CURRICULUM PLAN 2024-2025
Even Semester: V, III, I
Dr. Rashmi Menon
Dept. of Physics

B.Sc.(PS)-IIIrd year

Name of Paper and Code	Allocation of Lectures	Month-wise Schedule followed by the department
DSC 6: Solid State Physics -30 Periods		
Crystal Structure: Solids: amorphous and crystalline materials, lattice translation vectors, lattice with a basis, unit cell, types of lattices, Miller indices, reciprocal lattice, Ewald's construction (geometrical approach), Brillouin zones, diffraction of X-rays by crystals. Bragg's law	10	8-Jan to 7-Feb
Elementary Lattice Dynamics: Lattice vibrations and phonons: linear monoatomic and diatomic chains, acoustical and optical phonons, Dulong and Petit's law, qualitative discussion of Einstein and Debye theories, T3 law.	6	4-Feb to 28-Feb
Elementary Band Theory: Qualitative understanding of Kronig and Penny model (without derivation) and formation of bands in solids, concept of effective mass, Hall effect in semiconductor, Hall coefficient, application of Hall Effect, basic introduction to superconductivity	5	5-March to 25-March
Magnetic Properties of Matter: dia-, para-, and ferro- magnetic materials, classical Langevin theory of dia– and paramagnetism (no quantum mechanical treatment), qualitative discussion about Weiss's theory of ferromagnetism and formation of ferromagnetic domains, B-H curve hysteresis and energy loss	6	28-March to 22-April
Dielectric Properties of Materials: Polarization, local electric field in solids, electric susceptibility, polarizability, Clausius Mossoti equation, qualitative discussion about ferroelectricity and PE hysteresis loop	3	25-April to 2-May