

SUBJECT: Combined Physics



KS4 CURRICULUM PLAN

KS4 Knowledge and key skills

YEAR 10	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC	<i>Energy</i>	<i>Electricity</i>	<i>Electricity</i>	<i>Forces</i>	<i>Forces</i>	<i>Forces</i>
Knowledge	Energy stores and systems, Changes in energy, specific heat capacity, Power. Conservation and dissipation of energy. Calculate and describe ways to increase the efficiency of an intended energy transfer. National and global energy resources; Renewable and non-renewable.	Standard circuit component symbols. Define and calculate Current, resistance and potential difference. Know Voltage - current graphs for various components and how resistance changes in sensor circuits. describe the difference between series and parallel circuits	Explain qualitatively why adding resistors in series increases the total resistance whilst adding resistors in parallel decreases the total resistance. Domestic electricity uses and safety, including plugs. Mains electricity. Understand electrical power. The National Grid	Speed. Distance–time graphs. Velocity–time graphs. Acceleration. Scalar and vector quantities. Contact and non-contact forces. Gravity, weight and mass. Resultant forces/Resolving forces (HT Only)	Forces and acceleration. Inertia. Investigating the acceleration of an object- required practical. Paper 1 revision towards post Easter exam week.	Newton's third law. Momentum. Keeping safe on the road. Factors affecting stopping distance. Forces and elasticity. Elastic potential energy.
Skills	Calculate the amount of energy associated with a moving object, a stretched spring and an object raised above ground level. Calculate the amount of energy stored in or released from a system as its temperature changes. Calculate efficiency. Describe the main energy sources available distinguish between energy resources that are renewable. energy resources that are non-renewable	Draw Circuit diagrams using standard symbols. Calculate current, resistance and potential difference from formulae.	Build a circuit to measure the resistance of a component by measuring the current through, and potential difference across, the component. Calculate electrical power	Draw and interpret graphs, calculate gradients and area. Calculate weight. Draw free body diagrams. Draw vector diagrams to find resultant forces. Resolve a force into its components at right angles to each other.	Investigate Force, mass and acceleration practically.	Calculate a spring constant in linear cases. calculate work done in stretching (or compressing) a spring. Apply Newtons third law.
Key Vocab	Gravitational, elastic, kinetic, power, efficiency, renewable.	Electricity, current, potential difference (voltage), resistance. Parallel.	Resisatnce, transformers, national grid.	Acceleration, scalar, vector, speed, velocity, distance, displacement. Resultant.	Acceleration, inertia.	Momentum. Braking, stopping and thinking distance.

YEAR 11	SUMMER 2	SUMMER 1	SPRING 2	SPRING 1	AUTUMN 2	AUTUMN 1
TOPIC	<i>Revision/External examinations</i>	<i>Revision/External examinations</i>	<i>Revision</i>	<i>Electromagnetism</i>	<i>Waves</i>	<i>Waves</i>
Knowledge		Paper 1 & Paper 2 review	Revise the unit 1 topics Atomic Structure and the Particle model of matter from year 9. Revisit all required practicals	Magnetism and magnetic forces. Compasses and magnetic fields. The magnetic effect of a solenoid. Calculating the force on a conductor (HT Only)	Sound waves. Ultrasound.The electromagnetic spectrum. Infrared radiation and surfaces. Earths radiation budget.	Describing waves. Transverse and longitudinal waves. Measuring wave speeds. Measuring the wavelength, frequency and speed of waves in a ripple tank and waves in a solid - required practical. Reflection, refraction and wave fronts. Investigate the reflection of light by different types of surface and the refraction of light by different substances - required practical.
Skills		Answering : Long-answer questions, Mathematical skills, and Required Practicals.		Draw filed around a magnet. Calculate the forse on a current carrying wire		Recognise different properties of waves, measure wave speed practically, calculate waves speed, wavelength and frequency and time period from formulae.
Key Vocab				Magnetic, electromagnet, solenoid.	Electromagnetic, spectrum	Transverse, longitudinal, reflection, refraction, wavelength, frequency,

Key Knowledge Transfer