

Curriculum Plans: Year 12 Physics teacher A

Topic	Knowledge: By the end of the unit students will know:	Skills: What skills will students have developed by the end of this unit?	Key terms: What new key terms and vocabulary will be learnt in this unit?	Summative Assessment: How will pupils be assessed in this unit?
Waves	By the end of the unit, students will know: - Properties of quarks and antiquarks, including their charge, baryon number, and strangeness. - The process of beta decay and the application of conservation laws (e.g., charge, baryon number, lepton number, and strangeness) to particle interactions. - The concept of the photoelectric effect, including threshold frequency and work function, and how photons explain the effect. - The structure and interactions of fundamental particles (e.g., baryons, mesons, leptons). - Applications of electromagnetic radiation, quantum phenomena, and energy level transitions.	Students will have developed the following skills by the end of the unit: - Application of conservation laws in practical contexts. - Understanding and performing experimental demonstrations, such as using an electron diffraction tube to observe line spectra. - Explanation of particle behavior using concepts such as wave-particle duality and the De Broglie wavelength. - Applying knowledge of electromagnetic radiation and interactions to various experiments (e.g., demonstrating the photoelectric effect). - Performing calculations involving photon energy.	The new key terms and vocabulary to be learned in this unit include: - Quarks, Antiquarks, Baryons, Mesons, Leptons. - Threshold Frequency, Work Function, Photoelectric Effect. - Electron Diffraction, De Broglie Wavelength. - Photon Emission, Energy Levels, Excitation. - Wave-Particle Duality, Conservation Laws (Charge, Baryon Number, Lepton Number, Strangeness).	
Measurements and their errors	By the end of the unit, students will know: - How to investigate and analyze the charge and discharge of	Students will have developed the following skills by the	The new key terms and vocabulary to be learned in this unit include: -	

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	<p>capacitors, including determining the time constant RC using log-linear plotting. - The principles of how magnetic flux density, current, and the length of a wire affect the force experienced by a wire in a magnetic field. - The concept of magnetic flux linkage and how the angle between a search coil and magnetic field direction affects it. - The experimental approach to understand the inverse-square law for gamma radiation.</p>	<p>end of the unit: - Competence in plotting log-linear graphs to analyze capacitor charge and discharge. - Ability to determine time constants from experimental data. - Practical skills in using equipment like a top pan balance to investigate magnetic forces. - Skill in using a search coil and oscilloscope for analyzing magnetic flux linkage. - Verification of the inverse-square law for gamma radiation using detectors, enhancing their investigative and experimental approaches.</p>	<p>Capacitor, Charge and Discharge, Time Constant, RC. - Magnetic Flux Density, Current, Length, Top Pan Balance. - Search Coil, Oscilloscope, Magnetic Flux Linkage. - Inverse-Square Law, Gamma Radiation, Radiation Detector.</p>	
<p>Mechanics & Materials</p>	<p>By the end of the unit, students will know: - Newton's laws of motion and their application to various physical situations. - The principle of</p>	<p>Students will have developed the following skills by the end of the unit: -</p>	<p>The new key terms and vocabulary to be learned in this unit include: -</p>	

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	<p>conservation of momentum, including both elastic and inelastic collisions. - How to use work, energy, and power calculations to solve practical problems involving forces. - The laws of projectile motion, considering air resistance and friction. - The properties and behavior of materials under force, including Hooke's Law, Young's modulus, and elastic potential energy. - Basic understanding of momentum and impulse and their practical applications.</p>	<p>Ability to use Newton's laws to explain physical phenomena and solve practical problems. - Skill in performing and analyzing experiments to determine momentum, force, and efficiency (e.g., using graphs to understand relationships). - Competence in carrying out practical work to measure properties of materials, such as Young's modulus. - Application of the equations of motion to solve problems involving projectile motion. - Verification of conservation principles in physics through hands-on experiments, such as energy conservation in free-fall and motion experiments.</p>	<p>Newton's Laws of Motion, Momentum, Impulse. - Elastic and Inelastic Collisions, Conservation of Momentum. - Work, Energy, Power, Efficiency. - Projectile Motion, Air Resistance, Friction. - Hooke's Law, Young's Modulus, Tensile Stress, Tensile Strain, Elastic Limit, Stiffness.</p>	
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