GCSE Physics

The Ripley Academy

Years 9 - 11

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
P1.1 – Energy	By definition Physics is the study of energy. This unit will introduce students to the concepts of energy stores, and the mathematical analysis of them.	• Energy (KS3) • Motion (KS3) • Forces (KS3)	• Types of Energy Stores • Energy Store Calculations • Conservation of Energy • Heat Transfer • Renewable & Non-Renewable Resources • Infrared Radiation • Blackbody Radiation
P1.2 – Electricity	Students will learn about electrical circuits, how they work and the mathematical analysis of circuits.	• Electric Current (KS3) • Building Electric Circuits (KS3) • Analysing Circuits (KS3)	• Static Electricity • Electric Charge and Current • Electrical Energy and Potential Difference • Series and Parallel Circuits • IV Characteristics and Resistance • Mains Electricity and the National Grid
P1.3 – Matter	In this unit, students will learn about kinetic theory and how energy affects matter.	• Particle Theory (KS3) • Solids / Liquids / Gases • Measuring Mass (Practical Skills)	• States of matter and changes of state • Density • Specific Heat Capacity • Specific Latent Heat • Gas Pressure and Boyles Law

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P1.4 – Atomic Structure	Students will learn about ionising radiation, why it can be a risk and how it can also be useful.	• Particle Theory (KS3) • Atomic Structure (KS4) • Isotopes (KS4)	• History of Atomic Models • Radioactive Decay • Decay Equations • Properties of Radioactive Decay • Half-Life • Nuclear Radiation in Medicine • Nuclear Fission & Fusion
P2.1 – Forces	In this unit, students will learn how Newtonian Mechanics can be applied to the world around us.	• Forces (KS3)	• Scalers and Vectors • Forces and Motion • Newton's Laws of Motion • Motion Graphs • Thinking and Breaking Distances • Elasticity • Moments, Levers, Gears • Momentum and Collisions • Pressure in Solids and Liquids
P2.2 – Waves	A study of the mathematical analysis of wave structure and the uses of different wavelengths of the Electromagnetic Spectrum.	• Waves and Sound (KS3)	• Longitudinal and Transverse Waves • Properties of Waves • Wave Calculations • Determining Wavelength • Sound and Ultrasound • Seismic Waves • The EM Spectrum and its uses
P2.3 – Magnetism	Students will learn about magnetic fields, how they interact and their uses in the real world.	• Magnetism (KS3) • Electricity (KS4)	• Magnetic Fields • Inducted Magnetism • Electromagnetism • Motor Effect

			• Electromagnetic Induction • Transformers
P2.4 – Light	A unit where students learn about how light behaves as a wave, how colours are formed and how lenses work.	• Waves and Sound (KS3) • Waves (KS4)	• Reflection and Refraction of Light • Colour Formation • Lenses and their uses
P2.5 – Space	In this unit, students learn about stars and the formation of the universe.	• Atomic Structure (KS4) • Waves (KS4) • Light (KS4) • Space (KS3)	• Objects of the solar system • Stars and their lifecycle • Origins of the universe and evidence