



## Physics: Curriculum Overview

### Year 12

Term	Topic studied	What will I learn?	How will I be assessed?
Year 12 Autumn	Teacher 1: <ul style="list-style-type: none"> <li>Atomic structure</li> <li>Quantum Physics</li> <li>Particle Physics</li> </ul> Teacher 2 <ul style="list-style-type: none"> <li>Waves</li> </ul>	<ul style="list-style-type: none"> <li>Development of model of the atom, alpha scattering experiment, protons neutrons, electrons, isotopes, nucleon number, proton number, specific charge</li> <li>The notion of quantum, the photon, the eV, the photoelectric effect, electron diffraction, spectra</li> <li>Matter, antimatter, annihilation, pair production, Fundamental forces - G, E, SN, WN, Hadrons &amp; Leptons, Mesons and Baryons, Quantum numbers - Charge, lepton number, baryon number strangeness, Quark theory &amp; Quark confinement, Interactions, decay and particle transfer diagrams.</li> <li>Properties of waves; Wave speed; Transverse and Longitudinal; Stationary waves; Investigating Resonance; Diffraction; Two Source Interference; Young's Double Slits; Diffraction Gratin; Refractive index; Critical Angle</li> </ul>	<p><b>Practical assessment</b> - Determining Planks constant.</p> <p><b>Private Study assessments:</b> Atomic structure, Specific charge, Quantum Physics, Particle Physics</p> <p><b>Test assessments</b> - Structured Questions 4 week test, Structured Questions Quantum Physics</p> <p><b>Practical assessment</b> – Investigating Resonance</p> <p><b>Private Study assessments</b> - Transverse and Longitudinal, Stationary waves, Resonance, Young's Double Slits, Diffraction, Refractive index, Critical Angle</p> <p><b>Test assessments</b> - Structured Questions 4 week test, Structured Questions Waves</p>
Year 12 Spring	Teacher 1 <ul style="list-style-type: none"> <li>Forces - Equilibrium</li> <li>Force &amp; Motion - Kinematics</li> <li>Force &amp; Motion – Dynamics</li> </ul> Teacher 2 <ul style="list-style-type: none"> <li>Material</li> </ul>	<ul style="list-style-type: none"> <li>Conditions for equilibrium; Vectors, components and triangle of vectors; Moments and couples, torque; Analysing equilibrium situations - leaning ladder; cantilevers, inclined planes etc.</li> <li>Speed, velocity, distance, displacement, acceleration; S-t, v-t &amp; a-t graphs; SUVAT equation of constant acceleration; Independence of motions, projectile motion; Newton's Laws.</li> <li>Drag and the effects of drag; Conservation of momentum; Impacts &amp; Collisions; Impulse and change in momentum; Ft graphs</li> <li>Density; Hooke's Law; Stress and Strain; Young's Modulus; Stress-Strain and Force-Extension Graphs; Brittle Materials</li> </ul>	<p><b>Practical assessment</b> - g by falling object</p> <p><b>Private Study assessments</b> - ladder forces, Equilibrium, Motion Graphs, kinematics, the 9-second drive, Dynamics</p> <p><b>Test assessments</b> - Structured Questions Particle Physics, Structured Questions Equilibrium, Structured Questions Kinematics</p> <p><b>Practical assessment</b> – Young's Modulus</p> <p><b>Private Study assessment</b> – Density, Stress/strain, Young's modulus, Materials</p> <p><b>Test assessment</b> - Structured Questions Materials</p>
Year 12 Summer	Teacher 1 <ul style="list-style-type: none"> <li>Force &amp; Motion - Dynamics</li> <li>Force &amp; Motion - Work &amp; Power</li> <li>Practical Skills – uncertainties</li> <li>Begin y13 topic of study</li> <li>Further Mechanics - Circular Motion</li> </ul> Teacher 2 <ul style="list-style-type: none"> <li>Electricity</li> </ul>	<ul style="list-style-type: none"> <li>Complete impulse &amp; Collisions</li> <li>Work done and power, kinetic &amp; potential interchange.</li> <li>Errors - system and random; Uncertainties, absolute, fractional, percentage; Estimating uncertainties; Graphing uncertainties</li> <li>Angular velocity and centripetal force and acceleration. Time period. The radian. Vertical and horizontal circular motions, banked tracks</li> <li>Circuit Diagrams; Current and Potential Difference; Resistance; I-V Characteristics; Resistance; Determining the resistivity of a Wire; Power and Electrical Energy; E.m.f. and Internal Resistance; Conservation of Energy and Charge in Circuits; Potential Dividers</li> </ul>	<p><b>Practical assessment</b> - uncertainties in experimental data and graphs</p> <p><b>Private Study assessment</b> - Work &amp; Power, Uncertainties &amp; Errors</p> <p><b>Test assessment</b> - Structured Questions Work &amp; power, Structured Questions Impacts, 12 mock examination</p> <p><b>Practical assessment</b> - Determining the resistivity of a Wire, E.m.f. and Internal Resistance</p> <p><b>Private Study assessment</b> – Circuits, Current and pd, I-V Characteristics, Resistance, Power, emf and internal resistance, Potential dividers</p> <p><b>Test assessment</b> - Electricity</p>

