



Curriculum Map: Year 10 Subject: GCSE Physics (Separate Science) Exam Board: AQA

<b>Topic</b>	<b>Key Knowledge</b> <i>What will all students KNOW by the end of the topic?</i>	<b>Key Skills</b> <i>What key skills will be learnt/developed by the end of the topic? What will all students be able to DO by the end of the topic?</i>	<b>Assessment Opportunities</b> <i>What are the key pieces of assessment? How will students be assessed?</i>
<b>Atomic Structure</b>	<ul style="list-style-type: none"> <li>- Recap of atoms &amp; isotopes (from start of Year 9 Chemistry &amp; end of year 9 Physics)</li> <li>- Radioactive decay &amp; nuclear radiation</li> <li>- Nuclear equations</li> <li>- Half-lives</li> <li>- Contamination, irradiation &amp; their hazards</li> <li>- Hazards &amp; uses of radioactive emissions</li> <li>- Background radiation</li> <li>- Nuclear fission &amp; fusion</li> </ul>	<ul style="list-style-type: none"> <li>- Recall key terminology including the nature of alpha, beta &amp; gamma decay</li> <li>- Balance nuclear equations</li> <li>- Use graphs &amp; calculations in relation to half-lives</li> <li>- Interpretation of data &amp; application of knowledge to problem solving</li> <li>- Apply their knowledge of nuclear radiation to evaluate the best source of radiation to use in a given situation</li> <li>- Evaluate the perceived risk of using nuclear radiations in relation to given data</li> </ul>	<ul style="list-style-type: none"> <li>- Analysis of practical results</li> <li>- PPQ</li> <li>-Homework</li> <li>- Half life modelling and graph interpretation</li> <li>- Graph analysis</li> <li>- starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval</li> <li>- PPQ</li> <li>-AfL throughout lessons</li> <li>- Homework Tasks</li> <li>- Analysis of Risk with Nuclear Forces</li> <li>-Assessment 1</li> <li>-Assessment 2</li> <li>-Mocks</li> </ul>
<b>Electricity</b>	Recap of Current Electricity, Resistance from Year 9 <ul style="list-style-type: none"> <li>- Series &amp; parallel circuits</li> <li>- Required practical 4 – IV graphs (in 3 parts – resistor, filament lamp &amp; diode)</li> <li>- Ohm’s law &amp; resistance</li> <li>- Thermistors &amp; LDRs</li> <li>- Mains electricity &amp; the National Grid</li> <li>- Transferring energy &amp; power</li> </ul>	<ul style="list-style-type: none"> <li>-Building simple circuits</li> <li>- Calculations involving current, energy, charge, p.d. &amp; time</li> <li>- Use of models to understand the unobservable</li> <li>- Building more complex circuits &amp; taking measurements</li> <li>-Plot and draw appropriate graphs selecting appropriate scales for the axes.</li> </ul>	<ul style="list-style-type: none"> <li>- Analysis of practical results</li> <li>- PPQ</li> <li>- Required Practical Skills</li> <li>- Graph analysis</li> <li>- starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval</li> <li>- PPQ</li> </ul>

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	<ul style="list-style-type: none"> <li>- Static charge</li> <li>- Electric fields</li> </ul>	<ul style="list-style-type: none"> <li>- Lines of best fit</li> <li>- Method writing and identifying variables</li> <li>- Linking ideas between forces and Electric Fields</li> <li>- Linking to Magnets from KS3</li> </ul>	<ul style="list-style-type: none"> <li>- AfL throughout lessons</li> <li>- Homework Tasks</li> <li>- Calculation Questions</li> <li>- Assessment 1</li> <li>- Assessment 2</li> <li>- Mocks</li> <li>- Required Practical 4- Resistance of Components</li> </ul>
<b>Energy</b>	<ul style="list-style-type: none"> <li>- Calculations using work done, GPE, KE and EPE equations</li> <li>- Energy as a quantity that can be calculated</li> </ul>	<ul style="list-style-type: none"> <li>- Use of increasingly complex formulae in calculations (e.g. squared terms)</li> <li>- Calculations involving rearranging (now including the need to use the square-root function)</li> <li>- Use of correct units</li> </ul>	<ul style="list-style-type: none"> <li>- starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval</li> <li>- PPQ</li> <li>- AfL throughout lessons</li> <li>- Homework Tasks</li> <li>- Calculation for GPE, KE and EP</li> <li>- Assessment 1</li> <li>- Assessment 2</li> <li>- Mocks</li> </ul>
<b>Particle Model of Matter</b>	<ul style="list-style-type: none"> <li>- Using the particle model of matter explain motion of particles in a gas.</li> <li>- How gases exert forces on the walls of their containers.</li> <li>- How changing the temperature of a gas affects the pressure exerted</li> <li>- How changing the pressure of a gas affects the volume of the gas (and vice versa).</li> <li>- How pressure and volume of a gas are linked. (Boyle's Law)</li> <li>- Work done on a gas and the change in internal energy caused</li> </ul>	<ul style="list-style-type: none"> <li>- Graph plotting and choice of appropriate scale (e.g. y axis does not need to start at 0)</li> <li>- Explanatory answers needing to be in appropriate depth for the number of marks on offer</li> </ul>	<ul style="list-style-type: none"> <li>- Analysis of practical results</li> <li>- PPQ</li> <li>- Homework</li> <li>- Modelling and graph interpretation</li> <li>- Graph analysis</li> <li>- starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval</li> <li>- PPQ</li> <li>- AfL throughout lessons</li> <li>- Homework Tasks</li> </ul>

