

Subject: Physics and Trilogy

Stage: KS4

NB:

-Bold indicates separate science Physics content only

-Topic vary in length and hay 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:	Energy	Electricity	Particle	Atomic	Forces	Magnetism and	Waves	Space
Yr 10 & 11			model of	Structure		electromagnetis		Physics
			matter			m		
	Yr 9, Half							
	term 4							
Yr 10			Yr 10 unit 1	Yr 10 Unit 2	Yr 10 Unit 3			
Yr 11					Yr 11 Unit 1	Yr 11 Unit 2	Yr 11 unit 3	Yr 11 Unit 4
Aim of	The aim of	The aim of this	The aim of	The aim of	The aim of	The aim of this	The aim of this	The aim of
Unit	this topic is	topic is to build	this topic is	this topic is to	this topic is to	topic is to build	topic is to build	this topic is
	to build on	on the	to build on	build on the	build on the	on the	on the Waves	to build on
	the Energy	Electromagnets	the Matter	Earth topic	Forces topic	Electromagnets	topic from KS3	the Earth
	topic from	topic from KS3	topic from	from KS3	from KS3 and	topic from KS3	and further	topic from
	KS3 and	and further	KS3 and	and further	further	and further	develop the	KS3 and
	further	develop the	further	develop the	develop the	develop the	knowledge and	further
	develop the	knowledge and	develop the	knowledge	knowledge	knowledge and	understanding	develop the

Composite Knowledge (a task that requires several building blocks or components)	knowledge and understandin g 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. Pupils will extend their understandin g of key points and applications relating to Energy.	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. Pupils will extend their understanding of key points and applications relating to Electricity.	knowledge and understandin g 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. Pupils will extend their understandin g of key points and applications relating to Particle Model of Matter.	and understandin g 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. Pupils will extend their understandin g of key points and applications relating to Atomic Structure.	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. Pupils will extend their understanding of key points and applications relating to Forces.	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. Pupils will extend their understanding of key points and applications relating to Magnetism and Electromagnetism	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. Pupils will extend their understanding of key points and applications relating to Waves.	knowledge and understandin g 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. Pupils will extend their understandin g of key points and applications relating to Space Physics.
Component Knowledge (the building blocks that together,	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 practical 5: Density	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 non-contact forces	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 4.6.1.2 Properties of waves	4.8.1.1 Our solar system 4.8.1.2 The life cycle of a star 4.8.1.3 Orbital

when	4.1.1.3	4.2.1.3 Current,	4.3.1.2	number and	4.5.1.3	4.7.2.2 Fleming's	4.6.1.2 Required	motion,
known,	Energy	resistance and	Changes of	isotopes	Gravity	left-hand rule (HT	practical 8:	natural and
allow	changes in	potential	state	4.4.1.3 The	4.5.1.4	only)	Waves	artificial
successful	systems	difference	4.3.2.1	development	Resultant	4.7.2.3 Electric	4.6.1.3	satellites
performanc	4.1.1.3	4.2.1.3 Required	Internal	of the model	forces	motors (HT only)	Reflection of	4.8.2.1 Red-
e of a	Required	practical 3:	energy	of the atom	4.5.2.1 Work	4.7.2.4	waves	shift (physics
complex	practical 1:	Resistance	4.3.2.2	(common	done and	Loudspeakers	4.6.1.3	only)
task)	Specific heat	4.2.1.4 Resistors	Temperature	content with	energy	(HT only)	Required	
	capacity	4.2.1.4 Required	changes in a	chemistry)	transfer	4.7.3.1 Induced	practical 9:	
	4.1.1.4 Power	practical 4: I-V	system and	4.4.2.1	4.5.3.1 Forces	potential (HT	Light	
	4.1.2.1	characteristics	specific heat	Radioactive	and elasticity	only)	4.6.1.4 Sound	
	Energy	4.2.2.1 Series and	capacity	decay and	4.5.3.1	4.7.3.2 Uses of	waves (HT	
	transfers in a	parallel circuits	4.3.2.3	nuclear	Required	the generator	only)	
	system	4.2.3.1 Direct	Changes of	radiation	practical 6:	effect (HT only)	4.6.1.5 Waves	
	4.1.2.1	and alternating	heat and	4.4.2.2	Force and	4.7.3.3	for detection	
	Required	potential	specific latent	Nuclear	extension	Microphones	and exploration	
	practical 2:	difference	heat	equations	4.5.4.1	(HT only)	(HT only)	
	Thermal	4.2.3.2 Mains	4.3.3.1	4.4.2.3 Half-	Moments,	4.7.3.4	4.6.2.1 Types of	
	insulation	electricity	Particle	lives and the	levers and	Transformers	electromagnetic	
	4.1.2.2	4.2.4.1 Power	motion in	random	gears	(HT only)	waves	
	Efficiency	4.2.4.2 Energy	gases	nature of	4.5.5.1		4.6.2.2	
	4.1.3.1	transfers in	4.3.3.2	radioactive	Pressure in a		Properties of	
	National and	everyday	Pressure in	decay	fluid		electromagnetic	
	global energy	appliances	gases	4.4.2.4	4.5.5.1.2		waves 1	
	resources	4.2.4.3 The	4.3.3.3	Radioactive	Pressure in a		4.6.2.2 Required	
		National Grid	Increasing	contaminatio	fluid		practical 10:	
		4.2.5.1 Static	the pressure	n	(HT only)		Radiation and	
		charge	of a gas (HT	4.4.3.1	4.5.5.2		absorption	
		4.2.5.2 Electric	only)	Background	Atmospheric		4.6.2.3	
		fields		radiation	pressure		Properties of	
				4.4.3.2	4.5.6.1.1		electromagnetic	
				Different	Distance and		waves 2	
				half-lives of	displacement		4.6.2.4 Uses and	
				radioactive	4.5.6.1.2		applications of	
				isotopes	Speed			

