



Year 11 Physics Curriculum Map

Overview	<p>Students gain insights into how forces affect everyday objects. Engineers analyse forces when designing a great variety of machines and instruments, from road bridges and fairground rides to atomic force microscopes. Recent developments in artificial limbs use the analysis of forces to make movement possible.</p> <p>We look at how waves shape our lives - waves carry energy from one place to another and can also carry information. Designing comfortable and safe structures such as bridges, houses and music performance halls requires an understanding of mechanical waves. Modern technologies such as imaging and communication systems show how we can make the most of electromagnetic waves.</p> <p>(Triple Physics only) Questions about where we are, and where we came from, have been asked for thousands of years. In the past century, astronomers and astrophysicists have made remarkable progress in understanding the scale and structure of the universe, its evolution and ours. New questions have emerged recently. 'Dark matter', which bends light and holds galaxies together but does not emit electromagnetic radiation, is everywhere – what is it? And what is causing the universe to expand ever faster?</p>					
Year 11	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	P9 Motion	P10 Force and motion P11 (Triple Physics only)	P12 Wave properties P13 Electromagnetic waves	P14 (Triple Physics only) P15 Electromagnetism	P16 Space (Triple Physics only)	Revision
Knowledge	4.5.6 Forces and motion	P10 4.5.1 Forces and their interactions 4.5.3 Forces and elasticity 4.5.6 Forces and motion 4.5.7 Momentum (HT only) P11 4.5.5 Pressure and pressure differences in pressure (physics only)	4.6.1 Waves in air, liquids and solids 4.6.2 Electromagnetic waves 4.5.6.1.2 Speed	P14 4.6.1 Waves in air, liquids and solids 4.6.2 Electromagnetic waves P15 4.5.1.2 Contact and non-contact forces 4.7.1 Permanent and induced magnetism, magnetic forces and fields 4.7.2 The motor effect 4.7.3 Induced potential, transformers and the National Grid (physics only) (HT only)	4.8.1 Solar system; stability of orbital motions; satellites (physics only) 4.8.2 Red-shift (physics only)	

<p>Skills</p>	<p>Plot and interpret a distance-time graph. Make calculations of speed using a range of units. Plot and interpret a speed-time graph.</p>	<p>Explain, in terms of force, why the atmosphere exerts a pressure. Describe how and why the pressure in a fluid is related to depth.</p>	<p>Use equations for wave speed. Explain why waves are reflected and refracted. Describe how ultrasound waves are used to detect structure that we cannot see. Describe how and seismic waves are used to detect structure that we cannot see.</p>	<p>P14 Recall the electromagnetic spectrum, some of their uses and dangers, and calculate their frequencies and wavelengths. Explain what is meant by radiation dose, and how we minimise risk. Describe how radio waves are produced and detected, and how they can be changed to carry information. P15 Explain how the shape of a magnetic field explains why magnets attract or repel. Describe what affects the magnetic field pattern near a wire, and what affects the strength of a solenoid. Describe how motors, generators, loudspeakers, and microphones work.</p>	<p>Describe how the Solar System was formed. Describe the lifecycle of the Sun and more massive stars. Explain the effect of gravity on objects in orbit. Describe the evidence for the Big Bang and evaluate models of the Universe.</p>	
----------------------	--	--	--	--	---	--