










Curriculum Content Map

Subject: Physics

Year group: 10

	TERM 1		TERM 2		TERM 3
Unit title & description	Motion; Forces and Motion	Conservation of Energy	Waves; Light and the Electromagnetic Spectrum	Radioactivity	Energy – Forces Doing Work; Forces and their effects
Knowledge 	<ul style="list-style-type: none"> Vectors and Scalars Distance/time graphs Acceleration Velocity/time graphs Resultant Forces Newton’s Laws Momentum Stopping Distances Crash hazards Braking Distance and Energy 	<ul style="list-style-type: none"> Energy Stores and transfers Energy Efficiency Keeping Warm Stored Energies Non-renewable resources Renewable resources 	<ul style="list-style-type: none"> Describing Waves Wave Speed Investigating Waves Refraction- investigating refraction Electromagnetic waves and their uses EM Radiation dangers Waves crossing boundaries Ears and Hearing Ultrasound and infrasound Ray Diagrams Colour Lenses Radiation and Temperature 	<ul style="list-style-type: none"> Atomic Models Inside atoms Electrons and Orbits Background radiation Types of Radiation Radioactive Decay Half-Life Dangers of Radioactivity Using Radioactivity Radioactivity in Medicine Nuclear Energy Nuclear Fission Nuclear Fusion 	<ul style="list-style-type: none"> Work and Power Objects Affecting Each Other Vector Diagrams Rotational Forces
Skills 	<ul style="list-style-type: none"> Core practical – planning and analysing results, using equipment Interpreting force diagrams Applying knowledge to real-world contexts Evaluating use of safety features and speed limits 	<ul style="list-style-type: none"> Interpreting Sankey diagrams Applying knowledge to real-world contexts Evaluating and debating energy resources, and evaluating efficiency of devices, using evidence 	<ul style="list-style-type: none"> Core practical – planning and analysing results, using equipment Interpreting ray diagrams Applying knowledge to real-world contexts Evaluating uses and dangers of radiation 	<ul style="list-style-type: none"> Applying knowledge to real-world contexts Evaluating uses and dangers of radiation Interpreting decay equations and half-life graphs 	<ul style="list-style-type: none"> Core practical – planning and analysing results, using equipment Interpreting force and vector diagrams Applying knowledge to real world contexts Analysing moments and gear interactions
Literacy 	<ul style="list-style-type: none"> Key vocabulary Extended answer questions relating to forces and momentum 	<ul style="list-style-type: none"> Key vocabulary Extended answer questions relating to energy resources/transfers 	<ul style="list-style-type: none"> Key vocabulary Extended answer questions relating to electromagnetic spectrum and the greenhouse effect 	<ul style="list-style-type: none"> Key vocabulary Extended answer questions relating to uses and dangers of nuclear radiation, Rutherford’s alpha scattering experiment and nuclear fusion and fission 	<ul style="list-style-type: none"> Key vocabulary Extended answer questions relating to forces and interactions
Numeracy 	<ul style="list-style-type: none"> Calculations Drawing and interpreting graphs and vector diagrams to scale, with angles 	<ul style="list-style-type: none"> Calculations Drawing and interpreting Sankey diagrams to scale 	<ul style="list-style-type: none"> Calculations Using units and prefixes 	<ul style="list-style-type: none"> Interpreting half-life graphs and calculating half-lives. Averaging count rates Calculating atomic number and mass in decay equations 	<ul style="list-style-type: none"> Equations: $E = Fx$, $P = \frac{E}{t}$, $M = Fd$ (Work done, mechanical power, moments). Gear ratios, scale diagrams, Pythagoras’ theorem in resolving scale vector diagrams
Enrichment Learning 	<ul style="list-style-type: none"> Lots of practical opportunities, which includes working in groups Regenerative braking in eco-friendly cars – wider applications Possibility of investigation 	<ul style="list-style-type: none"> Lots of practical opportunities, which includes working in groups Possibility of investigation or project work into insulation/pendulums/fuel s 	<ul style="list-style-type: none"> Lots of practical opportunities, which includes working in groups Possibility of investigation or project work into radiation/optical fibres /SONAR/RADAR/lenses 	<ul style="list-style-type: none"> Lots of practical opportunities, which includes working in groups History of Science – how ideas about the atom have changed over time Analysing environmental 	<ul style="list-style-type: none"> Lots of practical opportunities, which includes working in groups Direct applications to students – gear ratios in bike and car gears, Possibility of investigation or project work into forces/work done/power/vector diagrams in real life situations (such as aircraft, boats, etc)/moments – levers etc.