	4 4 3 3 Uses	45613	electromagnetic	
	of nuclear	Velocity	waves	
	radiation	4 5 6 1 4 The	4.6.2.5 Lenses	
	4 4 4 1	distance_time	(nhysics only)	
	Nuclear	relationshin	4 6 2 6 Visible	
	fission	4 5 6 1 5	light (nhysics	
	4447	Acceleration	only)	
	Nuclear	receleration	4631	
	fusion	45621	Emission and	
	TUSION	Newton's	absorption of	
		First Law	infrared	
		15622	radiation	
		4.5.0.2.2 Newton's	1 autation 1 6 3 2 Dorfoot	
		Newton S	4.0.3.2 I effect	
			ond radiation	
		4.3.0.2.2 December 1	and radiation	
		Required		
		practical /:		
		Acceleration		
		4.5.6.2.3		
		Newton's		
		Third Law		
		4.5.6.3.1		
		Stopping		
		distance		
		4.5.6.3.2		
		Reaction time		
		4.5.6.3.3		
		Factors		
		affecting		
		braking		
		distance 1		
		4.5.6.3.4		
		Factors		
		affecting		

					braking distance 2 4.5.7.1 Momentum is a property of moving objects 4.5.7.2 Conservation of momentum 4.5.7.3 Changes in momentum□			
Rationale (why?):	Builds on KS3 in	Builds on KS3 in Electromagnetis	Builds on KS3 in	Builds on KS3 in	Builds on KS3 in	Builds on KS3 in Electromagnetism	Builds on KS3 in Waves 1 and	Builds on KS3 in Earth
Links to	energy 1 and	m 1 and 2. This	Matter 1 and	Matter 1 and	Forces 1 and	1 and 2. This unit	2. This unit	1 and 2. This
prior &	2. This unit	unit prepares	2. This unit	2. This unit	2. This unit	prepares pupils	prepares pupils	unit prepares
future	prepares	pupils for	prepares	prepares	prepares	for continuing	for continuing	pupils for
learning	pupils for	continuing	pupils for	pupils for	pupils for	electricity at KS5	waves at KS5 in	continuing
	continuing	electricity at KS5	continuing	continuing	continuing	in A level units	A level units	study on
	energy at	in A level units	matter at KS5	matter at KS5	forces at KS5	such as	such as Waves.	space at KS5
	KS5 in A	such as	in A level	in A level	in A level	Electricity. It	It offers	in A level
	level units	Electricity. It	units such as	units such as	units such as	offers	opportunities to	units such as
	such as	offers	Particles and	Particles and	Field and	opportunities to	explore Stem	Astrophysics
	further	opportunities to	radiation and	radiation and	their	explore Stem	careers such as	. It offers
	mechanics	explore Stem	also	also	It offers	careers such as	tele	opportunities
	and therman	renewable	and	and	. It offers	apargias	digital	Stem coreers
	offers	energies	anu Materials It	anu Materials It	to explore	electrical and tele	, uigitai marketing and	in the Army
	opportunities	electrical and tele	offers	offers	Stem careers	communications	media	Navy and Air
	to explore	communications	opportunities	opportunities	such as	communications	mean.	force as well
	Stem careers		to explore	to explore	engineering			as the
	such as		Stem careers	Stem careers	as well as			European
	renewable		such as	such as				Space

