



## Year 11 Physics

Subject and Year Group	Autumn Year 11	Autumn 2 Year 11	Spring 1 Year 11	Spring 2 Year 11	Summer 1 Year 11	Summer 2 Year 11
Topic/Unit to be studied	Magnetism & Electromagnetism	Forces I (Forces in equilibrium)	Waves	Forces II (Forces and Motion)	Space ( <i>separate only</i> )	
Core Knowledge (Substantive knowledge)	<ul style="list-style-type: none"> <li>Permanent and induced magnetism</li> <li>Magnetic materials</li> <li>Magnetic Fields</li> <li>The Motor Effect and DC motors (<b>HT only</b>)</li> <li>The generator effect and generators (<i>separate only</i>)</li> <li>Transformers (<i>separate only</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Types and examples of forces</li> <li>Scalars and vectors</li> <li>Resultant forces</li> <li>Finding resultant vectors and resolving vectors (<b>HT only</b>)</li> <li>Work done and energy transfers</li> <li>Hooke's law and elastic forces</li> <li><u>RP6</u>: Extension of a spring</li> <li>Moments, centre of mass and gears (<i>separate only</i>)</li> <li>Upthrust and fluid pressure (<i>separate only</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Types of wave</li> <li>Describing waves</li> <li>The wave equation</li> <li><u>RP8</u>: wavespeed, frequency and wavelength on a string and ripple tank.</li> <li>The electromagnetic spectrum</li> <li><u>RP10</u>: emission &amp; absorption of IR radiation.</li> <li>Wave behaviour (reflection and refraction)</li> <li><u>RP9</u>: reflection and refraction. (<i>separate only</i>)</li> <li>Sound and seismic waves (<i>separate only</i>)</li> <li>Lenses and ray diagrams (<i>separate only</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Describing, calculating and graphing motion in a line</li> <li>Circular motion (<b>HT only</b>)</li> <li>Acceleration</li> <li>Newton's laws of motion</li> <li><u>RP7</u>: Force, mass and acceleration</li> <li>Forces and braking</li> <li>Momentum (<b>HT only</b>)</li> <li>Impact Forces (<i>separate only</i>)</li> </ul>	<ul style="list-style-type: none"> <li>Lifecycle of a star (<i>separate only</i>)</li> <li>Big Bang Theory and evidence (<i>separate only</i>)</li> <li>Satellites (<i>separate only</i>)</li> </ul>	



<p><b>Core Skills (Disciplinary knowledge)</b></p>	<ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Identify anomalies and apply mathematical concepts to calculate means.</li> <li>- Present data using appropriate methods, including tables and graphs including straight lines of best fit.</li> <li>- Recognise mathematical relationships, including directly proportional and linear.</li> <li>- Understand, use, and convert prefixed and SI units.</li> <li>- Complete calculations making use of standard form.</li> <li>- Apply mathematical concepts to substitute in/ rearrange equations to calculate relevant physical quantities.</li> </ul>	<ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Identify anomalies and apply mathematical concepts to calculate means and uncertainty in repeated readings.</li> <li>- Present data using appropriate methods, including tables and graphs including straight lines of best fit.</li> <li>- Recognise mathematical relationships, including directly proportional and linear.</li> <li>- Understand, use, and convert prefixed and SI units.</li> <li>- Complete calculations making use of standard form.</li> <li>- Apply mathematical concepts to substitute in/ rearrange equations</li> </ul>	<ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Identify anomalies and apply mathematical concepts to calculate means and uncertainty in repeated readings.</li> <li>- Present data using appropriate methods, including tables and graphs including curved lines of best fit.</li> <li>- Recognise mathematical relationships, including directly proportional, inversely proportional, and linear.</li> <li>- Understand, use, and convert prefixed and SI units.</li> <li>- Complete calculations making use of standard form.</li> <li>- Apply mathematical concepts to</li> </ul>	<ul style="list-style-type: none"> <li>- Use appropriate techniques, apparatus, and materials during laboratory work, paying attention to health and safety.</li> <li>- Identify anomalies and apply mathematical concepts to calculate means and uncertainty in repeated readings.</li> <li>- Present data using appropriate methods, including tables and graphs including straight and curved lines of best fit.</li> <li>- Recognise mathematical relationships, including directly proportional, inversely proportional, and linear.</li> <li>- Understand, use, and convert prefixed and SI units.</li> <li>- Complete calculations making use of standard form.</li> <li>- Apply mathematical</li> </ul>	<ul style="list-style-type: none"> <li>- Use models to develop understanding and an appreciation of how scientific thinking and theories develop over time.</li> <li>- Understand the limitations of scientific evidence.</li> <li>- Understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</li> <li>- Present data using appropriate methods, including tables and graphs including straight lines of best fit.</li> <li>- Understand, use, and convert prefixed and SI units.</li> <li>- Complete calculations making use of standard form.</li> <li>- Understand, use, and convert non-SI</li> </ul>	
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	<ul style="list-style-type: none"> <li>-Interpret data to draw accurate conclusions.</li> <li>- make use physical representations of abstract concepts to solve problems (Fleming’s left hand law)</li> </ul>	<ul style="list-style-type: none"> <li>to calculate relevant physical quantities.</li> <li>- Make predictions using scientific knowledge and understanding.</li> <li>- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables.</li> <li>- Make and record observations and measurements using a range of methods; and evaluate the reliability of methods and suggest possible improvements.</li> <li>-Interpret data to draw accurate conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>substitute in/ rearrange equations to calculate relevant physical quantities.</li> <li>- Make predictions using scientific knowledge and understanding.</li> <li>- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables.</li> <li>- Make and record observations and measurements using a range of methods; and evaluate the reliability of methods and suggest possible improvements.</li> <li>-Interpret data to draw accurate conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>concepts to substitute in/ rearrange equations to calculate relevant physical quantities.</li> <li>- Make predictions using scientific knowledge and understanding.</li> <li>- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables.</li> <li>- Make and record observations and measurements using a range of methods; and evaluate the reliability of methods and suggest possible improvements.</li> <li>-Interpret data to draw accurate conclusions.</li> </ul>	<ul style="list-style-type: none"> <li>units (AU, lightyear, parsec).</li> <li>- Apply mathematical concepts to substitute in/ rearrange equations to calculate relevant physical quantities.</li> <li>- Interpret data to draw accurate conclusions.</li> </ul>	
<b>Assessment</b>	End of Unit assessment (MCQ/short answer/long answer) with interleaved content from previous units					