	or project work into forces/momentum /crashes/speed			impact and benefits of nuclear radiation <ul style="list-style-type: none"> • Possibility of investigation or project work into uses and dangers of nuclear radiation/models of the atom/cancer detection and treatment/benefits of fission and fusion/economics of fusion 	
British values 	<ul style="list-style-type: none"> • Laws around speed limits and safety features • Respectful group work 	<ul style="list-style-type: none"> • Discussion of Paris Climate Agreement and G20 meetings • Respectful group work 	<ul style="list-style-type: none"> • Discussion of international security/use of technology in defence • Respectful group work 	<ul style="list-style-type: none"> • Discussion of international security/terrorism/nuclear accidents • Ethics of nuclear power • Respectful group work • Health and Safety – dangers of nuclear radiation, effects of fusion and fission including nuclear waste 	Respectful group work
Personal Development 	<ul style="list-style-type: none"> • Redrafting extended answers –resilience • Working in groups – confidence • Homework and projects – independence 	<ul style="list-style-type: none"> • Redrafting extended answers –resilience • Working in groups and debating – confidence • Homework and projects – independence 	<ul style="list-style-type: none"> • Redrafting extended answers –resilience • Working in groups – confidence • Homework and projects – independence 	<ul style="list-style-type: none"> • Redrafting extended answers –resilience • Working in groups – confidence • Homework and projects – independence • Self-management and self-development through independent use of revision techniques which have been modelled in class 	<ul style="list-style-type: none"> • Redrafting extended answers –resilience • Working in groups – confidence • Homework and projects – independence Self-management and self-development through independent use of revision techniques which have been modelled in class
Careers 	In engineering, safety, sports analyst/coaching	In energy, fuels, renewable technologies	In optics, radiography, audiology, optometry, engineering	<ul style="list-style-type: none"> • Nuclear industry in the UK and abroad • Health and safety inspector • Emergency services 	Engineering, sports
Assessment opportunities 	<ul style="list-style-type: none"> • Assessed through CPAC, • Homework, • AP points • End of Topic mini-tests • AfL in lessons • DO now activities that assess knowledge recall • Extended writing DIRT tasks 	<ul style="list-style-type: none"> • Assessed through CPAC, • Homework, • AP points • End of Topic mini-tests • AfL in lessons • DO now activities that assess knowledge recall • Extended writing DIRT tasks 	<ul style="list-style-type: none"> • Assessed through CPAC, • Homework, • AP points • End of Topic mini-tests • AfL in lessons • DO now activities that assess knowledge recall • Extended writing DIRT tasks 	<ul style="list-style-type: none"> • AP points • End of Topic Tests • Practical Assessment • Mini-knowledge tests • AfL in lessons • DO now activities that assess knowledge recall • Extended writing DIRT tasks 	<ul style="list-style-type: none"> • AP points • End of Topic Tests • Practical Assessment • Mini-knowledge tests • AfL in lessons • DO now activities that assess knowledge recall Extended writing DIRT tasks
Differentiation for MA and LA	<ul style="list-style-type: none"> • Individual feedback provided for students when books are marked. • Individual DIRT tasks using GAP analysis • A01 type questions for LA • A03 type questions for MA • In class support for LA students by using TAs or City years • Use command words to set differentiated questions for the class 				

Bold denotes triple science only topics

Text in red is contact that should be revisited from KS3 rather than entirely new