ANNUAL SYLLABUS
SUBJECT: PHYSICS (CODE-42)
CLASS: XI (2025-26)

CONTENT

UNIT–I PHYSICAL WORLD AND MEASUREMENT

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.

UNIT-II 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).

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.

UNIT–III 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. 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).

UNIT–IV WORK, ENERGY AND POWER

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.

UNIT–V 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-VI GRAVITATION

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**.

***Note: - The above-mentioned syllabus must be completed by September 06, 2025.**

Revision: Mid Term Examination

Mid Term Examination

Discussion of Mid Term Exam Question Paper

UNIT–VII PROPERTIES OF BULK MATTER

Chapter–8: Mechanical Properties of Solids

Elasticity, Stress-strain relationship, Hooke's law, Young’s modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy. **Application of elastic behaviour of materials (qualitative idea only).**

Chapter–9: Mechanical Properties of Fluids

Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications **(Torricelli's law and Dynamic lift).** Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.

Chapter–10: Thermal Properties of Matter

Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; Cp, Cv - calorimetry; change of state - latent heat

capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law.

UNIT–VIII THERMODYNAMICS

Chapter–11: Thermodynamics

Thermal equilibrium and definition of temperature, zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: **Thermodynamic state variable and equation of state.** Change of condition of gaseous state isothermal, adiabatic, reversible, irreversible, and cyclic processes.

UNIT–IX BEHAVIOUR OF PERFECT GASES AND KINETIC THEORY OF GASES

Chapter–12: Kinetic Theory

Equation of state of a perfect gas, work done in compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom, law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.

UNIT–X OSCILLATIONS AND WAVES

Chapter–13: Oscillations

Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their applications. Simple harmonic motion (S.H.M), **uniform circular motion** and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period.

Chapter–14: Waves

Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.

All the syllabus Must be completed by 31st January, 2026.
Revision from Support material and Practice Papers uploaded on MIS

ANNUAL EXAMINATION (2025-26)

COURSE STRUCTURE

CLASS: 11, SUBJECT: PHYSICS THEORY (CODE-42)

Time: 3 hrs. **Max Marks: 70**

UNIT	CHAPTERS	MARKS
Unit–I	**Physical World and Measurement**	**23**
	Chapter–1: Units and Measurements	
Unit-II	**Kinematics**	
	Chapter–2: Motion in a Straight Line	
	Chapter–3: Motion in a Plane	
Unit–III	**Laws of Motion**	
	Chapter–4: Laws of Motion	
Unit–IV	**Work, Energy and Power**	**17**
	Chapter–5: Work, Energy and Power	
Unit–V	**Motion of System of Particles and Rigid Body**	
	Chapter–6: System of Particles and Rotational Motion	
Unit-VI	**Gravitation**	
	Chapter–7: Gravitation	
Unit–VII	**Properties of Bulk Matter**	**20**
	Chapter–8: Mechanical Properties of Solids	
	Chapter–9: Mechanical Properties of Fluids	
	Chapter–10: Thermal Properties of Matter	
Unit–VIII	**Thermodynamics**	
	Chapter–11: Thermodynamics	
Unit–IX	**Behaviour of Perfect Gases and Kinetic Theory of Gases**	
	Chapter–12: Kinetic Theory	
Unit–X	**Oscillations and Waves**	**10**
	Chapter–13: Oscillations	
	Chapter–14: Waves	
Total		**70**

For relevant NCERT textual material and further information kindly refer to CBSE guidelines

https://cbseacademic.nic.in/web_material/CurriculumMain26/SrSec/Physics_SrSec_2025-26.pdf