# ENGINEERING MECHANICS-II

**ME124**

## UNIT-I

**Kinematics of a Particle :** Introduction – Rectilinear kinematics : Continuous motion –General Curvilinear motion – Curvilinear motion : Rectangular components – Motion of a projectile – Curvilinear motion : Normal and tangential components – Absolute dependent motion analysis of two particles – Relative motion analysis of two particles using translating axes.

## UNIT-II

**Kinetics of a Particle : Force and Acceleration** Newton's law of motion – The equation of motion- Equation of motion for a system of particles – Equation of motion : Rectangular coordinates- Equation of motion : Normal and tangential coordinates.

**Kinetics of a Particle: Work and Energy** The work of a force – Principle of work and energy – Principle of work and energy for a system of particles – Power and efficiency – Conservative forces and potential energy – Conservation of energy.

## UNIT-III

**Kinetics of a Particle : Impulse and Momentum** Principle of linear impulse and momentum – Principle of linear impulse and momentum for a system of particles – Conservation of linear momentum for a system of particles – Impact.

**Planar Kinematics of a Rigid Body :** Rigid body motion – Translation – Rotation about a fixed axis- Absolute motion analysis – Relative motion analysis (Consider only simple cases, not related to mechanism) Velocity – Instantaneous center of zero velocity – Acceleration.

## UNIT-IV

**Planar Kinematics of a Rigid Body : Force and Acceleration** Planar kinetic equations of motion – Equations of motion : Translation – Equations of motion : Rotation about a fixed axis – Equations of motion : General plane motion.

**Planar Kinetics of a Rigid Body : Work and Energy** Kinetic energy – The work of a force – The work of a couple – Principle of work and energy – Conservation of energy.