B.Sc. I – First Semester (Paper A)

MECHANICS–I

Panjab University, Chandigarh

Total Teaching hours : 30

PHYSICS

SEMESTER–I

Paper A : Mechanics–I

UNIT–I

Cartesian and spherical polar co-ordinate systems, Two- and three-dimensional coordinate systems, area, volume, displacement, velocity and acceleration in these systems, solid angle.

Centre of mass, linear momentum, angular momentum, torque, potential energy and kinetic energy of a system of particles.

Relationship of conservation laws of linear momentum, angular momentum and energy and symmetries of space and time.

UNIT–II

Various forces in nature, relative strengths and spatial dependence,

Motion under force obeying inverse square law, equivalent one body problem.

Motion under central forces, equation of motion under central force, equation of orbit and turning points, Kepler's Laws.

Elastic collision in Lab. and C.M. systems, relationships of velocities, angles and kinetic energies in these two systems, cross section of elastic scattering, Rutherford scattering.