Class: B.Sc.-III Semester-V Subject: Physics Paper -I : PH-501 Quantum and Laser Physics	
S.No.	**Course Outcomes**
Co1	**Origin quantum physics (Experimental basis)** Differentiate between classical and quantum Physics. Describe Photoelectric effect,Broglie hypothesis, Davisson and Germer experiment, Phase velocity, group velocity and their relation, Heisenberg's uncertainty principle. Derive 1-D time-dependent Schrodinger wave equation , Time-independent Schrodinger wave equation, Eigen values, Eigen functions, wave functions and its Significance.
Co2	**Application of Schrodinger Wave Equation**: To solve problems like one-dimensional box, One dimensional step potential, One dimensional potential barrier, harmonic oscillator using Schrodinger wave equation .
Co3	**Laser Physics –I** Understand the LASER and its characteristics, Einstein's coefficients and possibility of amplification, momentum transfer, necessary condition for light amplification, laser pumping and Threshold condition for laser emission.
Co4	**Laser Physics – II** Describe different type of Laser such as He-Ne laser and RUBY laser, Semiconductor laser (Principle, Construction and working), Applications of lasers in the field of medicine and Industry.
Paper -II : PH-502 Nuclear Physics	
Co1	**Nuclear structure and properties of nuclei:** Students understand the basic nuclear properties. Determination of size of nuclei by Rutherford back scattering Experiment.
Co2	**Nuclear Radiation decay processes:** Students learnt about the theory of disintegration, interaction of heavy charged and light charged particles with matter.
Co3	**Nuclear Accelerators** Linear and Tendam accelerator , Cyclotron, Betatron are studied in detail. Also learnt about nuclear detectors.
Co4	**Nuclear Reactions and Nuclear Reactors** Nuclear fission and nuclear fusion are studied in details. Also use these reactions in study of Nuclear Reactors

Class: B.Sc. 3rd	Semester : Sixth
Subject : Physics	**Paper:1,:PH-601 Solid State and Nano Physics**
Sr. No.	**Outcomes**
Co1	**Crystal structure I** Concepts of periodicity, unit cell, primitive cell, crystal plan and miller indices is studied.
Co2	**Crystal Structure II** Students learn about phenomena of X-Ray Diffraction,Reciprocal lattice and its physical significance.
Co3	**Superconductivity** The introduction and classification of superconductors ,practical applications of superconductivity are studied.
Co4	**Introduction to Nano Physics** Vision and objective of Nano technology and applications of Nano technology in different field is studied
Paper : 2, PH-602, Atomic and molecular spectroscopy	
Co1	**Historical Background of Atomic Spectroscopy** The historical Background of atomic spectroscopy and Bohr atomic Model was studied. Derive Wilson Somerfield Quantization Rule & its relativistic Correction.
Co2	**Vector Atomic Model(Single valance electron)** Students learnt about Larmor's precession & Theorem. The spin orbit interaction for penetrating & non- penetrating orbits, Comparison of Alkali spectra & Hydrogen spectra.
Co3	**Vector Atomic Model (Two valance electron)** The spectra of Alkaline- earth elements was studied. The interaction energy of L-S coupling & J-J coupling was calculated.
Co4	**Atom in external field & molecular physics** Students learnt about Zeeman effect & Stark effect. The electronic , Rotational & Vibrational Spectra were studied.