

Honors Physics II – Course Overview

1 st Quarter	2 nd Quarter
<p>I Introduction to Mathematical concepts A Trigonometry, Scalar, vector, vector Addition and subtraction</p> <p>II Kinematics in one dimension A Displacement, speed, velocity, acceleration B Application of equations of kinematics C Graphical analysis of velocity and acceleration</p> <p>III Kinematics in two dimensions A Displacement, velocity, acceleration B Application of equations of kinematics in two dimension C Projectile motion</p> <p>IV Forces and Newton's Law's of Motion A Newton's First, Second and Third Law of Motion B Gravitation Force, Normal Force, Tension force C Equilibrium Application</p> <p>V Dynamics of uniform circular motion A Centripetal Acceleration and Force, Banked curves B Satellites in circular orbits, apparent weightlessness</p> <p>VI Work and energy A Work done by constant Force B Work energy Theorem and Kinetic Energy C Gravitational Potential Energy</p> <p>VII Impulse and momentum A Impulse momentum theorem, Principle of Conservation of Linear Momentum B Collision in One and Two dimension, Center of Mass</p> <p>VIII Rotational dynamics</p>	<p>IX Fluids A Density, Pressure, Pascal's law, Archimedes Principle, Bernoulli's Equation, Fluids in motion</p> <p>X Temperature and Heat A Temperature scale conversion, Linear Thermal Expansion, Volume Thermal Expansion, Heat capacity, Latent Heat</p> <p>XI Electric forces and electric fields A Charging by contact and Induction B Coulumb's law , Gauss's Law, C Electric Field Lines</p> <p>XII Electric potential energy and the electric potential A Potential Energy , B Electric Potential Difference, C Capacitors</p> <p>XIII Electric circuits A Ohm's Law B Direct current, Alternating Current C Series and Parallel Wiring D Internal Resistance E Resistor and Capacitors in Series and Parallel</p> <p>XIV Magnetic forces and magnetic fields A Force that a Magnetic Field exerts on a Moving Charge B Motion of a charged particle C Magnetic Fields Produced by Currents D Ampere's law</p>
3rd Quarter	BENCHMARK I
<p>XV Electromagnetic induction A Induced Emf and current, Magnetic Flux, Faraday's Law, Lenz's Law</p> <p>XVI Electromagnetic waves A Nature of Electromagnetic waves, Electromagnetic spectrum, Speed of light, Energy, Doppler Effect</p> <p>XVII Waves and sound waves</p> <p>XVIII Interference and the wave nature of light A Principle of linear superposition, Double slit experiment, Thin films, Diffraction</p> <p>XIX The reflection of light: mirrors</p> <p>XX The refraction of light lenses and optical instruments</p> <p>XXI Particles and waves</p>	<p style="text-align: center;">4th quarter</p> <p>XXII The nature of the atom A Rutherford, Bohr Model of atom B Line spectra, C Pauli Exclusion Principle D Quantum Mechanical Picture</p> <p>XXIII Nuclear physics and radioactivity A Nuclear Structure, Nuclear Reactions, Radioactivity Radiation Detectors</p> <p>XXIV Ionizing radiation, nuclear energy and elementary particles A Biological Effects of Ionizing Radiation B Nuclear Reactors, Fission, Fusion</p> <p>XXV Review for assessment</p> <p style="text-align: center;">BENCHMARK II</p>