

KS4 Year 11 Physics Curriculum

BOLD type denotes Single Physics only content

Curriculum Intent: We seek through an ambitious and engaging curriculum to develop a sense of curiosity to wonder why and how things work, and to provide skills and knowledge to find the answer. The curriculum is spiralled to introduce and build on key scientific concepts to help students understand complex ideas enriched by opportunities outside the classroom.

Physics provides a fundamental building blocks to understanding of chemistry and biological systems. Energy is the currency of the universe and is the common thread throughout all of Physics. This thread then feeds itself into chemistry and biology on the nano/macro scales/systems/particles. These links then become more about real world applications.

	Autumn Term			Spring Term			Summer Term	
Main Topic	Forces			Waves and Electromagnetism			Electromagnetism and Space	
Key Concepts	Forces in Balance	Forces in Motion	Force and Pressure	Wave Properties	Electromagnetic Waves	Magnetic Fields	Interactions of electrical and magnetic fields	The Solar System, Orbits, The Universe
Curriculum links	7SP1, 8SP1, 8SP2, 9SP1	7SP2, 8SP1, 8P2, 9SP1	8SP2	7SP3, 9SP2	9SP2	8SP1, 8SP3	7SP3, 8SP3	9SP1
Cross-curricular links	Maths - Vectors & Scalars, Resultant forces, Pythagoras theorem, Speed and Distance Time Graphs, Gradients, Using Equations Tech – Levers, Centre of Mass, Properties of elastic materials Chemistry – Conservation of Mass c.f. Conservation of momentum Biology – Oxygen concentration at high altitudes			Maths – Standard form, Using Equations Tech – Properties of materials e.g transparent Biology – Using X-Rays, treating cancer, Chemistry - Ionisation Biology – The Ear, Ultrasound scans, Magnification of lenses Geography – Seismic Waves			Tech – Using magnets and motors in design Chemistry – Element formation in stars	
Interleaving of skills	Identifying Variables Writing a method Collecting reliable data Evaluating			Using Standard form Identifying Variables Writing a method Collecting reliable data Evaluating			Using Evidence and secondary data Using Models	
Literacy	Magnitude, Scalar, Vector Free body diagram Equilibrium Moment	Gradient Acceleration Displacement Weight Mass Stopping distances	Area Altitude Upthrust	Longitudinal Transverse Oscillation Compression Rarefaction Wavelength Frequency	Electromagnetic Optical Radio Microwave Infrared Visible Ultraviolet	Permanent Induced Field Solenoid Electromagnet	Motor Effect Magnetic Flux Density Alternator Dynamo Transformer	Orbit Protostar Main Sequence Red Giant Red Supergiant White dwarf Black Dwarf

		Conservation		Amplitude Transparent Translucent Opaque Magnification	XRay Gamma Diagnosis Treatment			Supernova Neutron Star Black Hole Red Shift Cosmic Microwave Background Radiation
Cultural capital	Road Safety – Stopping and Braking Distances Product design / Fit for purpose			Communications – Using waves in mobile phones, broadband, radio communication etc. Energy for Electricity Supply and Demand Challenges			Understanding our place in the Universe How we use satellites to communicate and monitor	
Careers	Aerospace engineer Aeronautical engineer Space scientist Automobile engineer Physicist			Nuclear scientist/engineer Radiographer Health and safety officer Science journalist Astronomer Consultant Electronic engineer National grid engineer			Aerospace engineer Aeronautical engineer Space scientist Automobile engineer Physicist	
Assessment	KMP P5 Forces and motion CKT P5 Forces and motion MOCK 2 – Paper 1 Energy, molecules and matter, atomic structure and Electricity.			KMP P6 Waves CKT Waves MOCK3 Paper 2 Forces, waves, electromagnets and space. CKT P7 Electromagnets			CKT P8 Space	