



## Curriculum Map

Subject: Combined Science - Physics

Year Group: 11

	Autumn 1/Autumn 2	Autumn 2	Autumn 2/Spring 1	Spring 2	Summer
<b>Content</b>	<p><b>1 Review of Year 10 topics</b></p> <p><b>2 Conservation of Energy</b> Energy stores and systems -Changes in energy -Energy changes in systems -Power -Conservation and dissipation of energy -Efficiency</p>	<p><b>Electric Circuits</b> 1.circuit symbols and diagrams 2. series circuits 3. parallel circuits 4. Electric current 5. Potential difference and resistance 6. Resistance RP 7. Resistors in series and parallel RP 8. Thermistors and LDR's 9.IV characteristics RP</p>	<p><b>1 Electricity at Home</b> The difference between alternating current and direct current What is meant by the live wire and the neutral wire in a mains circuit The colours of live, neutral and mains circuits fuses</p> <p><b>2 Radioactivity</b> 1.The discovery of the nucleus 2. Discovery of protons, neutrons and electrons 3. Alpha, Beta and Gamma 4. Activity and half-life 5 Nuclear issues</p>	<p><b>Electromagnetism</b> 1.Permanent and induced magnetism, magnetic forces and fields 2.Magnetic fields 3.Electromagnetism 4.Fleming's left-hand rule 5.Electric motors</p>	<b>Review and Revise</b>
<b>Skills</b>		<p><b>Equation application</b> Recall and apply equations for; charge flow, Ohm's Law, resistance in series and parallel circuits, power, energy transferred.</p> <p><b>Practical Experiments</b> 1. To determine how length of a wire</p>	<p>Equation application 1. Students should be able to calculate alpha decay and beta decay 2.Students should be able to calculate half-life of a substance</p>	<p>Equation application 1.Students should be able to apply the equation for force = magnetic flux density <math>\times</math> current <math>\times</math> length 2.students should be able to calculate the ratio of the potential differences across the primary and secondary coils of a transformer <math>V_p</math> and <math>V_s</math> depends on the ratio of</p>	

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		<p>affects its resistance</p> <p>2. To investigate the effect of adding resistors in series and parallel</p> <p>3. To investigate the IV characteristics of some devices.</p>		the number of turns on each coil, $n_p$ and $n_s$ .	
<b>Key questions</b>	<p>In which ways can energy be stored?</p> <p>How is energy stored and transferred?</p> <p>What is conservation of energy?</p> <p>What is 'work' in physics, how is it related to energy and how can it be calculated?</p> <p>What is useful energy, what is wasted energy, and how is energy dissipated?</p> <p>How is efficiency calculated?</p> <p>What is power and how is it calculated?</p>	<p>What is an electric current?</p> <p>What is potential difference and what is resistance?</p> <p>How are series circuits and parallel circuits different?</p> <p>What are the characteristics of different circuit components?</p>	<p>What is the difference between direct current and alternating current?</p> <p>What is the National Grid?</p> <p>How do you wire a plug?</p> <p>What is the relationship between power and energy?</p> <p>How can we apply our understanding of efficiency to the home?</p> <p>What are radioactive sources?</p> <p>What are the different types of radiation and what are their properties?</p> <p>How was the nuclear model of the atom established and accepted?</p> <p>What happens during radioactive decay?</p> <p>What uses and what dangers do radioactive substances have?</p>	<p>What is induced magnetism?</p> <p>What is an electromagnet?</p> <p>What is the motor effect?</p>	

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			What is half life and how can it be determined?		
<b>Assessment</b>	Formative 'low stakes' assessments to take place more frequently throughout the term. This could be in the form of a range methods: <ul style="list-style-type: none"> <li>• Quiz</li> <li>• Homework task</li> <li>• Microsoft Forms short tests</li> <li>• In class short tests</li> <li>• Questions and answer sessions</li> <li>• Spelling tests</li> <li>• Group work tasks</li> <li>• Peer assessments</li> <li>• Literacy and numeracy activities</li> <li>• End of term summative assessments</li> <li>• PPE</li> <li>• GCSE exams</li> </ul>				
<b>Literacy/ Numeracy/ SMSC/ Character</b>	Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically. Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically.		Using scientific models to explain physical phenomena. Applying scientific understanding to real world examples. Using scientific equations to carry out calculations. Plotting graphs and bar charts. Interpreting data presented graphically. Using standard form confidently.		Using past exam papers to develop exam technique. Learning to correct common mistakes in written work and in calculations. Writing out all of your working in calculations.