

**BACHELOR OF SCIENCE (B.Sc.)**  
**(THREE YEAR DEGREE COURSE)**

**SUBJECT**

**PHYSICS**

# B.Sc. (PHYSICS)

## COURSE STRUCTURE

### **FIRST YEAR**

PAPER – 101: MECHANICS AND WAVE MOTION	50 MARKS
PAPER – 102: KINETIC THEORY AND THERMODYNAMICS	50 MARKS
PAPER – 103: CIRCUIT FUNDAMENTALS AND BASIC ELECTRONICS	50 MARKS
PAPER – 104: PRACTICAL (Based on Paper 101, 102, 103)	50 MARKS

### **SECOND YEAR**

PAPER – 201: PHYSICAL OPTICS AND LASERS	50 MARKS
PAPER – 202: ELECTROMAGNETICS	50 MARKS
PAPER – 203: ELEMENTS OF QUANTUM MECHANICS, ATOMIC AND MOLECULARS SPECTRA	50 MARKS
PAPER – 204: PRACTICAL (Based on Paper 201, 202, 203)	50 MARKS

## **THIRD YEAR**

PAPER – 301: RELATIVITY AND STATISTICAL PHYSICS 50 MARKS

PAPER – 302: SOLID STATE AND NUCLEAR PHYSICS 50 MARKS

PAPER – 303: SOLID STATE ELECTRONICS 50 MARKS

PAPER – 304 : PRACTICAL (Based on Paper 301, 302, 303) 50 MARKS

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**B.Sc. (PHYSICS)**  
**FIRST YEAR DETAILED SYLLBUS**  
**PAPER – 101**  
**MECHANICS AND WAVE MOTION**

**UNIT-I**

Inertial frame of reference, Newton's laws of motion, Dynamics of particle in rectilinear and circular motion, Conservative and Non -conservative forces, Conservation of mechanical energy, linear momentum and angular momentum examples of linear and corsuratmatic, Collision in one and two dimensions, cross impact parameter, scattering ample and scattering cross-section.

**UNIT -II**

Definition of a rigid body, Rotational energy and rotational inertia for simple bodies, the combined translational and rotation motion of a rigid body on horizontal and inclined planes, Simple treatment of the motions of a top.

Relations between elastic constants, bending of Beam, Cantilever and Torsion of Cylinder.

**UNIT - III**

Central forces, Two particle central force problem, reduced mass, relative and centre of mass motion, Law of gravitation, Kepler's laws of planetary motion and their deductions, motions of planets and satellites, geo-stationary satellites.

## UNIT IV

Simple harmonic motion, differential equation of S. H. M. and its solution, uses of complex notation, damped and forced vibrations, composition of simple harmonic motion.

Differential equation of wave motion and its solution, plane progressive, harmonic waves in fluid media, reflection of waves, phase change on reflection, superposition, stationary waves, pressure and energy distribution, phase and group velocity and relation between them.

### Text and Reference Books

- EM Purcell, Ed: "Berkeley Physics Course, Vol. 1, Mechanics" (McGraw-Hill).
- RP Feynman, RB Lighton and M Sands; "The Feynman Lectures in Physics", Vol. 1 (BI Publications, Bombay, Delhi, Calcutta, Madras).
- J.C. Upadhyay: 'Mechanics'.
- D.S, Mathur "Mechanics",
- P.K. Srivastava: "Mechanics" (New Age International).

# THANK YOU