Course Title: B Course of Mathematics-II [Mechanics (II)]
Course Rating: 4 Cr. Hours

Kinematics

- Rectilinear motion of particles
- Uniform rectilinear motion, uniformly accelerated rectilinear motion
- Curvilinear motion of particle, rectangular components of velocity and acceleration
- Tangential and normal components
- Radial and transverse components
- Projectile motion

Kinetics

- Work, power, kinetic energy, conservative force fields
- Conservation of energy, impulse, torque
- Conservation of linear ad angular momentum
- Non-conservative forces

Simple Harmonic Motion

- The simple harmonic oscillator, amplitude, period, frequency,
- Resonance and energy
- The damped harmonic oscillator, over damped, critically damped and under damped
- Motion, forces vibrations

Central Forces and Planetary Motion

- Central force fields, equations of motion, potential energy, orbits
- Kepler's laws of planetary motion
- Apsides and apsidal angles for nearly circular orbits
- Motion in an inverse square field

Centre of Mass and Gravity

- Discrete and continuous systems, density of rigid and elastic bodies
- Centroid: Discrete and continuous systems, solid region, region bounded by planes
- Semi-circular regions, sphere, hemisphere, cylinder and cone

Evaluation Criteria

Examination	Type	Marks
Internal Examination	Sessional Work	15%
	Mid-Semester	25%
External Examination	Final Semester	60%

Recommended Books

1. Fowles, G.R, Cassiday, G.L. *Analytical Mechanics*, 7th Edition, Thomson Brook Cole, 2005
2. Jafferson, B. Beasdsworth, T. *Further Mechanics*, Oxford University Press 2001
3. Murray R. Spiegel, *Theoretical Mechanics*, Schaum's Outline Series, Mc Graw Hill Book Company
4. D.K. Anand and P.F. Cunnif, *Statics and Dynamics*, Allyn and Becon, Inc. 1984
5. Ferdinand P.B and E.R. Johnston, *Statics and Dynamics*, Mc-Graw Hill Book Company, Inc. 1977