

Dr. Monica Rani
Assistant Professor
Dept. of Chemistry

Lesson Plan
(2025-26)

B.Sc Third Sem Ist
Chemistry Theory

July 22, 2025 - (1) Coordination Compounds - Werner's theory, EAN, Chelation, Nomenclature, Isomerism, Metal ligand bonding - VBT, CFT, Magnetic properties - Types, method of determination, spin only formula, L-S coupling.

Aug 2025 - (2) Thermodynamics II - Third law, Maximum Heat theorem, Residual entropy, Gibbs function, Helmholtz function, Partial, Molal properties, Chemical potential, Phase Equilibria - State, heat, degree of freedom, Gibbs phase rule, phase equilibrium of one component - H₂O system, two component system, B-H system.

Sept 2025 - (3) Quantum Mechanics-I - Black body radiation, Planck law, Heat capacity, postulates, operators, Schrodinger wave equation, Application, particle in one dimension box, Spectroscopy I - Basic features, EMR, Molecular spectroscopy, Signal/noise ratio, spectrophotometer, Beer-Bouguer's law, Rotational spectrum - rigid rotator, selection rule, Maxwell Boltzmann distribution, Bond length & concept of isotope.

Nov 2025 - (5) Organic Synthesis via Enolates - α hydrogens, alkylation, ethyl acetoacetate, synthesis, Claisen condensation, keto-enol tautomerism of ethyl acetoacetate. Heterocyclic Compounds - Introduction, molecular orbital structure of pyrazole, furan, triazine & pyridine, Electrophilic substitution, nucleophilic substitution, comparison of basicity of pyridine & pyrazole.

Dr. Monika Kaur
Asst. Prof. Chemistry

Lesson Plan
2025-26

B.A. Ind. SEC- Sewage
waste management

July 22, 2025 - Waste:- Classification, generation, Characterization, Basic aspects, on-site handling, transfer, transport, processing techniques, ultimate disposal.

Aug 2025 - Hazardous waste:- Definition, sources, effect, management, treatment, fixation, encapsulation, pyrolysis, incineration, Biomedical waste, E-waste sources.

Sep 2025 - Disposal of Solid waste:- Sanitary land filling, Site selection, design, operation, leachate collection, treatment, Secure land filling, incineration, Types, plasma pyrolysis, Composting, vermicomposting.

Oct 2025 - Principles of Industrial waste treatment:- sources, properties, manufacturing, How shut character-istics, waste reduction, fermentation, Planting & petrochemical refineries.

Nov 2025 - Role of Biotechnology in waste minimisation:-

Recovery of by product, Conversion, reuse, reclamation, Sludge, Bioscrubbing, Biological methods, Biomethanation, Biodiesel, Biohydrogen.

Name - Dr. Monu Kanou
Desi - Assistant Professor

Lesson Plan (2025-26)

(Chemistry) B.Sc IInd year Sem- IIIrd Chemistry Theory

- # July 22, 2025 - s and p block elements - Salient features of hydrides, oxides, halides, hydroxides of s- block elements. Structure, preparation and properties of Diborane & Borazine.
- # August, 2025 - Catenation, Carbides, fluoro carbons, Silicates, Structure of oxides of nitrogen & phosphorus, Structure of white and Red phosphorus, Structure of oxoacids of N, P, S, Cl & Comparison, Noble gases, Chemistry of Xenon, Structure & bonding in fluorides, oxides & oxyfluorides of Xenon.
- # Sept, 2025 - Electrochemistry I - Electrolytic Conduction, factors, specific, molar conductance, equivalent conductance & relation, Kohlrausch's law, Concept of pH & pK_a, Buffer solutions, Buffer mechanism, Henderson-Hassel equation.
- # Electrochemistry II - Reversible & irreversible cell, ΔG , ΔH & ΔK , Types of electrodes, Nernst equation, Application of EMF & potentiometric titrations using glass electrode.
- # Oct 2025 - Alkynes - Nomenclature, Structure, method of formation, dehydrohalogenation, Kolbe's electrolysis, Addition reactions, Emory, ozonolysis, Acidity of alkynes. Stereochemistry, enantiomers, Relative & absolute Configuration, Conformation Analysis, Newman & Sawhorse projection formulae.
- # Nov 2025 - Benzene & its derivative - Nomenclature, Huckel's rule of aromaticity, Electrophilic Substitution, Mechanism of nitration, halogenation, Sulphonation & Friedel Craft reaction.
- Alkyl halides - Nomenclature, method, nucleophilic Substitution, S_N2 & S_N1 reaction with energy profile diagrams.
- Alkyl halides - method, Sandmeyer rxn, addition, substitution reaction, allyl, vinyl & aryl halides.

Dr. Monika Ravi
(Asst. Prof. Chemistry)

Lesson plan
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B.A and MAC - Introduction
Chemistry

July 22, 2025 - Pollution and their types: Plastic and poly-
-mer pollution, pollution sources, Recycling of plastic,
green house effect, ozone depletion.

August 2025 - Energy - Energy sources, Renewable & non-
Renewable sources, cells, Batteries, fuel cell, Solar cell,
polymer cell.

Sept 2025 - Water - source, water conservation, TDS
Techniques of purification, RO, Osmosis, Reverse osmosis,
waste water management

Oct 2025 - Pesticides & Herbicides - Introduction, definition
Biological Control, chemical control.

Nov 2025 - Natural & Synthetic pesticides, Benefits &
Adverse effect of DDT, BHC, malathion.

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B.A. 1st - VOC - Biomedical
Waste Management

July 22, 2025 - Introduction: Definition, Classification, Significance, Health & Environmental risks.

Aug 2025 - National & International Regulations and Guidelines, Role of regulatory bodies & Compliance requirements.

Sept 2025 - Segregation & Collection - techniques, Color coding, Safe handling, PPE, Collection methods, Transportation, Documentation & record keeping.

Oct 2025 - Treatment & Disposal - overview of technologies, Environment Impact assessment, Disposal methods, Land-filling, Disposal, effective waste treatment and disposal practices.

Nov 2025 - Infection Control & Safety practices - Prevention occupational health, safety practices, Training programs, Auditing, monitoring, Public awareness, Campaigns & Community engagement.