

YEAR 10 PHYSICS CURRICULUM PROGRESSION OVERVIEW

Science is changing our lives and is vital to the world's future prosperity, and all students should be taught essential aspects of the knowledge, methods, processes and uses of science. They should be helped to appreciate the achievements of science in showing how the complex and diverse phenomena of the natural world can be described in terms of a number of key ideas relating to the sciences which are inter-linked, and which are of universal application.

	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	4.1 Energy	4.3 Particle Model of Matter	4.2 Electricity	4.2 Electricity	4.4 Atomic Structure	4.6 Waves
Core Knowledge/ Threshold Concept	4.1.1 Energy changes in a system & the ways energy is stored before & after such changes 4.1.2 Conservation & dissipation of energy 4.1.3 National & global energy resources	4.3.1 Changes of state & the particle model 4.3.2 Internal energy & energy transfers 4.3.3 Particle model & pressure	4.2.1 Current, potential difference & resistance 4.2.2 Series & parallel circuits	4.2.3 Domestic uses and safety 4.2.4 Energy transfers 4.2.5 Static electricity	4.4.1 Atoms and isotopes 4.4.2 Atoms & nuclear radiation 4.4.3 Hazards and uses of radioactive emissions and of background radiation 4.4.4 Nuclear fission and fusion	4.6.1 Waves in air, fluids & solids 4.6.2 Electromagnetic waves 4.6.3 Black body radiation
Why this learning now?	Topics are fundamental to understanding Science and follow from prior learning	Crucial knowledge builds on fundamental concepts, i.e. apply knowledge of atoms to properties of solids, liquids and gases and the way that energy changes between them.	Crucial knowledge builds to cover more conceptually difficult aspects such as electricity in Physics.	Topics build in difficulty. The electricity covered here, recaps useful energy calculations first built upon in Autumn Term 1	Topics build in difficulty and continue to apply crucial knowledge. Pupils recap their learning from Chemistry Term 1 by looking at the atom in Physics.	Paper 2 content is started. Starting with waves.
Assessment Opportunities:	<ul style="list-style-type: none"> ➤ Recall starter activities (crucial knowledge) ➤ AFL in lessons ➤ End of topic tests & exam questions (develop exam skills) 					

	➤ Standardised block test (Oct) with synoptic content.	➤ Re-test for underperforming students (Nov)	➤ Standardised block test (Jan) with synoptic content.	Re-test (Feb/Mar)	➤ Standardised block test (Apr) with synoptic content.	➤ Full Mock Paper 1 Exam (Jun)
Learning at Home	<ul style="list-style-type: none"> ➤ Exam questions ➤ Online learning (SENECA, MyGCSEScience, YouTube, etc.) ➤ Recall activities (quizzes, revision tasks, etc.) 					
Key Vocabulary	Energy, Insulation, Power, Renewable	Density, Specific Heat Capacity	Current, Potential difference, Resistance, Series	Fuse, Charge, Power	Atom, Isotope, Radioactive decay, Fission, Fusion	Amplitude, Frequency, Refracted, Transverse
Spiritual, Moral, Social and Cultural concepts covered	<p>The aims of the National Curriculum in Science are to develop scientific knowledge and conceptual understanding, follow the scientific process to answer questions about the world to equip pupils with the knowledge required to understand the uses and implications of science. There SMSC is covered in a variety of contexts throughout the teaching order.</p> <p>Spiritual: Big Bang Theory Moral: Pollution, Fossil fuels, Nuclear fuels Social: Electromagnetic waves for communication, Fossil fuels, Nuclear power Cultural: Contributions of scientists, Star formation</p>					
Links to careers and the world of work	<p>Staff will regularly link the learning in lessons to real-life contexts in order to engage and enthuse the pupils. For example, in Physics the students will discuss how components are used in household items and how plugs and the National Grid function.</p>					

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	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Topic	4.5 Forces	4.5 Forces	4.5 Forces	4.7 Magnetism & Electromagnetism	Synoptic Content & Exam Skills	Synoptic Content & Exam Skills
Core Knowledge/ Threshold Concept	4.5.6 Forces & motion 4.5.1 Forces & their interactions	4.5.4 Moments, levers and gears 4.5.5 Pressure and pressure differences in fluids	4.5.2 Work done & energy transfer 4.5.3 Forces & elasticity 4.5.7 Momentum	4.7.1 Permanent & induced magnetism, magnetic forces & fields 4.7.2 The motor effect 4.7.3 Induced potential, transformers and the National Grid 4.8 Space physics	Synoptic Content & Exam Skills	Synoptic Content & Exam Skills
Why this learning now?	Topics build on prior learning from Year 10 and are consolidated to allow progression onto more challenging knowledge and application	Crucial knowledge builds on fundamental concepts. In Physics, fundamental concepts in forces are introduced which will be applied later in the year.	Crucial knowledge builds to cover more conceptually difficult aspects such as momentum.	Topics build in difficulty. The motor and generator effect is conceptually difficult, so taught as late as possible.	In this final term, the lessons are spent on review of key concepts and revision techniques ready for the GCSE exam.	
Assessment Opportunities:	<ul style="list-style-type: none"> ➤ Recall starter activities (crucial knowledge) ➤ AFL in lessons ➤ End of topic tests & exam questions (develop exam skills) 					
	➤ Full Mock Exam (Paper 1)	➤ Re-test for underperforming students (Nov)	➤ Mock Exam (Paper 1 & 2)	➤ Mock Exam (Paper 2)	➤ GCSE Exam	➤ GCSE Exam

Learning at Home	<p>Staff use a variety of resources including:</p> <ul style="list-style-type: none"> ➤ Exam questions ➤ Online learning (SENECA, MyGCSEScience, YouTube, etc.) ➤ Recall activities (quizzes, revision tasks, etc.) 					
Key Vocabulary	Acceleration, Displacement, Velocity, Inertia, Vector Quantity	Moment, lever, pressure	Extension, Stopping Distance	Electromagnet, Magnetic Field	n/a	n/a
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