



The curriculum for this stage of students' education has been designed to build upon their prior knowledge of Working Scientifically including: using a range of scientific equipment, recording data and results, presenting findings and drawing conclusions, explaining, evaluating and communicating their methods and findings. Students will explore: Particles, Force, energy and momentum, EM radiation and Quantum Phenomena, Forces and Materials, Waves, Electricity, Refraction, diffraction and interference; DC circuits, Circular Motion, Oscillations, Nuclear Physics.

<p><b>HALF TERM 1:</b> Particles, Force, energy and momentum</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>• Particles: Understand constituents of the atom, stable and unstable nuclei, particles, anti-particles and photons and particle interactions.</li> <li>• Force, energy and momentum: Explain scalars and vectors, moments, motion in a straight-line projectile motion and Newton's laws of motion.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> Assessments will be completed at the end of each topic and one main assessment will occur during each term to assess progress. Required practicals are also an integral part of the course.</p>	<p><b>HALF TERM 2:</b> EM radiation and Quantum Phenomena, Forces and Materials</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>• Particles: Understand the photoelectric effect, collisions of electrons with atoms, energy levels and photon emissions, wave-particle duality.</li> <li>• Force, energy and momentum: Application of moments, work, energy and power, conservation of energy.</li> <li>• Materials: Understand and apply bulk properties of solids, the Young Modulus.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> Assessments will be completed at the end of each topic and one main assessment will occur during each term to assess progress. Required practicals are also an integral part of the course.</p>	<p><b>HALF TERM 3:</b> Waves, Electricity</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>• Waves: Understand and apply the concepts of progressive waves, longitudinal and transverse waves, principle of waves and formation of stationary waves.</li> <li>• Current Electricity: Understand and apply the basics of electricity, current voltage characteristics, resistivity.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> Assessments will be completed at the end of each topic and one main assessment will occur during each term to assess progress. Required practicals are also an integral part of the course.</p>
<p><b>HALF TERM 4:</b> Refraction, diffraction and interference; DC circuits</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>• Waves: Explain the concepts of interference, diffraction, refraction at a plane surface.</li> <li>• DC circuits: Understand and apply: Circuits, the potential divider, electromotive force and internal resistance.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> Assessments will be completed at the end of each topic and one main assessment will occur during each term to assess progress. Required practicals are also an integral part of the course.</p>	<p><b>HALF TERM 5:</b></p> <p><b>Consolidation, Revision and Past Papers Assessments and mocks</b></p>	<p><b>HALF TERM 6:</b> Circular Motion, Oscillations, Nuclear Physics</p> <p><b>STUDENTS MUST KNOW:</b></p> <ul style="list-style-type: none"> <li>• Periodic motion: Understand circular motion, simple harmonic motion, SHM systems, forced vibrations and resonance.</li> <li>• Nuclear Physics: Understand radioactivity in terms Rutherford scattering, types of radiation, radioactive decay, nuclear instability, nuclear radius.</li> </ul> <p><b>HOW THIS WILL BE ASSESSED:</b> Assessments will be completed at the end of each topic and one main assessment will occur during each term to assess progress. Required practicals are also an integral part of the course.</p>

**Embedding this knowledge can be supported at home by using the AQA website and typing in the key phrase for each lesson to consolidate learning that has taken place in class. Work is assessed at the end of each topic.**