

Physics Syllabus for NEET 2025

<u>Chapter/Unit Name</u>	<u>Topics</u>
<u>Class 11th Syllabus</u>	
Physics And Measurement	Units of measurements. System of Units, S I Units, fundamental and derived units, significant figures, Errors in measurements, and Dimensions of Physics Dimensional analysis, and its applications.
Kinematics	Frame of reference, motion in a straight line. Position- Speed. speed and velocity: Uniform and non-uniform Average. average speed and instantaneous Uniformly accelerated Velocity, position-time graph, relations for uniformly accelerated motion- Scalars and Vectors. Vector Addition and subtraction, scalar and vector products. Unit Vector. Resolution of a Vector. Relative Velocity. Motion in a 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, Impulses: 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: a vehicle on a level, circular road: a vehicle on a banked road.
Work, Energy, and Power	Centre of the mass: of a two-particle system, Centre of the mass of a rigid body: Basic concepts of rotational motion; moment of a force; torque, angular momentum, conservation of angular momentum and its applications; Moment of inertia: the radius of gyration, values of moments of inertia for simple geometrical objects, parallel and perpendicular axes theory. and their applications. Equilibrium of rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.
Gravitation	The universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Kepler's law of planetary motion. Gravitational potential energy, Escape velocity, Motion of a satellite, orbital velocity, time period, and energy of satellite.
Properties of Solids and Liquids	Elastic behaviour, Stress-strain relationship, Hooke's Law. Young's modulus, bulk modulus, and modulus of rigidity. Pressure due to a fluid column; Pascal's law and its applications. Effect of gravity on fluid

	<p>pressure.</p> <p>Viscosity. Stokes' Terminal velocity, streamline, and turbulent flow.</p> <p>Critical velocity Bernoulli's principle and its applications.</p> <p>Surface energy and surface tension, angle of contact, excess pressure across a curved surface, application of surface tension – drops, bubbles, and capillary rise. Heat, temperature, thermal expansion; specific heat capacity, calorimetry; change of state, latent heat. Heat transfer conduction, convection, and radiation.</p>
Thermodynamics	<p>Thermal equilibrium, zeroth law of thermodynamics, the concept of temperature. Heat, work, and internal energy. The first law of thermodynamics, isothermal and adiabatic processes.</p> <p>The second law of thermodynamics: reversible and irreversible processes.</p>
Kinetic Theory of Gases	<p>Equation of state of a perfect gas, work done on compressing a gas, Kinetic theory of gases – assumptions, the concept of pressure. Kinetic interpretation of temperature: RMS speed of gas molecules: Degrees of freedom. Law of equipartition of energy and applications to specific heat capacities of gases; Mean free path. Avogadro's number.</p>
Oscillation and Waves	<p>Oscillations and periodic motion – period, frequency, displacement as a function of time. Periodic functions. Simple harmonic motion (S.H.M.) and its equation; phase: oscillations of a spring -restoring force and force constant: energy in S.H.M. – Kinetic and potential energies; Simple pendulum – derivation of expression for its period:</p> <p>Wave motion. Longitudinal and transverse waves, travelling waves. 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.</p>
<u>Class 12th Syllabus</u>	
Electrostatics	<p>Electric charges: Conservation of charge. Coulomb's law forces between two point charges, forces between multiple charges: superposition principle and continuous charge distribution.</p> <p>Electric field: Electric field due to a point charge, Electric field lines. Electric dipole, Electric field due to a dipole. Torque on a dipole in a uniform electric field'</p> <p>Electric flux' Gauss's law and its applications to find fields due to infinitely long uniformly charged straight wire, uniformly charged infinite plane sheet and uniformly charged thin spherical shell. Electric potential and its calculation for a point charge, electric dipole and system of charges potential difference, Equipotential surfaces, Electrical potential energy of a system of two point charges, and electric dipole in electrostatic Conductors and insulators. Dielectrics and electric polarization, capacitors, capacitances, the combination of capacitors in</p>

