CURRICULUM PLAN 2023-24 (Odd Semesters: I,III,V)
B.Sc. (PHYSICAL SCIENCE)
Semester – V

DR. ARAVIND KUMAR

Name of Paper & Code	Allocation of Lectures	Month wise schedule followed by the Department
MODERN PHYSICS		
Origin of Quantum Theory: Black Body Radiation and failure of classical theory, Planck's Quantum Hypothesis, Planck's Radiation Law, Quantitative treatment of Photo-electric effect and Compton scattering. Wave properties of particles: de Broglie hypothesis, Group and Phase velocities and relation between them. Heisenberg's Uncertainty Principle, Gamma ray microscope thought experiment, Position-Momentum Uncertainty, consequences of uncertainty principle.	8	1 Aug2024 to 31-Aug-24
The Schrodinger Equation: The Schrodinger equation in 1-d, statistical interpretation of wave function, probability and probability current densities. Normalization, conditions for physical acceptability of wave functions with examples, position and momentum operators and their expectation values; Commutator of position and momentum operators	7	01-Sep 24 to 30-Sep 24
Time Independent Schrodinger Equation: Demonstration of separation of variable method for time independent Schrodinger equation: Free particle wave function, wave packets, application to energy eigen values and stationary states for particle in a box problem, energy levels.	5	01-oct 24 to 15-oct 24
Atomic Physics: Beyond the Bohr's Quantum model: Sommerfeld theory of elliptical orbits; hydrogen atom energy levels and spectra emission and absorption spectra Correspondence principle X-rays: Method of production, X-ray spectra: Continuous and characteristic X-rays, Moseley Law.	5	15-oct 24 to 31-oct 24
Basic Properties of Nuclei: Introduction (basic idea about nuclear size, mass, angular momentum, spin), semi-empirical mass formula, nuclear force and meson theory. Accelerators: Accelerator facility available in India: Van de Graaff generator, linear accelerator, cyclotron (principle, construction, working, advantages and disadvantages), discovery of new elements of the periodic table		1-Oct--24 to 28-Oct-24