	energies and		renewable	renewable	health and			Agency,
	careers in the		energies,	energies,	safety.			NASA and
	energy		nuclear	nuclear	-			Space X.
	sector.		fission and	fission and				-
			research.	research.				
Assessment	Energy topic	Electricity topic	Particle	Atomic	Forces topic	Magnetism and	Waves topic	Space topic
Task	assessment	assessment	Model of	Structure	assessment	Electromagnetism	assessment	assessment
	(Foundation	(Foundation or	Matter topic	topic	(Foundation	topic assessment	(Foundation or	(Foundation
	or Higher).	Higher). H/W	assessment	assessment	or Higher).	(Foundation or	Higher). H/W	or Higher).
	H/W quiz on	quiz on SMH	(Foundation	(Foundation	H/W quiz on	Higher). H/W	quiz on SMH	H/W quiz on
	SMH every	every week to	or Higher).	or Higher).	SMH every	quiz on SMH	every week to	SMH every
	week to	retain knowledge	H/W quiz on	H/W quiz on	week to retain	every week to	retain	week to
	retain	(Interrupt the	SMH every	SMH every	knowledge	retain knowledge	knowledge	retain
	knowledge	forgetting curve).	week to	week to	(Interrupt the	(Interrupt the	(Interrupt the	knowledge
	(Interrupt the	Formative	retain	retain	forgetting	forgetting curve).	forgetting	(Interrupt the
	forgetting	assessment	knowledge	knowledge	curve).	Formative	curve).	forgetting
	curve).	though recall	(Interrupt the	(Interrupt the	Formative	assessment	Formative	curve).
	Formative	questioning and	forgetting	forgetting	assessment	though recall	assessment	Formative
	assessment	formative	curve).	curve).	though recall	questioning and	though recall	assessment
	though recall	assessment tasks.	Formative	Formative	questioning	formative	questioning and	though recall
	questioning		assessment	assessment	and formative	assessment tasks.	formative	questioning
	and formative		though recall	though recall	assessment		assessment	and formative
	assessment		questioning	questioning	tasks.		tasks.	assessment
	tasks.		and formative	and formative				tasks.
			assessment	assessment				
			tasks.	tasks.				
Enrichmen	Practical	Practical	Practical	Practical	Practical	Practical lessons	Practical	Practical
t	lessons	lessons applied	lessons	lessons	lessons	applied to	lessons applied	lessons
	applied to	to everyday	applied to	applied to	applied to	everyday	to everyday	applied to
	everyday	scenarios.	everyday	everyday	everyday	scenarios.	scenarios.	everyday
	scenarios.	Utilising GCSE	scenarios.	scenarios.	scenarios.	Utilising GCSE	Utilising	scenarios.
	Utilising	POD or other	Utilising	Utilising	Utilising	POD or other	GCSE POD or	Utilising
	GCSE POD	online providers	GCSE POD	GCSE POD	GCSE POD	online providers	other online	GCSE POD
	or other	L	or other	or other	or other	1	providers to	or other

online	to facilitate	online	online	online	to facilitate	facilitate	online
providers to	enrichment.	providers to	providers to	providers to	enrichment.	enrichment.	providers to
facilitate		facilitate	facilitate	facilitate			facilitate
enrichment.		enrichment.	enrichment.	enrichment.			enrichment.