

S.D.PUBLIC SCHOOL,PITAMPURA,NEW DELHI
ACADEMIC PLANNER , XI- Physics(2026-2027)

DAY/D ATE	chapter/contents	Learning outcomes	No. of Assignments/H. W	INTERDISCI PLINARY ASPECT/SD	Activities/practicals
April	Bridge course program				
1--15					
(11 days)					
April 16--30 (12 days)	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	uses International system of units (SI Units), symbols, nomenclature of physical quantities and formulations, conventions; such as, common SI prefixes and symbols for multiples and sub-multiples; important constants	C.W.:NCERT numericals(examples and conceptual questions) Hw: Assignment of electrostatics	Physics & Mathematics: The Language of Measurement	To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.
May (1-15) (06 days)	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)	differentiates between certain physical quantities; such as, between distance and displacement; speed and velocity; rectilinear and curvilinear motions; average, relative, and instantaneous velocity and speed	Cw:N.C.E.R.T. examples & questions will be done	Physics & Mathematics: The Language of Motion Concepts Integrated: Differentiation & Integration →	To measure diameter of a given wire and thickness of a given sheet using screw gauge.

<p>July (1-15) (12 days)</p>	<p>Chapter-3: Motion in a Plane Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, 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.</p>	<p>explains processes, phenomena and laws with the understanding of the relationship between nature and matter on scientific basis;</p>	<p>Hw:N.C.E.R.T questions Assignment will be given at the end of chapter</p>	<p>Physics & Biology: Biomechanics & Locomotion and Projectile</p>	<p>To find the weight of a given body using parallelogram law of vectors.</p>
<p>July (16-31) (14 days)</p>	<p>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).</p>	<p>explains processes, phenomena and laws with the understanding of the relationship between nature and matter on scientific basis; such as, various laws such as laws of motion, friction, lubrication,</p>	<p>Cw:NCERT questions will be done Assignment will be given at the end of chapter</p>	<p>. Physics & Chemistry: Molecular Forces and Motion</p>	<p>To measure the force of limiting friction for rolling of a roller on a horizontal plane</p>

<p>August (1--15) (11 days)</p>	<p>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.</p>	<p>derives formulae and equations, such as, potential energy of a spring, proof of work-energy theorem for a variable force,</p>	<p>Cw: Conceptual questions &numericals</p>	<p>Physics & Chemistry: Energy Transformations in Reactions</p>	<p>To make a paper scale of given least count, e.g., 0.2cm, 0.5 cm.</p>
<p>August (16--31) (11 days)</p>	<p>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)</p>	<p>exhibits creativity and out-of-the-box thinking in solving challenging physics problems; such as, minimum speed required by motorcyclist at the uppermost position to perform a vertical loop in a death well .</p>	<p>Cw:NCERT & extra questions will be done</p>	<p>Physics & Engineering: Machine Dynamics & Structural Analysis</p>	<p>To study the conservation of energy of a ball rolling down on an inclined plane (using a double inclined plane).</p>
<p>Sept. (1--15) (11days)</p>	<p>Revision</p>				

Sept. (16--30) (13days)					
	HALF YEARLY EXAM.				
Oct. (1--15) (11days)	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.	takes initiative to learn about the newer researches, discoveries and inventions in physics; such as, about space programme of India and other countries.	Hw:Assignment	Physics & Biology: Gravity's Influence on Life & Evolution	To study variation of time period of a simple pendulum of a given length by taking bobs of same size but different masses and interpret the result.
Oct. (16--31) (09days)	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 behavior of materials (qualitative idea only).	recognises different processes applications; such as, knowledge of strength of materials used for structural design of columns, beams and supports .	Hw:assignment of chapter	Physics & Economics: Cost vs. Performance in Material Selection	To study the effect of load on depression of a suitably clamped metre scale loaded at (i) its end (ii) in the middle.

<p>Nov. (1--15) (09days)</p>	<p>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.</p>	<p>applies concepts of physics in daily life with reasoning while decision-making and solving problems during blood transfusion the height at which the blood container be placed so that blood may just enter the vein through the needle inserted in vein;</p>	<p>Hw:assignment of chapter</p>	<p>Physics & Biology: Fluid Mechanics in Living Systems</p>	<p>To determine the coefficient of viscosity of a given viscous liquid by measuring terminal velocity of a given spherical body.</p>
<p>Nov. (16--31) (12days)</p>	<p>Chapter-10: Thermal Properties of Matter Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p, C_v - 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.</p>	<p>analyses and interprets data, graphs, and figures, and draws conclusion; such as, isothermal and adiabatic processes from P-V curves;</p>	<p>Hw:Assignment of chapter</p>	<p>Physics & Chemistry: Molecular Interactions in Heat Transfer</p>	<p>To observe and explain the effect of heating on a bi-metallic strip</p>

<p>Dec (1--15) (12days)</p>	<p>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.</p>	<p>derives formulae and equations, such as, energy of a particle executing SHM.</p>	<p>Topics will be taught through class projects, experiments, examples, etc. Activities will be conducted through multisensory modes before explaining any theory and concept.</p>	<p>Physics & Mathematics: The Analytical Framework</p>	<p>To study the effect of detergent on surface tension of water by observing capillary rise.</p>
<p>Dec (16--31) (13days)</p>	<p>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</p>	<p>recognises the concepts of Physics related to various natural phenomena; such as, simple harmonic motion, greenhouse effect, variation in speed of sound in different media.</p>	<p>Hw:assignment of chapter</p>	<p>physics & Chemistry: Molecular Behavior and Wave Phenomena</p>	<p>To study the relation between the length of a given wire and tension for constant frequency using sonometer.</p>

<p>Jan (16--31) (12days)</p>	<p>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. 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</p>	<p>realises and appreciates the interface of Physics with other disciplines; such as, mechanism of conversion of heat into work for different heat engines; develops positive scientific attitude, and appreciates the role and impact of Physics and technology towards the improvement of quality of life and human welfare,</p>	<p>Hw:assignment of chapter</p>	<p>Physics & Engineering: Energy Efficiency & Technology Applications</p>	<p>To study the relationship between the temperature of a hot body and time by plotting a cooling curve</p>
	<p>Unit test I</p>	<p>Chapter 1-2</p>			
	<p>Half Yearly Exam.</p>	<p>Chapter 1-5</p>			
	<p>Unit test II</p>	<p>Chapter 6,7,8</p>			
	<p>Annual Examination</p>	<p>Complete Syllabus.</p>			