

Lesson Plan

Name of Teacher: Dr. Meena Rani Subject: CHEMISTRY (DSC)		Class: B. Sc. I Sem : 1 st (as per NEP) Paper Code: C24 CHE101T	Session: 2026-27
July 2026	Topic- Unit-I Atomic Structure Dual behaviour of matter and radiation, de-Broglie's relation, Heisenberg's uncertainty principle, Quantum mechanics. Time independent Schrodinger equation (Derivation Excluded). Significance of Ψ and Ψ^2 , Normal and orthogonal wave functions, Concept of atomic orbitals, Significance of quantum numbers, shapes of <i>s</i> , <i>p</i> and <i>d</i> orbitals, Rules for filling electrons in various orbitals, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals.		
Aug 2026	Topic- Unit-II Structure and Bonding Localized and delocalized chemical bond, Van der Waals interactions, Concept of resonance and its applications, Hyperconjugation, Inductive effect, Electromeric effect and their comparison. Mechanism of Organic Reactions Curved arrow notation, homolytic and heterolytic bond fission, Types of reagents: electrophiles and nucleophiles. Types of organic reactions: Substitution, Addition, Condensation, Elimination, Rearrangement, Isomerization. Reactive intermediates: Carbocations, Carbanions, Free radicals and Carbenes (structure & stability).		
Sept 2026	Topic- Unit-III Stereochemistry Type of Stereoisomers, Conformations with respect to ethane, butane and cyclohexane. Optical isomerism, Elements of symmetry, Concept of chirality (upto two carbon atoms). Enantiomerism, Diastereomerism, Threo and erythro diastereomers and Meso compounds.; Configuration: (relative and absolute), sequence rules D and L; R and S (for upto 2 chiral carbon atoms) system of nomenclature; Geometrical isomerism; <i>cis</i> - <i>trans</i> nomenclature; and <i>E/Z</i> Nomenclature (for up to two C=C systems).		
Oct. 2026	Topic- UNIT-IV Gaseous State Kinetic theory of gases and derivation of the kinetic gas equation. Maxwell's distribution of velocities and energies (Graphic representation - derivation excluded), Temperature dependence of these distributions, Most probable velocity, Average velocity and Root Mean Square Velocity (Derivations excluded), Relationship among three types of velocities, Collision diameter, Collision number, Collision frequency and Mean free path (with Derivations), Deviation of real gases from ideal behaviour, Compressibility factor, Causes of deviation, Derivation of Van der Waal' s Equation of State, its application in the calculation of Boyle's temperature.		
Nov.2026	Revision of all the topics and doubt sessions for the students and Class tests		

Lesson Plan

Name of Teacher: Dr. Meena Rani		Class: B. Sc. I	Sem : 1st (as per NEP)	Session: 2026-27
Subject: CHEMISTRY Minor Course (MIC)		Paper Code: C24MIC131T		
July 2026	Topic- Unit-I			
	Valence bond theory approach, Various type of hybridisation and shapes of simple inorganic molecules and ions with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangement			
Aug 2026	Topic- Unit-I			
	Various type of hybridisation and shapes of simple inorganic molecules and ions (BeF_2 , BF_3 , CH_4 , PF_5 , SF_6 , IF_7 , SO_4^{2-} , ClO_4^- , NO_3^-), Valence Shell Electron Pair Repulsion (VSEPR) theory to NH_3 , H_3O^+ , SF_4 , ClF_3 , H_2O , SnCl_2 , ClO_3^- and ICl_2^- .			
Sept 2026	Topic- Unit-II			
	Nomenclature, Classification of carbon atoms in alkanes and its structure. Isomerism in alkanes. Methods of formation: Wurtz reaction, Corey-House reaction			
Oct. 2026	Topic- UNIT-II			
	Kolbe electrolytic reaction, and decarboxylation of carboxylic acids. Mechanism of free radical halogenation of alkanes: reactivity and selectivity.			
Nov.2026	Revision of all the topics and doubt sessions for the students and Class tests			

Lesson Plan

Name of Teacher: Dr. Meena Rani Subject: CHEMISTRY (DSC)		Class: B. Sc. II, Sem 3 rd (as per NEP) Paper Code: C24 CHE 301T	Session: 2026-27
July 2026	Transition Elements (3d series) General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states (Latimer diagrams) for Fe and Cu. Lanthanoids and Actinoids	Topic- Unit-I	
	Electronic configurations, oxidation states, colour, magnetic properties, lanthanide contraction, separation of lanthanides (ion exchange method only).		
Aug 2026	Alkyl and aryl halides Alkyl Halides Preparation: From Alkenes and Alcohols, Reactions: Nitrite and Nitro formation, Nitrite and isonitrite formation. Williamson's ether synthesis. Types of Nucleophilic Substitution (S _N 1, S _N 2 and S _N i) reactions. Aryl Halides Preparation (Chloro, bromo and iodo-benzene case): From phenol, Sandmeyer & Gattermann reactions. Chemical reactions (Chlorobenzene): Aromatic nucleophilic substitution (replacement by - OH group) and effect of nitro substituent. Benzyne Mechanism: KNH ₂ /NH ₃ (or NaNH ₂ /NH ₃). Reactivity and Relative strength of C-Halogen bond in alkyl, allyl, vinyl and aryl halides.	Topic- Unit-II	
Sept 2026	Alcohols and Phenols Alcohols Preparation: Preparation of 1°, 2° and 3° alcohols using Grignard reagent, Ester hydrolysis, Reduction of aldehydes, ketones and esters. Acidic nature reactions: With sodium, HX (Lucas test), Esterification, Oxidation (with PCC and acidic dichromate). Phenols Preparation: From Cumene, diazonium salts and Grignard reagent. Acidic nature, Chemical reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer-Tiemann Reaction, Claisen rearrangement, Fries rearrangement and Schotten-Baumann Reaction, Kolbe's reaction (with mechanism).	Topic- Unit-II	
Oct. 2026	Conductance and Conductivity Introduction, Equivalent and Molar conductivity and their variation with dilution for weak and strong electrolytes, Kohlrausch's law of independent migration of ions, Transport number, Ionic mobility, Applications of conductance measurements: Determination of degree of ionization of weak electrolyte, Solubility and Solubility products of sparingly soluble salts, Ionic product of water. Conductometric titrations (only acid-base): Concept of pH and pK _a , buffer solution, buffer action, Henderson-Hasselbalch equation.	Topic- UNIT-IV	
Nov. 2026	Revision of all the topics and doubt sessions for the students and Class tests		

