



Subject: Physics and Trilogy

Stage: KS4

NB:

- Bold indicates separate science Physics content only
- Topic vary in length and may be delivered over multiple half terms, please see curriculum maps.
- Electricity has been delivered to year 10 last year
- Future year groups will begin Energy in year 10

KS4: Yr 10 & 11	Energy	Electricity	Particle model of matter	Atomic Structure	Forces	Magnetism and electromagnetis m	Waves	Space Physics
	<i>Yr 9, Transition unit</i>							
Yr 10		<i>Yr 10 unit 1</i>	<i>Yr 10 Unit 2</i>	<i>Yr 10 Unit 3</i>				
Yr 11					<i>Yr 11 Unit 1</i>	<i>Yr 11 Unit 2</i>	<i>Yr 11 unit 3</i>	<i>Yr 11 Unit 4</i>
Aim of Unit	The aim of this topic is to build on the Energy topic from KS3 and further	The aim of this topic is to build on the Electromagnets topic from KS3 and further develop the	The aim of this topic is to build on the Matter topic from KS3 and further	The aim of this topic is to build on the Earth topic from KS3 and further develop the	The aim of this topic is to build on the Forces topic from KS3 and further develop the	The aim of this topic is to build on the Electromagnets topic from KS3 and further develop the	The aim of this topic is to build on the Waves topic from KS3 and further develop the knowledge and	The aim of this topic is to build on the Earth topic from KS3 and further

	develop the knowledge and understanding around energy and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	knowledge and understanding around electricity and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	develop the knowledge and understanding around matter and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	knowledge and understanding around ionising radiation and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	knowledge and understanding around forces and the role they play in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	knowledge and understanding around magnetism and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	understanding around Sound and Light and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.	develop the knowledge and understanding around space and the role it plays in our lives. It will also prepare pupils for the required disciplinary knowledge through the required practical activities.
Composite Knowledge <i>(a task that requires several building blocks or components)</i>	Pupils will extend their understanding of key points and applications relating to Energy.	Pupils will extend their understanding of key points and applications relating to Electricity.	Pupils will extend their understanding of key points and applications relating to Particle Model of Matter.	Pupils will extend their understanding of key points and applications relating to Atomic Structure.	Pupils will extend their understanding of key points and applications relating to Forces.	Pupils will extend their understanding of key points and applications relating to Magnetism and Electromagnetism.	Pupils will extend their understanding of key points and applications relating to Waves.	Pupils will extend their understanding of key points and applications relating to Space Physics.
Component Knowledge <i>(the building blocks that)</i>	4.1.1.1 Energy stores and systems 4.1.1.2 Changes in energy	4.2.1.1 Standard circuit diagram symbols 4.2.1.2 Electrical charge and current	4.3.1.1 Density of materials 4.3.1.1 Required	4.4.1.1 The structure of an atom 4.4.1.2 Mass number, atomic	4.5.1.1 Scalar and vector quantities 4.5.1.2 Contact and	4.7.1.1 Poles of a magnet 4.7.1.2 Magnetic fields 4.7.2.1 Electromagnetism	4.6.1.1 Transverse and longitudinal waves	4.8.1.1 Our solar system 4.8.1.2 The life cycle of a star

