



Curriculum Map



Subject: Science - PHYSICS

Year group: 11

	Autumn 1	Autumn 2 + Spring 1	Spring 1 + 2	Summer 1
Content <i>Declarative Knowledge – ‘Know What’</i>	Phy 6: Properties of electromagnetic waves. Reflection and refraction of waves at media boundaries. Measuring speed, wavelength, amplitude and frequency of waves. Characteristics of all parts of the electromagnetic spectrum – frequency, wavelength, uses and dangers. Use of waves to detect structures: ultrasound, echo sounding and seismic waves. How lenses work. Transverse and longitudinal waves.	Phy 7: How a motor works and is used. The function of a commutator. Direct and alternating currents are produced in generators. How step-up and step-down transformers change the potential difference of an alternating current. How transformers are used to supply energy efficiently. Properties of magnetic materials. The magnetic effect of a current through a wire.	Phy 8: Constituent parts of our solar system. Fusion in stars leading to formation of new elements. Life cycle of stars. Observation of movement in space of: moons, satellites and universe expansion. Measurement and implications of red-shift. Limits of our own understanding of the universe: dark matter and dark energy. Relative movement of the Earth creates days, seasons.	
Skills <i>Procedural Knowledge – ‘Know How’</i>	How to draw ray diagrams showing the formation of images by lenses. Measure the wavelength, frequency and speed of waves in water and solid. Measure the reflection of light by different types of surface and refraction of light by different substances. Surface determines amount of infra-red radiation radiated or absorbed. Eyes and cameras use lenses to form images.	The National grid supplies reliable energy. Make an electromagnet and vary its' strength.	Measuring distances and time in space: light years, parsecs. Determine force of gravity.	
Key Questions	What are the different parts of the electromagnetic spectrum? What are their respective wavelengths? Frequencies? Uses? Dangers? What happens to waves at media boundaries? How do we measure this? Use these features?	Why does the National Grid transfer energy at High Voltage? How do we determine field direction? Current? Movement? In an electric motor? Generator?	What is red-shift and what does it provide evidence of? How is our solar system structured? What are the sequences of different size stars? How do days and seasons occur?	
Assessment	Phy 6, 5, topic test – exampro.	Phy 7, 6, and 5 topic test.	Phy 8, 7, 6, 5 topic test. Year 11 PPE – March / April – Paper 2 content.	
Literacy / Numeracy / SMSC / Character	Using a rearranging equations. Velocity, frequency and wavelength, time period calculations.	Rearranging equations. Calculating changes to pd achieved by transformers, using equations provided.	Human understanding – boundaries always being pushed. E.g. understanding of dark matter and energy. Using scale and standard form. Calculate weight, g and mass.	