Lesson Plan

Name of Teacher: Dr. Meena Rani		Class: B. Sc. II	Sem : 3 rd (as per NEP)	Session: 2026-27
Subject: CHEMISTRY		Minor Course(MIC) Paper Code: C24 MIC331T		
July 2026	Topic- Unit-I			
	Periodic table and Properties Classification of periodic table: s, p, d and f blocks, Periodic properties-atomic and ionic radii, ionization energy, electron affinity and electronegativity- trend in periodic properties (in s and p-block elements only)			
Aug 2026	Topic- Unit-II			
	Mechanism of Organic Reactions Curved arrow notation, Homolytic and heterolytic bond fission, Types of reagents: electrophiles and nucleophiles. Types of organic reactions: Substitution, Addition, Condensation, Elimination, Rearrangement, Isomerization. Reactive intermediates: Carbocations, Carbanions and Free radicals (structure & stability).			
Sept 2026	Topic- Unit-III			
	Thermodynamics System and surroundings, types of systems, concept of internal energy, work, heat, enthalpy and entropy. Statement of first, second and third laws of thermodynamics, Hess's law of constant heat summation, spontaneous and non-spontaneous processes.			
Oct. 2026	Topic- UNIT-III			
	Solutions Formation of different types of solutions, expressing concentration of solution in different units. statement of Henry's law and Raoult's law. Ideal and non-ideal solutions, deviation of real solutions from Raoult's law (elementary treatment only).			
Nov.2026	Revision of all the topics and doubt sessions for the students and Class tests			

Lesson Plan

Name of Teacher: Dr. Meena Rani		Class: B. Sc. III Sem 5 th (as per NEP)	Session: 2026-27
Subject: CHEMISTRY (DSC)		Paper Code: C24 CHE 501T	
July 2026	Organometallics	Topic- Unit-I	Definition and Classification based on the nature of metal carbon bond. Structures of methyl lithium, Zeiss's salt and Ferrocene, Preparation, structure, bonding and properties of mononuclear carbonyls of 3d metals. pi-acceptor behaviour of carbon monoxide. EAN rule as applied to carbonyls.
Aug 2026	Carboxylic acids and their derivatives	Topic- Unit-II	Carboxylic acids (aliphatic and aromatic): Preparation: Acidic and Alkaline hydrolysis of esters, from nitriles. Reactions: Hell- Volhard-Zelinsky Reaction, Hunsdiecker reaction. Carboxylic acid derivatives (aliphatic): (Up to 5 carbons) Preparation: Acid chlorides, Anhydrides, Esters and Amides from acids. Reactions: Comparative study of nucleophilicity of acyl derivatives. Reformatsky Reaction, Perkin condensation.
Sept 2026	Ultraviolet (UV) absorption spectroscopy	Topic- Unit-III	Absorption laws (Beer-Lambert law), Molar absorptivity, Types of electronic transitions. Transition probability, Selection rules, Effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. Solvent effects. Applications of UV spectroscopy. Woodward-Fieser rules, calculation of lambda max of simple conjugated dienes and unsaturated ketones.
Oct. 2026	Chemical Equilibrium	Topic- UNIT-IV	Definition, Law of Mass Action, Law of Chemical Equilibrium, Types of equilibrium constants and relationship between them, concept of chemical potential. Free energy change in a chemical reaction, Standard state free energy change, Thermodynamic derivation of the law of chemical equilibrium. Equilibrium constant and free energy, Van't Hoff Reaction Isotherm, Variation of equilibrium constant with temperature, Clausius-Clapeyron equation and its applications. Le Chatelier's principle
Nov. 2026	Revision of all the topics and doubt sessions for the students and Class tests		

Lesson Plan

Name of Teacher: Dr. Meena Rani Subject: CHEMISTRY (MIC/VOC)		Class: B. Sc. III Sem 5 th (as per NEP) Paper Code: C24VOC 531T	Session: 2026-27
July 2026	Topic- Unit-I		
	Chemistry of Oils Introduction to oils and fats, Classification: Edible and Non-edible oils, Essential and Mineral oil, Common fatty acids present in oils and fats, Classification of glycerides, M.pt. of glycerides,		
Aug 2026	Topic- Unit-I		
	Chemical difference between fat and oils, Chemical properties: Hydrogenation, hydrolysis, Rancidity. Analysis of fats and oils: Acid value, Saponification value, iodine value (Hubl's method).		
Sept 2026	Topic- Unit-II		
	Common Compounds Preparation, properties and uses of some common compounds: baking soda, washing soda, plaster of paris, bleaching powder,		
Oct. 2026	Topic- UNIT-II		
	Preparation, properties and uses of some common compounds: gypsum, quick lime, slaked lime, limestone, boric acid.		
Nov.2026	Revision of all the topics and doubt sessions for the students and Class tests		