<i>together, when known, allow successful performance of a complex task)</i>	4.1.1.3 Energy changes in systems 4.1.1.3 Required practical 1: Specific heat capacity 4.1.1.4 Power 4.1.2.1 Energy transfers in a system 4.1.2.1 Required practical 2: Thermal insulation 4.1.2.2 Efficiency 4.1.3.1 National and global energy resources	4.2.1.3 Current, resistance and potential difference 4.2.1.3 Required practical 3: Resistance 4.2.1.4 Resistors 4.2.1.4 Required practical 4: I-V characteristics 4.2.2.1 Series and parallel circuits 4.2.3.1 Direct and alternating potential difference 4.2.3.2 Mains electricity 4.2.4.1 Power 4.2.4.2 Energy transfers in everyday appliances 4.2.4.3 The National Grid 4.2.5.1 Static charge 4.2.5.2 Electric fields	practical 5: Density 4.3.1.2 Changes of state 4.3.2.1 Internal energy 4.3.2.2 Temperature changes in a system and specific heat capacity 4.3.2.3 Changes of heat and specific latent heat 4.3.3.1 Particle motion in gases 4.3.3.2 Pressure in gases 4.3.3.3 Increasing the pressure of a gas (HT only)	number and isotopes 4.4.1.3 The development of the model of the atom (common content with chemistry) 4.4.2.1 Radioactive decay and nuclear radiation 4.4.2.2 Nuclear equations 4.4.2.3 Half-lives and the random nature of radioactive decay 4.4.2.4 Radioactive contamination 4.4.3.1 Background radiation 4.4.3.2 Different half-lives of radioactive isotopes	non-contact forces 4.5.1.3 Gravity 4.5.1.4 Resultant forces 4.5.2.1 Work done and energy transfer 4.5.3.1 Forces and elasticity 4.5.3.1 Required practical 6: Force and extension 4.5.4.1 Moments, levers and gears 4.5.5.1 Pressure in a fluid 4.5.5.1.2 Pressure in a fluid (HT only) 4.5.5.2 Atmospheric pressure 4.5.6.1.1 Distance and displacement	4.7.2.2 Fleming's left-hand rule (HT only) 4.7.2.3 Electric motors (HT only) 4.7.2.4 Loudspeakers (HT only) 4.7.3.1 Induced potential (HT only) 4.7.3.2 Uses of the generator effect (HT only) 4.7.3.3 Microphones (HT only) 4.7.3.4 Transformers (HT only)	4.6.1.2 Properties of waves 4.6.1.2 Required practical 8: Waves 4.6.1.3 Reflection of waves 4.6.1.3 Required practical 9: Light 4.6.1.4 Sound waves (HT only) 4.6.1.5 Waves for detection and exploration (HT only) 4.6.2.1 Types of electromagnetic waves 4.6.2.2 Properties of electromagnetic waves 1 4.6.2.2 Required practical 10: Radiation and absorption 4.6.2.3 Properties of electromagnetic waves 2	4.8.1.3 Orbital motion, natural and artificial satellites 4.8.2.1 Red-shift (physics only)
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Rationale (why?): Links to prior & future learning	Builds on KS3 in energy 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as further mechanics and thermal physics. It offers opportunities to explore Stem careers such as	Builds on KS3 in Electromagnetism 1 and 2. This unit prepares pupils for continuing electricity at KS5 in A level units such as Electricity. It offers opportunities to explore Stem careers such as renewable energies, electrical and telecommunications.	Builds on KS3 in Matter 1 and 2. This unit prepares pupils for continuing matter at KS5 in A level units such as Particles and radiation and also Mechanics and Materials. It offers opportunities to explore Stem careers	Builds on KS3 in Matter 1 and 2. This unit prepares pupils for continuing matter at KS5 in A level units such as Particles and radiation and also Mechanics and Materials. It offers opportunities to explore Stem careers	Builds on KS3 in Forces 1 and 2. This unit prepares pupils for continuing forces at KS5 in A level units such as Field and their consequences . It offers opportunities to explore Stem careers such as engineering as well as	Builds on KS3 in Electromagnetism 1 and 2. This unit prepares pupils for continuing electricity at KS5 in A level units such as Electricity. It offers opportunities to explore Stem careers such as renewable energies, electrical and telecommunications	Builds on KS3 in Waves 1 and 2. This unit prepares pupils for continuing waves at KS5 in A level units such as Waves. It offers opportunities to explore Stem careers such as telecommunications , digital marketing and media.	Builds on KS3 in Earth 1 and 2. This unit prepares pupils for continuing study on space at KS5 in A level units such as Astrophysics . It offers opportunities to explore Stem careers in the Army, Navy and Air force as well as the European

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