

MT505: MECHANICS-I

Syllabus: D'Alembert's principle; General equation of motion of rigid body; Motion of centre of inertia; Motion relative to centre of inertia; Motion about a fixed axis; Compound pendulum; Centre of percussion; Motion of a rigid body in two dimension under finite forces; Motion under impulsive forces; Motion in three dimension with reference to Euler's dynamical and geometrical equations; Motion under finite forces; Motion under no forces; Motion under impulsive forces; Conservation of linear and angular momentums; Conservation of energy for finite and impulsive forces; Lagrange's equation; Energy equation for conservative field; Small oscillations, Motion under impulsive forces (Lagrange's equations for blows)

UNIT SCHEDULE

- Unit 1** D'Alembert's principle
- Unit 2** Motion about a fixed axis
- Unit 3** Motion of a rigid body in two dimension under finite forces and impulsive forces
- Unit 4** Motion in three dimension under finite forces
- Unit 5** Motion in three dimension (under no forces)
- Unit 6** Conservation of momentum and energy
- Unit 7** Generalised Co-ordinates