

SYLLABUS

JEE Main

Physics and Measurement

Physics, Technology and Society, SI units, Fundamental and derived units, Least count, Accuracy and Precision of measuring instruments, Errors in measurement, Dimensions of physical quantities, Dimensional analysis and its applications.

Kinematics

Frame of reference, Motion in a straight line, Position-time graph, Speed and velocity, Uniform and non-uniform motion, Average speed and instantaneous velocity, Uniformly accelerated motion, Velocity-time and position-time graphs, Relations for uniformly accelerated motion, Scalars and Vectors, vectors addition and subtraction, Zero vector, scalar and vector products, Unit vector, resolution of a vector, Relative velocity, motion in plane, Projectile motion, Uniform circular motion.

Laws of Motion

Force and inertia, Newton's first law of motion, Momentum, Newton's second law of motion, impulse, Newton's third Law of motion, law of conservation of linear momentum and its applications, Equilibrium of concurrent forces. Static and kinetic friction, Laws of friction, rolling friction. Dynamics of uniform circular motion, centripetal force and its applications.

Work, Energy and Power

Work done by a constant force and a variable force, Kinetic and potential energies, Work energy theorem, power. Potential energy of a spring, Conservation of mechanical energy, Conservative and non-conservative forces, Elastic and inelastic collisions in one and two dimensions.

Centre of Mass

Centre of mass of a two particle system, Centre of mass of a rigid body.

Experimental Skills

Vernier Callipers and its use to measure internal and external diameter and depth of a vessel. Screw gauge its use to determine thickness/diameter of thin sheet/wire.

JEE Advanced

General Physics

Units and dimensions, Dimensional analysis, Least count, Significant figures, Methods of measurement and error analysis for physical quantities pertaining to the following experiments, Experiments based on vernier callipers and screw gauge (micrometer).

Kinematics

Kinematics in one and two dimensions (Cartesian coordinates only), Projectiles, Uniform circular motion, Relative velocity.

Laws of Motion

Newton's laws of motion, Inertial and uniformly accelerated frames of reference, Static and dynamic friction.

Work, Energy and Power

Kinetic and potential energy, Work and power, Conservation of linear momentum and mechanical energy.

Centre of Mass and Collision

System of particles, Centre of mass and its motion, Impulse, Elastic and inelastic collisions.