Programme of study for year 10 GCSE Physics

Autumn (1st term)	Autumn (2nd term)	Spring (1st term)	Spring (2nd Term)	Summer (1st term)	Summer (2nd term)
Topic: **P5 Electricity in the home** Lesson 1 – Alternating current Lesson 2 – Cables and plugs Lesson 3 – Electrical power and potential difference Lesson 4 – Electrical currents and energy transfer Lesson 5 – Appliances Lesson 6 – efficiency **P4 Electricity** Lesson 7 – Static and charge (Triple Only) Lesson 8 – Electric fields (Triple Only) Lesson 9 – Consolidate /assess **End of topic test** **P8 Forces in balance** Lesson 1 – Vectors and Scalars	Topic **P8 Forces in balance** (continued) Lesson 7 – Moments (Triple Only) Lesson 8 - More about levers and gears (Triple Only) Lesson 9 - Consolidate /assess **P9 Motion** Lesson 1- Speed and distance/time graphs Lesson 2 - Velocity and acceleration Lesson 3 - Velocity time graphs Lesson 4 - Velocity time graphs continued Lesson 5 - Equations of motion (Higher Only) Lesson 6 - Consolidate/assess **End of topic test** **P10 Forces and Motion**	Topic: **P10 Forces and Motion** (continued) Lesson 5 - Forces and elasticity Lesson 6 - Impact Forces (Triple Only) Lesson 7 - Safety First (Triple Only) Lesson 8 – Consolidate /assess **End of topic test** **P11 Forces and pressure** Lesson 1 - Pressure and surfaces Lesson 2 - Pressure in a liquid at rest Lesson 3 - Atmospheric pressure Lesson 4 - Upthrust and flotation Lesson 5 - Consolidate/assess	Topic: **P7 Radioactivity** (continued) Lesson 6 – Nuclear radiation in medicine Lesson 7 – Nuclear fission Lesson 8 – Nuclear fusion Lesson 9 – Nuclear issues Lesson 10 – Consolidate /assess **End of topic test** **P12 Wave** Lesson 1 – The nature of waves Lesson 2 – The properties of waves Lesson 3 – Wave practical **Year group Test**	Topic: **P12 Wave** (continued) Lesson 4 – Reflection and refraction Lesson 5 – More about waves Lesson 6 – Sound waves Lesson 7 – The uses of ultrasound Lesson 8 – Seismic waves Lesson 9 – Waves Consolidate /assess **End of chapter assessment**	Topic:

Lesson 2 – Forces between objects Lesson 3 – Resultant forces Lesson 4 – Centre of mass Lesson 5-Parallelogram of forces (Higher Only) Lesson 6 – Resolution of forces (Higher Only)	Lesson 1 – Force and acceleration Lesson 2 - Weight and terminal velocity Lesson 3 – Forces and braking Lesson 4 – Momentum (Higher Only)	**P7 Radioactivity** Lesson 1 – Atoms and radiation Lesson 2 - Discovery of the nucleus Lesson 3 - Nuclear reactions Lesson 4 - More about alpha beta gamma Lesson 5 - Activity and half life			

Skills (students should be able to do): AO1: Demonstrate knowledge and understanding of: 1) scientific ideas scientific techniques and procedures	Skills (students should be able to do): AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures	Skills (students should be able to do): AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions	Skills (students should be able to do): AO2: Apply knowledge and understanding of: 1) scientific ideas 2) scientific enquiry, techniques and procedures.	Skills (students should be able to do): AO1: Demonstrate knowledge and understanding of: 1) scientific ideas 2) scientific techniques and procedures AO2: Apply knowledge and understanding of: 1) scientific ideas scientific enquiry, techniques and procedures.	Skills (students should be able to do): AO3: Analyse information and ideas to: 1a) interpret 1b) evaluate 2a) make judgements 2b) draw conclusions 3a) develop experimental procedures 3b) improve experimental procedures Revision and review for linear **end of year exam**:

Building understanding: Rationale / breakdown for your sequence of lessons:

In physics, the topic sequence begins 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," 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.

The topic "Radioactivity" introduces students to the concept of nuclear physics, including the properties and behaviour of radioactive materials. This topic connects with chemistry through the study of nuclear reactions and their applications, such as in medicine and energy production.

The final topic in physics, "Waves" and "The electromagnetic spectrum," explores the behaviour and properties of waves, including light and sound waves. This topic allows students to make connections between physics and other disciplines, such as optics in biology and the use of electromagnetic waves in communication technology.

If time allows, 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.

Home – Learning:

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

Reading / High Quality Text:

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: =, <>, >, ∝ , ~ ;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