



**THE CAMFORD INTERNATIONAL SCHOOL**  
**ANNUAL LESSON PLAN 2023-24**

**SUBJECT : PHYSICS XI**

<b>MONTH</b>	<b>CHAPTER</b>	<b>DETAIL CONCEPTS TO BE COVERED</b>	<b>PRACTICALS</b>
APRIL	Chapter-1: Basic Mathematics	Trigonometry Differentiation, Integration	
	Chapter-2: Units and Measurements	Need for measurement: Units of measurement; systems of units; SI units, fundamental and derived units. significant figures. Dimensions of physical quantities, dimensional analysis and its applications.	
MAY	Chapter-3: 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, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).	

JUNE	Chapter–4: Motion in a Plane	<p>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,</p> <p>Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors.</p> <p>Motion in a plane, cases of uniform velocity and uniform acceleration projectile motion, uniform circular motion</p>	<p>EXP-1: 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.</p>
	Chapter–5: Laws of Motion	<p>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.</p> <p>Law of conservation of linear momentum and its applications.</p> <p>Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication.</p> <p>Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).</p>	
JULY	Chapter–6: Work, Energy and Power	<p>Work done by a constant force and a variable force; kinetic energy, workenergy theorem, power.</p> <p>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>EXP-2: To measure diameter of a given wire and thickness of a given sheet using screw gauge..</p>

	Chapter-7: System of Particles and Rotational Motion	<p>Centre of mass of a two-particle system, momentum conservation and Centre of mass motion.</p> <p>Centre of mass of a rigid body; centre of mass of a uniform rod.</p> <p>Moment of a force, torque, angular momentum, law of conservation of angular momentum and its applications.</p> <p>Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions.</p> <p>Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).</p>	
AUGUST	Chapter-8: Gravitation	<p>Kepler's laws of planetary motion, universal law of gravitation.</p> <p>Acceleration due to gravity and its variation with altitude and depth.</p> <p>Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite..</p>	EXP-3: Using a simple pendulum, plot its L-T <sup>2</sup> graph and use it to find the effective length of second's pendulum.

	Chapter–9: 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.	EXP-4: To study the relation between frequency and length of a given wire under constant tension using sonometer.
SEPTEMBER	Chapter–10: 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. 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.	EXP-5: To study the relation between the length of a given wire and tension for constant frequency using sonometer.

	Chapter-11: 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	EXP-6: To find the speed of sound in air at room temperature using a resonance tube by two resonance positions.
OCTOMBER	Chapter-12: Thermodynamics	Thermal equilibrium and definition of temperature zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.	
	Chapter-13: 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.	

	Chapter-14: Oscillations	Composition and size of nucleus, nuclear force Mass-energy relation, mass defect; binding energy per nucleon and its variation with mass number; nuclear fission, nuclear fusion.	
	Chapter-15: Waves	Energy bands in conductors, semiconductors and insulators (qualitative ideas only) Intrinsic and extrinsic semiconductors- p and n type, p-n junction Semiconductor diode - I-V characteristics in forward and reverse bias, application of junction diode -diode as a rectifier.	