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			<ul style="list-style-type: none"> <li>-Assessment 1</li> <li>-Assessment 2</li> <li>-Mocks</li> </ul>
<b>Electromagnetism</b>	<ul style="list-style-type: none"> <li>- Permanent and induced magnetism</li> <li>- Poles of a magnet</li> <li>- Magnetic forces &amp; fields</li> <li>- Electromagnetism &amp; its uses</li> <li>- Force on a current carrying conductor &amp; the motor effect</li> <li>- Fleming’s left-hand rule</li> <li>- Use of the motor effect in electric motors</li> <li>- Use of the motor effect in loudspeakers &amp; headphones</li> <li>- Induced potential &amp; the generator effect</li> <li>- Use of then generator effect in alternators &amp; dynamos</li> <li>- Use of the generator effect in microphones &amp; headphones</li> <li>- Use of the generator effect in transformers</li> <li>- The structure of step-up &amp; step-down transformers</li> <li>- The relationship between number of turns and p.d. for step-up &amp; step-down transformers</li> </ul>	<ul style="list-style-type: none"> <li>- (describe) how to plot the magnetic fields pattern of a magnet using a compass</li> <li>- describe how the magnetic effect of a current can be demonstrated</li> <li>- interpret diagrams of electromagnetic devices in order to explain how they work</li> <li>- Use Fleming’s left-hand rule to determine the direction of the force, current or magnetic field given the direction of the other two</li> <li>- Application of the motor effect to new experimental arrangements</li> <li>- Connections to Topic 2 (Electricity), Topic 5 (Newton’s Laws subtopic) &amp; Topic 6 (Sound subtopic) to explain how the motor effect is used to convert variations in current in electrical circuits to pressure variations in sound waves</li> <li>- Apply the principles of the generator effect in a given context</li> <li>- Connections to Topic 2 (Electricity), Topic 5 (Newton’s Laws subtopic) &amp; Topic 6 (Sound subtopic) to explain how the generator effect is used to convert pressure variations in sound waves into variations in current in electrical circuits</li> <li>- Connections to Topic 2 (Electricity) and power transfer in transformers</li> </ul>	<ul style="list-style-type: none"> <li>- Analysis of practical results</li> <li>- PPQ</li> <li>-Homework</li> <li>- Ray Diagrams</li> <li>- Graph analysis</li> <li>- starter tasks interleaving previous knowledge from last lesson/ year 9 content retrieval</li> <li>- PPQ</li> <li>- Calculations of Uncertainty</li> <li>-AfL throughout lessons</li> <li>- Homework Tasks</li> <li>-Assessment 1</li> <li>-Assessment 2</li> <li>-Mocks</li> <li>- Motor Effect Practical</li> </ul>
<b>Space -Summer Work</b>	<ul style="list-style-type: none"> <li>Our solar system</li> <li>- The lifecycle of a star &amp; formation of the elements</li> </ul>	<ul style="list-style-type: none"> <li>- Connection to Atomic Structure and fusion</li> </ul>	<ul style="list-style-type: none"> <li>-Marking of Research and Tasks carried out at home.</li> </ul>

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	<ul style="list-style-type: none"><li>-Orbital motion, natural and artificial satellites</li><li>- Red-shift &amp; its support of the Big Bang theory</li></ul>	<ul style="list-style-type: none"><li>- Explain how fusion processes lead to the formation of new elements</li><li>- Connection to Forces (Newton's Laws) to explain the equilibrium between the gravitational collapse of a star and the expansion of a star due to fusion energy</li><li>- Connection to Forces to explain how for circular orbits the force of gravity can lead to changing velocity but unchanged speed</li><li>. - Connection to Waves to explain the observed increase in wavelength of light from galaxies that are moving away from the Earth</li></ul>	<ul style="list-style-type: none"><li>- Assessments</li><li>- PPQ</li><li>- Mocks</li></ul>
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