CURRICULUM PLAN 2025-26 (Odd Semester)

Name of Teacher: Prof. Pushpa Bindal

B. Sc. (HONS.) PHYSICS, Semester I

Name of Paper	Allocation of Lectures	Month wise schedule followed by the Department	Tutorial/Assignment/ Presentation etc.
PAPER –CORE: Waves and Oscillations			
Unit 1: Simple Harmonic Motion Differential equation of simple harmonic oscillator, its solution and characteristics, energy in simple harmonic motion, linearity and superposition principle, rotating vector representation of simple harmonic oscillation, motion of simple and compound pendulum (Bar and Kater's pendulum), loaded spring. Superposition of N collinear harmonic oscillations with (1) equal phase differences and (2) equal frequency differences, Beats Superposition of two perpendicular harmonic oscillations: Graphical and Analytical Methods. Lissajous Figures with equal and unequal frequencies, effect of variation of phase	12 lectures	August-September	Problems on SHM, Superposition of various types and lissajous figures
Unit 2: Damped and Forced Oscillations Damped Oscillations: Equation of motion, dead beat motion, critically damped system, lightly damped system: relaxation time, logarithmic decrement, quality factor Forced Oscillations: Equation of motion, complete solution, steady state solution, resonance, sharpness of resonance, power dissipation, quality factor .	8 lectures	September	Problems on damped and forced oscillations
Unit 3 : Coupled Oscillations Coupled oscillators, normal coordinates and normal modes, energy relation and energy transfer, di-atomic molecules, representation of a general solution as a linear sum of normal modes, normal modes of N coupled oscillators.	6 lectures	October	Problems on coupled oscillators
Unit 4 : Wave Motion One dimensional plane wave, classical wave equation, standing wave on a stretched string (both ends fixed), normal modes. Travelling wave solution	4Lectures	November	Related Problems& numericals.

B. Sc. (HONS.) PHYSICS, Semester III

Name of Paper	Allocation of Lectures	Month wise schedule followed by the Department	Tutorial/Assignment/ Presentation etc.
PAPER –CORE: LIGHT & MATTER (50%)			
Unit 2: Interference (8 Hours) **By Light waves:** Division of amplitude and wave-front. Two-slit interference experiment with photons: Young‟s double slit experiment. Lloyd‟s Mirror. Phase change on reflection: Stokes‟ treatment. Interference in Thin Films: parallel and wedge-shaped films. Fringes of equal inclination (Haidinger Fringes); Fringes of equal thickness (Fizeau Fringe). Newton‟s Rings: Measurement of wavelength and refractive index.	8 lectures	Aug-Oct	Problems on interference of light waves
Unit 3: Diffraction (7 Hours) Fresnel Diffraction: Fresnel‟s Assumptions. Fresnel‟s Half Period Zones for Plane Wave. Explanation of Rectilinear Propagation of Light. Theory of a Zone Plate: Multiple Foci of a Zone Plate. Fresnel diffraction of Straight edge, a slit and a wire by Fresnel Half Period Zones.	7 lectures	November	Problems on Fresnel Diffraction