

Programme of study for Year 11 GCSE Physics

| Autumn (1 <sup>st</sup> term)  | Autumn (2 <sup>nd</sup> term)  | Spring (1 <sup>st</sup> term)  | Spring (2 <sup>nd</sup> Term)   | Summer (1 <sup>st</sup> term)   | Summer (2 <sup>nd</sup> term)                      |
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| <p>Topic:<br/><b>P15 Electromagnetism</b><br/>Lesson 1 – Magnetic fields</p> <p>Lesson 2 – Magnetic fields of electric currents</p> <p>Lesson 3 – Electromagnets in devices</p> <p>Lesson 4 – Practical</p> <p>Lesson 5 – The motor effect</p> <p>Lesson 6 – The generator effect</p> <p>Lesson 7 – The alternating-current generator</p> <p>Lesson 8 – Transformers</p> <p>Lesson 9 – Transformers in action</p> <p>Lesson 10 – Motion - Consolidate/assess</p> | <p>Topic:<br/><b>P8 Forces in balance</b><br/>Lesson 1 – Vectors and scalars</p> <p>Lesson 2 – Forces between objects</p> <p>Lesson 3 – Resultant forces</p> <p>Lesson 4 – Moments at work</p> <p>Lesson 5 – More about levers and gears</p> <p>Lesson 6 – Centre of mass</p> <p>Lesson 7 – Moments and equilibrium</p> <p>Lesson 8 – Parallelogram of forces</p> <p>Lesson 9 – Resolution of forces</p> <p><b>End of topic test</b></p> <p><b>P9 Motion</b><br/>Lesson 1 – Speed and distance-time graphs</p> | <p>Topic:<br/><b>P9 Motion</b></p> <p>Lesson 3 – Velocity-time graphs</p> <p>Lesson 4 – Velocity-time graphs continued</p> <p>Lesson 5 – Equations of motion (Higher Only)</p> <p>Lesson 6 – Motion - Consolidate/assess</p> <p><b>P11 Force and pressure</b><br/>Lesson 1 – Pressure and surface area</p> <p>Lesson 2 – Pressure in a liquid at rest</p> <p>Lesson 3 – Atmospheric pressure</p> <p>Lesson 4 – Upthrust and pressure</p> <p><b>End of topic test</b></p> <p>Skills(students should be able to do):</p> | <p>Topic:<br/>Revision for GCSE Physics exams.</p> <p>Skills(students should be able to do):<br/>AO1: Demonstrate knowledge and understanding of:<br/>1) scientific ideas<br/>2) scientific techniques and procedures<br/>AO2: Apply knowledge and understanding of:<br/>1) scientific ideas<br/>2) scientific enquiry, techniques and procedures.<br/>AO3: Analyse information and ideas to:<br/>1a) interpret<br/>1b) evaluate<br/>2a) make judgements<br/>2b) draw conclusions<br/>3a) develop experimental procedures<br/>3b) improve experimental procedures</p> | <p>Topic:<br/>Revision for GCSE Physics exams.</p> <p>Skills(students should be able to do):<br/>AO1: Demonstrate knowledge and understanding of:<br/>1) scientific ideas<br/>2) scientific techniques and procedures<br/>AO2: Apply knowledge and understanding of:<br/>1) scientific ideas<br/>2) scientific enquiry, techniques and procedures.<br/>AO3: Analyse information and ideas to:<br/>1a) interpret<br/>1b) evaluate<br/>2a) make judgements<br/>2b) draw conclusions<br/>3a) develop experimental procedures<br/>3b) improve experimental procedures</p> | <p>Topic:<br/>Revision for GCSE Physics exams.</p> |

**End of topic test**

Lesson 2 – Velocity and acceleration

AO2: Apply knowledge and understanding of:  
1) scientific ideas

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| <p>Skills(students should be able to do):<br/>AO1: Demonstrate knowledge and understanding of:<br/>1) scientific ideas<br/>2) scientific techniques and procedures</p> | <p>Skills(students should be able to do):<br/>AO3: Analyse information and ideas to:<br/>1a) interpret<br/>1b) evaluate<br/>2a) make judgements<br/>2b) draw conclusions<br/>3a) develop experimental procedures<br/>3b) improve experimental procedures</p> | <p>2) scientific enquiry, techniques and procedures.</p> |  |  |  |
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**Building understanding: Rationale / breakdown for your sequence of lessons:**

The inclusion of "The electromagnetic spectrum" provides students with a broader understanding of the various types of electromagnetic waves and their applications in different areas of science and technology.

In physics, the topic sequence continues with "Forces in balance," which introduces students to the concept of forces and their equilibrium. This topic lays the foundation for understanding the principles of motion and force that follow. This builds on their knowledge from KS3 on the big idea of forces. The subsequent topic, "Motion," allows students to explore the kinematics of objects, including the study of velocity, acceleration, and forces acting on moving objects. This topic provides a solid understanding of the fundamental concepts of physics.

Moving on to "Force and motion," then "force and pressure" students delve into Newton's laws of motion and the relationships between forces, mass, and acceleration. This topic allows students to apply their understanding of forces and motion to real-world scenarios.

**Home – Learning:**

Teachers will set home learning using lesson materials. Some of these will be assessed. This will be indicated.

**Reading / literacy:**

Students are encouraged to prior reading on topics. In lessons students are taught how to construct answers through use of writing frames and exemplar answers where extended writing is required and command words and keywords that are relevant to the topic are consistently assessed in lessons through questioning and written question practice.

**Numeracy:**

- Recognise and use expressions in decimal form: Recognise and use expressions in standard form; Use ratios, fractions and percentages; Make

estimates of the results of simple calculations

- Handling data: Use an appropriate number of significant figures; Find arithmetic means; Construct and interpret frequency tables and diagrams, bar charts and histograms; Make order of magnitude calculations
- Algebra: Understand and use the symbols: =, <>, >,  $\propto$ ,  $\sim$ ; Change the subject of an equation; Substitute numerical values into algebraic equations using appropriate units for physical quantities
- Graphs: Translate information between graphical and numeric form; Understand that  $y = mx + c$  represents a linear relationship; Plot two variables from experimental or other data; Determine the slope and intercept of a linear graph; Draw and use the slope of a tangent to a curve as a measure of rate of change
- Geometry and trigonometry: Visualise and represent 2D and 3D forms including two dimensional representations of 3D objects; Calculate areas of triangles and rectangles, surface areas and volumes of cubes

Enrichment / opportunities to develop cultural capital (including careers, WRL and SMSC):

- Trips during science week
- Science week
- Science club
- STEM club