Belfairs Academy

GCSE Physics Fundamentals Map

Italics are for triple-science only

Knowledge	Skills
ESSENTIAL MATHS Know SI units Know how to rearrange equations	Work to significant figures Draw and interpret graphs Use ratios Use estimates *Use standard form*
ENERGY Understand types of energy Understand work done Understand power Understand specific heat capacity Understand dissipation of energy Understand energy resources and supplies	Use energy equations Investigate specific heat capacity Use energy efficiency calculations *Investigate ways of reducing unwanted energy transfers*
ELECTRICITY Explain electric current Understand control circuits Understand electricity in the home Know how electricity is transmitted Understand power and energy *Understand static electricity* *Understand electric fields*	Draw circuit diagrams Investigate series and parallel circuits Investigate voltage and current of components Calculate power
PARTICLE MODEL OF MATTER Understand density Understand changes of state Understand internal energy Understand latent heat Explain the particle model in changes of state *Explain pressure in gases*	Investigate density of regular and irregular objects Explain particle motion in gases
ATOMIC STRUCTURE Explain atomic structure Understand radioactive decay Understand background radiation Explain hazards and uses of radiation – including in medicine Explain irradiation *Explain nuclear radiation* *Explain nuclear fission and fusion*	Use nuclear equations Interpret half-life Interpret experimental results about atomic structure

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Knowledge	Skills
FORCES Explain forces Explain speed and acceleration Explain size and magnitude Understand resultant forces, motion and acceleration Understand Newton's third law Explain momentum *Explain levers and gears* *Understand pressure in a fluid* *Understand atmospheric pressure*	Use velocity-time graphs Use suvat equations Investigate the acceleration of an object Apply momentum to road safety Investigate force and extension in a spring *Calculate moments*
WAVES Describe waves Recognise transverse and longitudinal waves Explain energy transfer by waves Explain reflection and refraction of waves Understand the uses and properties of waves in the EM spectrum *Understand sound waves* *Explore ultrasound* *Explain seismic waves* *Explain colour* *Understand lenses* *Understand temperature of the Earth*	Measure wave speed Investigate waves in a ripple tanks and a solid Investigate reflection and refraction of light Investigate absorption and radiation of IR
ELECTROMAGNETISM Understand magnetism and magnetic forces Understand compasses and magnetic fields Explain solenoids Explain how electric motors work *Explain how loudspeakers work* *Explain transformers*	Calculate the force on a conductor Use the generator effect Uses of electromagnets
SPACE *The Solar System* *Orbits* *The Sun and other stars* *Explain the main sequence of a star* *Explain life-cycles of stars* *Explain red-shift*	*Interpret scales* *Use standard form* *Interpret graphical representations*