

PHYSICS(042)

MONTH	CHAPTER	Pedagogy Tools Used	E- Content	LEARNING OUTCOMES
April	Unit 1 Physical World and Measurements Chapter–1: Units and Measurements Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. significant figures, Determining the uncertainty in result. Dimensions of physical quantities, dimensional analysis and its applications.	Demonstration cum lecture method	https://diksha.gov.in/play/collec tion/do_3131034752886128641 978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_313087942744276992119	Students will be able to : use international system of units (SI Units), symbols, nomenclature of physical quantities and formulations, conventions - Apply the principle of homogeneity - Convert units from one system to another. - Identify limitations - Round off correctly: - Use in calculations: Apply rules for addition, subtraction, multiplication, and division while retaining correct significant figures. Errors in Measurement - Classify errors - Combine errors - Express results properly - Improve accuracy & precision

May	Unit 2 Kinematics chapter–2: Motion in a Straight Line, Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non-uniform motion, average speed and average velocity and instantaneous velocity, uniformly accelerated motion, velocity -time and position-time graphs. Relations for uniformly accelerated motion (graphical and calculus treatment).	Guided discussion	https://diksha.gov.in/play/collection/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130908402736087041451	Enable students to differentiate between certain physical quantities; such as, between distance and displacement; speed and velocity; rectilinear and curvilinear motions; average, relative, and instantaneous velocity and speed
June	SUMMER VACATIONS			

July	Chapter 3: Motion in a Plane Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane, cases of uniform velocity and uniform acceleration- projectile motion, uniform circular motion.	Demonstration cum lecture method	https://diksha.gov.in/play/collection/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130928923284193281816	Vectors - Distinguish scalars vs vectors; add & resolve vectors using head-to-tail and component methods - Apply vector addition to relative velocity problems Projectile Motion - Explain projectile motion - Calculate time of flight, max height, range, and velocity at any point for horizontal & angled launches Uniform Circular Motion - Define UCM: - Identify centripetal acceleration & force; calculate acceleration, speed, frequency.
	Unit 3 laws of motion Chapter-4: Laws of motion Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications.	Demonstration cum lecture method	https://diksha.gov.in/play/collection/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_3130957090878013441121	Students will be able to know about: Inertia, it's types, applications, Mass measures inertia. Newton's 3 Laws, their applicability in daily life

	Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).			Force analysis, Draw free-body diagrams and resolve forces into components, Types of forces, Solve problems for inclined planes, pulleys, connected bodies, Distinguish inertial vs non-inertial frames, and pseudo forces. Students will be able to know about friction, types of friction, factors affecting the friction, advantages and disadvantages of the friction, methods to change the friction and solve problems related to friction Need for banking, safe speed, Optimum speed, Applications like Design of highways, racetracks, railway tracks
August	Unit 4 Work, power, energy Chapter–5: Work,Energy and Power Work done by a constant force and a variable force; kinetic energy, work-energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: non-conservative forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions	Guided discussion, Problem solving based learning	https://diksha.gov.in/play/collection/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_31310775945196339213	Students will be able to define and explain work, identify different forms of energy, apply work energy theorem, calculate work done by constant and variable force, analyse situations involving energy transformations and conservation, solve numerical problems related to work, power, energy and collisions

	Unit 5: Motion of System of Particles and Rigid Body Chapter–6: System of Particles and Rotational Motion Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation). Unit 6 Chapter –7: Gravitation Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape speed, orbital velocity of a satellite, energy of an orbiting satellite.	Demonstration cum lecture method	https://diksha.gov.in/play/collec tion/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_31310357817056460811407	Student will be able to define and calculate centre of mass, know about the centre of mass in different bodies. They will be able to explain and calculate angular displacement, angular velocity, angular acceleration, angular momentum, torque, moment of inertia, rotational kinetic energy etc. they will be able to solve problems related to rotational dynamics
		Activity based teaching	https://diksha.gov.in/play/collec tion/do_3131034752886128641978?referrer=utm_source%3Dmobile%26utm_campaign%3Dshare_content&contentId=do_31310355009147699211429	Students will be able to know about Newton's law of gravitation, gravitational potential, gravitational potential energy, variation of acceleration due to gravity with height and depth, escape velocity, orbital velocity.
September	Term I Examination			

