KS4 Science – Physics

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Curriculum Intent:
Science has massive impact on society and is vital to the world's future prosperity. At Forge Valley all pupils are taught to appreciate the achievements of science and to develop their curiosity and excitement about the natural world.
We aim to provide all pupils with a high challenge, high-quality science education that provides the foundations for understanding the world through the specific disciplines of Biology, Chemistry and Physics. We will do this by embedding a culture of confidence and mastery underpinned by scientific enquiry and by building up a body of key foundational knowledge and concepts. Pupils will be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, analyse causes, as well as to develop their ability to see connections between science subject areas. Our pupils will develop an in depth understanding of the world around them and will appreciate how major scientific ideas have played a vital role in society, preparing them for life in an increasingly scientific and technological world.

	Core Knowledge		Procedural Knowledge
	Y10 Topics	Y11 Topics	Pupils will
Autumn Half Term 1	Energy Fundamentals	Combined: Energy Calculations Triple: Waves	• Use scientific theories and explanations to develop hypotheses. • Plan experiments or devise procedures to make observations, produce or characterise a substance, test hypotheses, check data or explore phenomena. • Apply a knowledge of a range of techniques, instruments, apparatus, and materials to select those appropriate to the experiment. • Carry out experiments appropriately having due regard for the correct manipulation
Autumn Half Term 2	The structure of Atom	Combined: Forces and Elasticity Triple: EM Waves	
Spring Half Term 1	Motion	Combined: Momentum and Stopping Triple: Space	
Spring Half Term 2	Forces	Combined: Electromagnetism Triple: Electromagnetism	

Summer Half Term 1	Particle model of matter	Revision and Exam Preparation	of apparatus, the accuracy of measurements and health and safety considerations. • Make and record observations and measurements using a range of apparatus and methods. • Evaluate methods and suggest possible improvements and further investigations.
Summer Half Term 2	Combined: Waves Triple: Momentum	Revision and Exam Preparation	

Homework:
Homework is set on Bromcom. An Educake quiz is set on a weekly basis. Each quiz should take 15-20 minutes to complete. Every quiz has support material to aid pupils. The expectation is that pupils repeat the quiz until they achieve at least 70%. Each quiz is designed to consolidate learning from lessons.

Assessment:
In Y10, there are also two assessment weeks. The November exam will cover Y9 content – Electricity, energy resources and particle model of matter, and the exam in April will be a full AQA GCSE Physics Paper 1 Topics 1-4: Energy; Electricity; Particle model of matter; and Atomic structure.

In Y11, there are also two assessment weeks.
The October exam will be a full AQA GCSE Physics or Combined Science: Trilogy paper 1.

- Physics Paper 1: Topics 1-4: Energy; Electricity; Particle model of matter; and Atomic structure.
- Combined Paper 1: Topics 18–21: Energy; Electricity; Particle model of matter; and Atomic structure

The February exam will be a full AQA GCSE Physics or Combined Science: Trilogy paper 2.

- Physics Paper 1: Topics 5-8: Forces; Waves; Magnetism and electromagnetism; and Space physics
- Combined Paper 1: Topics 22–24: Forces; Waves; and Magnetism and electromagnetism

Links to Personal Development:

- Risk assessments: Enabling students to recognise risks to their own wellbeing.
- Social development: Practise using a range of social skills in different situations.
- Teamwork and communication: Completing practical work in pairs whereby pupils will need to work together and delegate tasks
- Problem-solving and critical thinking: Completing multi-step calculations from a range of topic areas and using information to determine unknowns

- Diversity: Opportunities to recognise the contributions that physicists and engineers have had from a range of backgrounds have contributed to the knowledge base that we use today
- Careers: Linking topic areas to the wide range of careers and academic pathways that Physics can lead towards

How is my knowledge further developed in Key Stage 5?

GCSE Physics provides an excellent foundation for A-Level Physics. GCSE Physics builds on the core knowledge at KS3 and allows pupils to add layers of understanding and complexity to access the KS5 course. A-Level Physics continues to build on GCSE knowledge as we continue to explore and add depth to topics that have already been studied such as forces, electricity and waves as well as discovering new knowledge such as quantum physics and fields. The practical skills introduced at KS4 will be further honed at KS5 allowing for an extra qualification that assesses practical competency