



CAMBRIAN PUBLIC SCHOOL KANKE ROAD RANCHI

Class – XII (Session 2026-27)

LEARNING PLAN OUTCOMES

Subject: Physics (042)

S. No.	Month	Chapter/Unit Name	Competency Based Learning Outcomes
1	April	Unit 1: Electrostatics	• Explain Coulomb's law, electric field, potential and apply to point charges & dipoles • Derive & use Gauss's law to find field due to charged wire, sheet, sphere • Calculate capacitance of parallel plate capacitor, effect of dielectric, energy stored • Analyze behavior of conductors in electrostatic field and concept of electrostatic shielding
2	May	Unit 2: Current Electricity	• State & apply Ohm's law, drift velocity, resistivity, temperature dependence • Solve circuits using Kirchhoff's laws and Wheatstone bridge • Explain working of potentiometer to compare EMF and find internal resistance • Describe Joule heating, power, and safe use of electricity in daily life
3	June	Unit 3: Magnetic Effects & Magnetism	• Apply Biot-Savart law & Ampere's circuital law for straight wire, loop, solenoid • Determine force on moving charge/current in magnetic field; define Lorentz force • Explain principle of moving coil galvanometer, its conversion to ammeter & voltmeter • Compare dia, para, ferro magnetic materials with examples and applications
4	July	Unit 4: EMI & Alternating Current	• State Faraday's & Lenz's laws; calculate induced EMF in coils, rods • Explain self & mutual induction; working of transformer • Analyze AC circuits with R, L, C using phasors; calculate impedance, power factor • Describe resonance in LCR circuit and uses in tuning circuits
5	August	Unit 5: Electromagnetic Waves	• Outline basic idea of displacement current and EM wave production

			List EM spectrum regions with wavelengths, frequencies, uses & hazards
6	September	Unit 6: Optics	- Apply reflection & refraction laws; derive mirror/lens formula, magnification - Explain working of microscope, telescope; calculate magnifying power - Describe wave nature via Huygens' principle, interference, Young's experiment - Explain diffraction at single slit, polarization and its applications
7	October	Unit 7: Dual Nature & Atoms	- Explain photoelectric effect, Einstein's equation, de Broglie wavelength - Describe Bohr's model, energy levels, hydrogen spectrum - State radioactive decay law, half-life, uses of nuclear energy
8	November	Unit 8: Electronic Devices	- Differentiate conductors, semiconductors, insulators on band theory - Explain p-n junction diode: I-V characteristics, rectifier, LED, photodiode
9	December	General Skills / Competencies Developed	- Experimental: Design and perform experiments, take readings, handle errors, draw graphs - Problem-solving: Apply concepts to numericals + competency-based real-life problems - Critical thinking: Analyze data, predict outcomes, evaluate technological applications - Communication: Explain phenomena with diagrams, derivations, and correct terminology - Value linkage: Connect physics to environment, safety, society – e.g., energy conservation, radiation safety
