

ENGINEERING MECHANICS

Module I (10 Hours)

Concurrent forces on a plane – Composition and resolution of forces and equilibrium of concurrent coplanar forces, Method of projections, Methods of moment, Friction.

Parallel forces in a plane- Two parallel forces, General case of parallel forces,

Module II (8 Hours)

Center of parallel forces in a plane and center of gravity- centroids of composite plane figure and curves, Distributed parallel forces in a plane.

General case of forces in a plane- composition of forces in a plane and equilibrium of forces in a plane.

Moments of Inertia- Plane figure with respect to an axis in its plane and perpendicular to the plane- parallel axis theorem, Moment of Inertia of material bodies.

Plane trusses- method of joints and method of sections, Principle of virtual work – equilibrium of ideal systems.

Module III (8 Hours)

Rectilinear Translation- Kinematics- Principles of Dynamics- Concept of Inertial and Non-inertial frame of reference, D'Alemberts Principles.

Module IV (10 Hours)

Momentum and impulse, Work and Energy- impact

Curvilinear translation- Kinematics- equation of motion- projectile- D'Alemberts Principle in curvilinear motion, Moment of momentum, Work- Energy in curvilinear motion.

Kinetics of Rotation of rigid body

Text Book:

1. Engineering Mechanics by S Timoshenko, D.H Young and J.V.Rao, McGraw Hill.

Reference Books:

- i. Vector Mechanics for Engineers Statics /Dynamics by Beer, Johnston, McGraw Hill
- ii. Fundamental of Engineering Mechanics by S. Rajesekharan & G.Sankara Subramaniam, Vikash Publishing House Pvt. Ltd.
- iii. Engineering Mechanics by Shames and Rao, Pearson Education.
- iv. Engineering Mechanics, Statics and Dynamics by Boresi and Schmidt, Thomson.
- v. Engineering Mechanics by K.L.Kumar, Tata McGraw Hill.