

CURRICULUM PLAN
(Odd Semester, 2024-2025)

Generic Elective: Semester V, NEP-UGCF 2022

Name of the teacher: Dr. Upasana Issar

Name of Paper: GE 7: Chemistry: States of Matter

UPC: 2174001011

Two Lectures Per Week

Contents	Allocation of Lectures	Month wise schedule to be followed	Tutorial/Assignments /Presentation etc
<p>Unit 3: Solid State Forms of solids, symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of crystallography - law of constancy of interfacial angles. Law of rational indices, Miller indices. X-ray diffraction by crystals, Bragg's law and powder XRD. Powder diffraction patterns of NaCl, CsCl and KCl (qualitative treatment only), defects in crystals. Glasses and liquid crystals</p>	12	5 th August 2024 – 9 th September 2024	<ul style="list-style-type: none"> • Syllabus Overview • Books Suggestions • Related Examples and Problem solving session
<p>Unit 1 Kinetic theory of gases Postulates of kinetic theory of gases and derivation of the kinetic gas equation, deviation of real gases from ideal behaviour, compressibility factor, causes of deviation, van der Waals equation of state for real gases. Boyle temperature (derivation not required), critical phenomena, critical constants and their calculation from van der Waals equation, Andrews isotherms of CO₂, Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance. Temperature dependence of these distributions, most probable, average</p>	12	10 th September – 30 th October 2024	<ul style="list-style-type: none"> • Numerical Solving • Test • Assignment • Doubt Session • Previous university papers discussion

and root mean square velocities (no derivation), collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules, viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only).			
Unit 2: Liquid State Surface tension and its determination using stalagmometer, Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer, effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only). Effect of addition of various solutes on surface tension and viscosity. Explanation of cleansing action of detergents.	06	4 th November 2024 – 18 th November 2024	<ul style="list-style-type: none"> • Numerical Solving • Doubt Session Previous university papers discussion

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