CURRICULUM PLAN
(Odd Semester, 2020-2021)

B.Sc. (H) Chemistry, I Year (Semester I)
Name of the teacher: Dr. Upasana Issar
Name of Paper: Physical Chemistry I-States of Matter & Ionic Equilibrium (CBCS)
UPC: 32171102

Contents	Allocation of Lectures	Month wise schedule to be followed	Tutorial/Assignments /Presentation etc
Unit 1: Gaseous state • Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; • Behaviour of real gases: Deviations from ideal gas behaviour, compressibility factor, Z, and its variation with pressure and temperature for different gases. • Causes of deviation from ideal behaviour. • Equation of states for real gases; van der Waals equation of state, its derivation and application in explaining real gas behaviour • Virial coefficients	06	3rd week of November- 2nd week of December	• Syllabus Overview • Books Suggestions • Related Examples and Problem solving session
Unit 1 (Continued) • calculation of Boyle temperature. • Isotherms of real gases and their comparison with van der Waals isotherms. • Continuity of states, critical state, relation between critical constants and van der Waals constants • law of corresponding states. • law of equipartition of energy, degrees of freedom and	07	3rd week of December- 2nd week of January	• Numerical Solving • Doubt Session • Assignment allocation

molecular basis of heat capacities.			
Unit 1 (Continued) • collision frequency; collision diameter; mean free path and viscosity of gases, including their temperature and pressure dependence • relation between mean free path and coefficient of viscosity, calculation of σ from η; variation of viscosity with temperature and pressure. • Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy	09	3rd week of January – 1st week of February	• Numerical Solving • Doubt Session • Previous university papers discussion
Unit 3: Solid state: • Law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method. Analysis of powder diffraction patterns of NaCl, CsCl and KCl.	08	2nd week of February-1st week of March	• Numerical Solving • Doubt Session • Assignment Collection • Result discussion

Dr. Upasana Issar
Department of Chemistry