

Specification: OCR Physics A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12	<p><b>BASIC CONCEPTS</b> Approx. 3 lessons. <b>What will be learnt?</b> Quantities and units, uncertainties. <b>Why will it be learnt?</b> <b>Main outcome:</b> To learn basic ideas that will be applied through the course. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Using prefixes.</li> <li>Calculating uncertainties.</li> </ul> <p><b>How will learning be assessed?</b> Throughout the course.</p> <p><b>MOTION</b> Approx. 12 lessons. <b>What will be learnt?</b> Motion graphs. Equations of motion. Determining g. Projectile motion. <b>Why will it be learnt?</b> <b>Main outcome:</b> To be able to describe the motion of objects mathematically. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Using prefixes</li> <li>Recording data.</li> </ul>	<p>Resistance. I-V characteristics. Diodes. Resistance &amp; resistivity. Thermistors &amp; LDRs. Electrical power. <b>Why will it be learnt?</b> <b>Main outcome:</b> To explore the properties of many common components and explain how they can be used to construct useful circuits. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Proportionality.</li> <li>Recording data.</li> <li><math>y=mx+c</math> analysis.</li> <li>Citing sources.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>ELECTRICAL CIRCUITS</b> Approx. 8 lessons. <b>What will be learnt?</b> Kirchhoff's laws. Combining resistors. Internal resistors. Potential dividers. <b>Why will it be learnt?</b> <b>Main outcome:</b> To explore how the design of circuits can be adjusted</p>	<p><b>WORK, ENERGY &amp; POWER</b> Approx. 8 lessons. <b>What will be learnt?</b> Work. Energy conservation. KE and GPE. Power. Efficiency. <b>Why will it be learnt?</b> <b>Main outcome:</b> To apply the idea of conservation of energy to find unknown quantities. To measure the power and efficiency of systems. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Using conservation laws.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test</p> <p><b>WAVES 1</b> Approx. 8 lessons. <b>What will be learnt?</b> Wave properties. Intensity. Reflection. Refraction total internal reflection. Diffraction. Polarisation. <b>Why will it be learnt?</b> <b>Main outcome:</b> To explain and predict the results of various phenomena involving waves.</p>	<p><b>MATERIALS</b> Approx. 8 lessons. <b>What will be learnt?</b> Hooke's law. Elastic potential energy. Deforming materials. Stress, strain and Young modulus. <b>Why will it be learnt?</b> <b>Main outcome:</b> To predict the behaviour of materials under forces. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Uncertainties</li> <li>Researching / citing sources</li> <li>Proportionality</li> <li>Recording data</li> <li><math>y=mx+c</math> analysis</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>WAVES 2</b> Approx. 8 lessons. <b>What will be learnt?</b> Superposition. Two-source interference. Diffraction gratings. Stationary waves and harmonics. <b>Why will it be learnt?</b></p>	<p><b>LAWS OF MOTION &amp; MOMENTUM</b> Approx. 6 lessons. <b>What will be learnt?</b> Newton's Laws of Motion. Conservation of momentum. Impulse. <b>Why will it be learnt?</b> <b>Main outcome:</b> To apply Newton's laws and the idea of conservation of momentum to solve problems and explain various phenomena. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Using conservation laws.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test</p> <p><b>OSCILLATIONS</b> Approx. 12 lessons. <b>What will be learnt?</b> Analysing simple harmonic motion. Energy in simple harmonic motion. Damping. Resonance. <b>Why will it be learnt?</b> <b>Main outcome:</b> To analyse and predict the behaviour of oscillating</p>	<p><b>CIRCULAR MOTION</b> Approx. 4 lessons. <b>What will be learnt?</b> Angular velocity. Centripetal forces and acceleration. <b>Why will it be learnt?</b> <b>Main outcome:</b> To describe the motion of objects moving in circles, to be applied in later contexts.. <b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>Recording data</li> <li><math>y=mx+c</math> analysis</li> </ul> <p><b>How will learning be assessed?</b> End of topic test</p> <p><b>THERMAL PHYSICS</b> Approx. 12 lessons. <b>What will be learnt?</b> Temperature. States of matter. Internal energy. Specific heat capacity. Specific latent heat. <b>Why will it be learnt?</b> <b>Main outcome:</b> To explain the meaning of temperature and describe the changes that occur when energy is added to a</p>

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<ul style="list-style-type: none"> <li>• <math>y=mx+c</math> analysis</li> <li>• Comparing accuracy</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>CHARGE &amp; CURRENT</b> Approx 4 lessons.</p> <p><b>What will be learnt?</b> Current and charge. Kirchhoff's first law. Mean drift velocity.</p> <p><b>Why will it be learnt?</b></p> <p><b>Main outcome:</b> To explain what current is and how it flows.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Using conservation laws.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test</p> <p><b>CHARGE &amp; CURRENT</b> Approx 14 lessons.</p> <p><b>What will be learnt?</b> EMF &amp; PD. The electron gun. Continued in Autumn 2.</p> <p><b>Why will it be learnt?</b></p> <p><b>Main outcome:</b> To explain what current is and how it flows.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Using conservation</li> </ul>	<p>to make them more useful.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Problem-solving</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>FORCES IN ACTION</b> Approx. 16 lessons.</p> <p><b>What will be learnt?</b> Force &amp; acceleration. Free body diagrams. Drag &amp; terminal velocity. Moments, couples &amp; torques. Triangles of forces. Density &amp; pressure. Archimedes principle.</p> <p><b>Why will it be learnt?</b></p> <p><b>Main outcome:</b> To explore various ways in which forces affect motion.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Reducing errors.</li> <li>• Trigonometry.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test Equilibrium mini-test PAG</p>	<p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Using conservation laws.</li> <li>• Recording data.</li> <li>• <math>y=mx+c</math> analysis.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p>	<p><b>Main outcome:</b> To explain how interference patterns come about from multiple wave sources. To explain how stationary waves form and use these to find wave speeds.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Recording data.</li> <li>• Uncertainties.</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>QUANTUM PHYSICS</b> Approx. 8 lessons.</p> <p><b>What will be learnt?</b> Photon model. Photoelectric effect. Wave-particle duality.</p> <p><b>Why will it be learnt?</b></p> <p><b>Main outcome:</b> To apply the idea of conservation of energy to find unknown quantities. To measure the power and efficiency of systems.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Recording data</li> <li>• <math>y=mx+c</math> analysis</li> </ul> <p><b>How will learning be assessed?</b> End of topic test</p>	<p>systems, including when damped or driven.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Using trigonometric functions</li> <li>• Reducing errors</li> <li>• Designing experiments</li> <li>• Recording data</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p> <p><b>CAPACITANCE</b> Approx. 12 lessons.</p> <p><b>What will be learnt?</b> Capacitance. Energy storage in capacitors. Capacitor discharge and time constants. Capacitors in series and parallel.</p> <p><b>Why will it be learnt?</b></p> <p><b>Main outcome:</b> To analyse circuits involving capacitors and predict their behaviour.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Recording data</li> <li>• <math>y=mx+c</math> analysis</li> <li>• Exponential functions</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p>	<p>system thermally.</p> <p><b>Skills developed:</b></p> <ul style="list-style-type: none"> <li>• Planning experiments</li> <li>• Recording data</li> <li>• <math>y=mx+c</math> analysis</li> </ul> <p><b>How will learning be assessed?</b> End of topic test PAG</p>
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