

**II Year II Semester**

**Code: 20ME4750**

**L T P C**

**3 1 0 4**

**CLASSICAL MECHANICS**

**UNIT – I**

Introduction to Engg. Mechanics – Basic Concepts.

**Systems of Forces:** Coplanar Concurrent Forces – Components in Space – Resultant – Moment of Force and its Application – Couples and Resultant of Force Systems.

**UNIT – II**

**Equilibrium of Systems of Forces:**

Free Body Diagrams, Equations of Equilibrium of Coplanar Systems, Spatial Systems for concurrent forces. Lamis Theorem, Graphical method for the equilibrium of coplanar forces, Converse of the law of Triangle of forces, converse of the law of polygon of forces condition of equilibrium.

**UNIT – III**

**Centroid:** Centroids of simple figures (from basic principles ) – Centroids of Composite Figures

**Centre of Gravity:** Centre of gravity of simple body (from basis principles), centre of gravity of composite bodies, pappus theorem.

**UNIT – IV**

**Area moments of Inertia:** Definition – Polar Moment of Inertia, Transfer Theorem, Moments of Inertia of Composite Figures, Products of Inertia, Transfer Formula for Product of Inertia.

**Mass Moment of Inertia:** Moment of Inertia of Masses, Transfer Formula for Mass Moments of Inertia, mass moment of inertia of composite bodies.

**UNIT – V**

Analysis of perfect frames ( Analytical Method) – Types of Frames – Assumptions for forces in members of a perfect frame, Method of joints, Method of sections, Force table, Cantilever Trusses, Structures with one end hinged and the other freely supported on rollers carrying horizontal or inclined loads.

**TEXT BOOKS**

1. Engg. Mechanics / Irving. H. Shames Prentice – Hall.
2. Engg. Mechanics / S.S. Bharikati & J.G. Rajasekharappa

**REFERENCES:**

1. Engineering Mechanics / Fedinand . L. Singer / Harper – Collins.
2. Engg. Mechanics / Timoshenko & Yound.
3. Engg. Mechanics Umesh Regl / Tayal.
4. Engg. Mechanics / R.V. Kulkarni & R.D. Askhevkar
5. Engg. Mechanics / Khurmi / S. Chand.
6. Engg. Mechanics / KL Kumar / Tata McGraw Hill.