

CURRICULUM PLAN
(Odd Semester, 2026-2027)

B.Sc. (H), II Year (Semester III), NEP-UGCF 2022

Name of the teacher: Dr. Upasana Issar

Name of Paper: GE: States of Matter

Two Lectures Per Week

Contents	Allocation of Lectures	Month wise schedule to be followed	Tutorial/Assignments /Presentation etc
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 CO ₂ , 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 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).	12	28 th July 2026 – 15 th September 2024	• Syllabus Overview • Books Suggestions • Related Examples and Problem solving session
Unit 2: Liquids 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	06	16 th September 2026- 30 th September 2026	• Numerical Solving • Doubt Session • Assignment allocation

detergents.			
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.	12	1 st October 2026- November 2026	- Test - Assignment return - Problem solving doubt clearing sessions - Previous years University questions solving sessions

Upasana

Dr. Upasana Issar

Department of Chemistry