Aromaticity: Benzenoids and Hückel's	ISA-II preparation Assignment	Smart Board	Listed as above

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September	01/9/2025	30/09/2025		Liquid State Surface Tension, Units of Surface Tension, Determination of Surface Tension by Capillary Rise Method and stalagmometer method. Viscosity, Units of Viscosity, Poiseuille equation, Measurement of Viscosity by Ostwald Method, Effect of Temperature on Viscosity of a Liquid. Numerical problems. Aliphatic Hydrocarbons: Functional group approach for the following reactions (Preparations & reactions) to be studied in context to their structure Alkanes: Preparation: Wurtz reaction, Kolbe's synthesis, Reactions: Free radical Substitution: Halogenation. Alkenes: Preparation: Elimination reactions: Dehydration of alcohols and dehydrohalogenation of alkyl halides Reactions: Addition of HX (Markownikoff's and anti-Markownikoff's addition)			Listed as above
October	01/10/2025	12/10/2025	9	Alkynes: Preparation: Acetylene from CaC₂ and conversion into higher alkynes; by dehalogenation of tetra halides and dehydrohalogenation of vicinal-dihalides. Reactions: formation of metal acetylides, addition of HX and bromine.	revisions problems therein	Smart Board	2. G. Chatwal and S. Anand, Instrumental Methods of Chemical Analysis 5th edition (reprint 2003), Himalaya publication. 3. Vogels Textbook of Quantitative Inorganic Analysis 4th edition ELBS.

