

Physics Curriculum Map							
A. Formal Curriculum Key Stage 5							
Core Content & Skills		<p>By the end of key stage FIVE we want all students of Physics to know and do the following things: help students understand the increasingly complex world in which we live and to enable them to become informed about the technology in common use and the potential for future developments in their lifetime. Physics is a core component of the microscopic computing technologies and the macroscopic understanding of the universe. We want our students to be able to 'Think Like a Scientist'. We want our students to be able to follow experimental procedures as well as develop their own experimental procedures. Pupils should be competent in planning, conducting and evaluating a range of investigations. To be able to develop their understanding of particle physics, wave and optics, mechanics, materials, electricity, motion, fields and nuclear physics. We want our students to be able to apply the knowledge they have acquired to make sense of unfamiliar situations so that, in the future, they are able to overcome complex situations.</p>					
Prior Knowledge & Skills		<p>In KS5, students of Physics will build on the following prior learning: Students start in the lower school learning theory and carrying out the relevant practical tasks to consolidate or explore the concepts presented. We aim for small group work to ensure that confidence is built with the common pieces of equipment, and for equality of opportunity within the classroom environment. Preconceived ideas about Physics and its relevance to individuals are challenged. Throughout the GCSE course we aim to produce competent scientists who are comfortable with investigation equipment. We also aim to get them to see the common patterns in Physics and to develop their understanding of the links between the topics.</p>					
Future knowledge		<p>The Curriculum in KS5 Physics will prepare students for the following future learning:</p>					
Year 13	Key knowledge, skills and concepts TAUGHT, REVISED, REVISITED AND LEARNT	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		<p><u>Fields and their consequences.</u> The concept of field is one of the great unifying ideas in physics. The ideas of gravitation, electrostatics and magnetic field theory are developed within the topic to emphasise this unification. Many ideas from mechanics and electricity from earlier in the course support this and are further developed. Practical applications considered include: planetary and satellite orbits, capacitance and capacitors, their charge and discharge through resistors, and electromagnetic induction. These topics have considerable impact on modern society Coverage of gravitational, electric and magnetic fields, electromagnetic induction and capacitance.</p>		<p><u>Turning Points in Physics</u> This option is intended to enable key concepts and developments in physics to be studied in greater depth than in the core content. Students will be able to appreciate, from historical and conceptual viewpoints, the significance of major paradigm shifts for the subject in the perspectives of experimentation and understanding. Many present-day technological industries are the consequence of these key developments and the topics in the option illustrate how unforeseen technologies can develop from new discoveries.</p>			



	<p>This uses knowledge from their understanding of year 12 electric circuits as well as knowledge developed in KS3 and 4 about magnetism and electromagnetism. It links in to future learning in many fields of engineering and medicine.</p> <p><u>Thermal Physics</u></p> <p>This topic covers the thermal properties of materials, the properties and nature of ideal gases, and the molecular kinetic theory to be studied in depth. It develops knowledge of specific heat capacity and specific latent heat as well as the gas laws first encountered in KS4</p> <p><u>Nuclear Physics</u></p> <p>This section builds on the work of Particles and radiation to link the properties of the nucleus to the production of nuclear power through the characteristics of the nucleus, the properties of unstable nuclei, and the link between energy and mass. Students should become aware of the physics that underpins nuclear energy production and also of the impact that it can have on society. This also links back to the model of the atom and radioactivity that is studied in KS4</p>				
Key assessment points	<p>Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments</p>	<p>Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments</p>	<p>Year 13 mock exam Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test</p>	<p>Ongoing exam style questions Teacher Assessed Tasks</p>	



Year 12	Key knowledge, skills and concepts TAUGHT, REVISED, REVISITED AND LEARNT	Term 1 1. Particle Physics and radiation This topic focuses on 3 key aspects. Matter and Radiation, quarks and leptons and quantum phenoma. It involves revisiting and reviewing the particle model of matter that students were introduced to in ks 3 and that was developed in KS4 and then introducing them to more fundamental particles. It also develops their simple KS3/KS4 understanding of wave like behaviour and how particles can behave like waves. Additionally, the application of this knowledge is explored in terms of potential employment and the what benefits that researching relatively obscure scientific areas can bring as well as the need for scientists to work collaboratively. 2. Wave & Optics GCSE studies of wave phenomena are extended through a development of knowledge of the characteristics, properties, and applications of travelling waves and stationary waves. Topics treated include refraction (introduced in ks3), diffraction (introduced in KS4), superposition and interference.	Term 2 3. Mechanics and Materials Forces in Equilibrium, equations of uniform acceleration (SUVAT), motion graphs, Newton's laws of motion Vectors and their treatment are introduced followed by development of the student's knowledge and understanding of forces, energy and momentum. Develops knowledge of resolving two coplanar force to Investigation of the conditions for equilibrium for three coplanar forces acting at a point using a force board. 4. Electricity Electric Current and DC circuits. This section builds on and develops earlier study of these phenomena from GCSE. It provides opportunities for the development of practical skills at an early stage in the course and lays the groundwork for later study of the many electrical applications that are important to society.	Term 3 5. Mechanics and Materials Force and momentum, energy/power/work The section continues with a study of materials considered in terms of their bulk properties and tensile strength. As with earlier topics, this section (and also the following section Electricity provide a good starting point for students who prefer to begin by consolidating work from KS3 and 4). 6. Further mechanics Circular motion, simple harmonic motion	Term 4 	Term 5 	Term 6
	Key assessment points	Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments	Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments	Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments	Ongoing exam style questions Teacher Assessed Tasks End of Chapter test End of topic test Required practical assessments		
B. Holistic development via Enrichment/Personal Development Curriculum							





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HOLISTIC, ACADEMIC, EDUCATION
"Encouraging Excellence, Nurturing Talent"