



Thomas Mills
High School & Sixth Form

GCSE Physics Curriculum Intent Statement

At Thomas Mills High School, our GCSE Physics curriculum is designed to provide all pupils with a deep understanding of key physical principles, equipping them with the knowledge, skills, and confidence to explain the world around them. Following the OCR A specification, our curriculum builds upon prior learning, ensuring pupils develop scientific literacy and the ability to apply physics to real-world contexts.

Our intent is to:

Develop Scientific Knowledge and Understanding: We aim to ensure that pupils gain a thorough understanding of core physics topics, including forces, energy, waves, electricity, radioactivity, and space. These concepts are taught progressively, allowing pupils to make connections between topics and apply their knowledge to new and unfamiliar situations.

Enhance Mathematical, Problem-Solving, and Practical Skills: The study of Physics at GCSE level requires strong mathematical skills, including algebra, ratio, and graph work. We explicitly develop these skills alongside problem-solving strategies, enabling pupils to approach physics questions logically and systematically. Through required practicals and hands-on investigations, pupils refine their ability to design experiments, collect accurate data, and analyse results critically.

Prepare for A-Level and Beyond: Our curriculum ensures that pupils are well-prepared for further study in Physics and related disciplines, including engineering and other STEM fields. By emphasising the relevance of physics in modern technology and industry, we inspire pupils to appreciate its significance in shaping the future. Our focus on analytical thinking and scientific inquiry equips pupils with transferable skills that benefit them in further education and beyond.



Year 11			
Unit	Topic	Knowledge and Skills	Useful Links
1	P7: Energy	Knowledge and Understanding Pupils will explore the different types of energy stores and transfers, including kinetic, gravitational potential, elastic potential, and thermal energy. They will study the principles of conservation of energy and efficiency, learning how energy is dissipated in real-world applications. Power and energy calculations will be introduced, helping pupils understand how to quantify energy usage in appliances. We will also look at how energy transfer occurs in the context of our homes and how we can reduce energy loss. Skills Development Pupils will develop their ability to apply the principle of conservation of energy to real-world scenarios and analyse Sankey diagrams to determine energy efficiency. They will refine their mathematical skills by working with power, energy, and efficiency equations. Practical investigations will focus on measuring energy transfer and evaluating the efficiency of different devices.	Unit: Energy of moving particles KS4 Physics Oak National Academy Investigating the effectiveness of insulating materials - Energy: Video playlist - BBC Bitesize Unit: Energy of moving objects KS4 Physics Oak National Academy
Assessments		Standardised assessments: Topic Summary Check Lists – Pupils use these to review progress and self-reflect on content taught. Online Homework Tasks – Pupils have their own online account with EDUCAKE, and online learning platform. Mid Unit Assessment – An informal task that requires pupils to answer a series of questions in different styles, ranging from multiple choice, calculate and extended writing. End of Unit Test – Formal, in class, exam style assessment on content covered in this unit.	
2		Knowledge and Understanding	Lesson: Stopping (and estimating stopping distances) Higher



	P8: Global Challenges	Pupils will examine how physics is applied to global challenges such as climate change, space exploration, and energy security. They will study the forces involved in vehicle motion, including stopping distances, braking forces, and crash safety. Renewable and non-renewable energy resources will be examined, with a focus on the advantages, disadvantages, and environmental impact of different energy sources. The physics of space will be introduced, covering topics such as orbits, satellites, and the life cycle of stars. Skills Development Pupils will develop critical thinking skills by evaluating real-world case studies related to transport, energy use, and climate change. They will apply their knowledge of forces and motion to analyse stopping distances and safety features in vehicles. Mathematical skills will be strengthened through calculations involving gravitational fields, orbital motion, and atmospheric pressure.	OCR KS4 Physics Oak National Academy Lesson: Stopping safely Higher OCR KS4 Physics Oak National Academy Unit: Gravity in space KS4 Physics Oak National Academy Space - GCSE Physics (Single Science) - BBC Bitesize
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