	series and parallel, and capacitance of a parallel plate capacitor with and without dielectric medium between the plates. Energy is stored in a capacitor.
Current Electricity	Electric current. Drift velocity, mobility, and their relation with electric current. Ohm's law. Electrical resistance. V-I characteristics of ohmic and non-ohmic conductors. Electrical energy and power. Electrical resistivity and conductivity. Series and parallel combinations of resistors; Temperature dependence of resistance. Internal resistance, potential difference, and emf of a cell, a combination of cells in series and parallel. Kirchhoff's laws and their application Wheat stone bridge. Metre Bridge.
Magnetic Effects of Current and Magnetism	Biot – Savart law and its application to the current carrying circular loop. Ampere's law and applications to infinitely long current carrying straight wire and solenoid. Moving charge in uniform magnetic and electric fields. Force on a current-carrying conductor in a uniform magnetic field. The force between two parallel currents carrying conductors definition of ampere. Torque experienced by a current loop in a uniform magnetic field: Moving coil galvanometer, its sensitivity, and conversion to ammeter and voltmeter. Current loop as a magnetic dipole and its magnetic dipole moment. Bar magnet as an equivalent sole Magnetic field line; Magnetic field due to a magnetic dipole (bar magnet) along its axis and perpendicular to its axis. Torque on a magnetic dipole in a uniform magnetic para,- dia- and ferromagnetic substances with examples of the effect of temperature on magnetic properties.
Electromagnetic Induction and Alternating Currents	Electromagnetic induction: Faraday's law. Induced emf and current: Lenz's Law, Eddy currents. Self and mutual inductance. Alternating currents, peak and RMS value of alternating current/ voltage: reactance and impedance: LCR series circuits, resonance: power in AC circuits, wattles current. AC generator and transformer.
Electromagnetic Waves	Displacement current. Electromagnetic waves and their characteristics, Transverse nature of electromagnetic waves, Electromagnetic spectrum (radio waves, microwaves, infrared, visible, ultraviolet. X-rays. Gamma rays), Applications of e.m. waves.
Optics	Reflection of light , spherical minors, mirror formula. Refraction of right at the plane and spherical surfaces, thin lens formula, and lens maker formula. Total internal reflection and its applications. Magnification. Power of a Lens. Combination of thin lenses in contact. Refraction of light through a prism. Microscope and Astronomical Telescope (reflecting and refracting) and their magnifying powers.

	<p>Wave optics: wavefront and Huygens' principle. Laws of reflection and refraction using Huygens principle. Interference, Young's double-slit experiment, and expression for fringe width, coherent sources, and sustained interference of light. Diffraction due to a single slit, width of central maximum. Polarization, plane-polarized light: Brewster's law, uses of plane-polarized light and Polaroid.</p>
Dual Nature of Matter and Radiation	<p>Dual nature of radiation. Photoelectric effect. Hertz and Lenard's observations; Einstein's photoelectric equation: particle nature of light. Matter waves-wave nature of particles, de Broglie relation.</p>
Atoms and Nuclei	<p>Alpha-particle scattering experiment; Rutherford's model of atom; Bohr model, energy levels' hydrogen spectrum. Composition and size of nucleus, atomic masses, Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number, nuclear fission, and fusion</p>
Electronic Devices	<p>Semiconductors; semiconductor diode: I-V characteristics in forward and reverse bias; diode as a rectifier; I-V characteristics of LE photodiode, solar cell, and Zener diode; Zener diode as a voltage regulator. Logic gates (OR. AND. NOT. NAND and NOR).</p>
Experimental Skills	<ol style="list-style-type: none"> 1. Calliper– measure the internal and external diameter and depth of a vessel. 2. A screw gauge uses to determine the thickness/diameter of a thin sheet/wire. 3. Simple pendulum – dissipation of energy by plotting a graph between the square of amplitude and time. 4. Metre Scale – the mass of a given object by the principle of moments. 5. Young's modulus of elasticity of the material of a metallic wire. 6. Surface tension of water by capillary rise and effect of detergents. 7. Coefficient of Viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body. 8. Speed of sound in air at room temperature using a resonance tube. 9. Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures. 10. The resistivity of the material of a given wire using a metre bridge. 11. The resistance of a given wire using Ohm's law. 12. Resistance and figure of merit of a galvanometer by half deflection method. 13. The focal length of Convex mirror, Concave mirror, and Convex lens using the parallax method. 14. The plot of the angle of deviation vs angle of incidence for a

	<p>triangular prism.</p> <p>15. The refractive index of a glass slab using travelling microscopes Characteristic curves of a p-junction diode in forward and reverse Characteristic curves of a Zener diode and finding reverse breakdown voltage.</p> <p>16. Identification of Diode. LED, Resistor. A capacitor from a mixed collection of such items</p>
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