

Purple - PSHE content

Yellow – key words

Green – Triple only

KS 4 Science Curriculum 2022-2023 Year 11

Curriculum Intent

The science curriculum will provide all pupils, regardless of starting point with the foundation of knowledge needed to allow them to critically analyse and engage with science, technology and nature in the modern world.

Curriculum Implementation

Year	Start When	No of lessons	Topic	Summary	Big Questions	Assessment for learning	Key Practicals
11	Autumn	12	Waves	This builds on the KS3 waves and radiation topic and the GCSE Energy topic	<p>What are the types of Waves and their properties? (Transverse/Longitudinal)</p> <p>How can we measure wave speed?</p> <p>How can you use a ripple tank and a stretched string to calculate wave speed?</p> <p>How are images in a mirror created?</p> <p>Why are sound waves important?</p> <p>What are Electromagnetic waves and how do they differ from each other?</p> <p>How Can we investigate the reflection of light by different types of surface and the refraction of light by different substances?</p> <p>What are the Uses and Hazards of Electromagnetic Waves?</p>	<p>Cold calling</p> <p>Regular check point questions in the lessons</p> <p>Trust wide standardised 45min exam question test</p>	<p>RP – How can we measure wave speed?</p> <p>TRP – Reflection</p> <p>TRP – Refraction</p> <p>RP- Effects in Insulation on radiation</p>

					<p>How does the amount of infrared radiation absorbed or radiated by a surface depend on the nature of that surface?</p> <p>What are Lenses and how do they form an image?</p> <p>How does the colour of light affect how it behaves?</p> <p>What is Black Body Radiation?</p>		
11	Autumn	10	Chemistry of the Atmosphere and Earths Resources	This topic builds on the KS3 topic Earth and Atmosphere	<p>What is the current make up of Earth's atmosphere?</p> <p>What is the current theory for how the Earth's early atmosphere was created?</p> <p>Why is this just a theory?</p> <p>How was the oxygen level in the early atmosphere increased?</p> <p>How was the level of Carbon Dioxide in the early atmosphere decreased?</p> <p>How are limestone and fossil fuels produced?</p> <p>What are Greenhouse gases?</p> <p>Why are they important?</p> <p>What Human activities increase greenhouse gas emissions?</p>	<p>Cold calling</p> <p>Regular check point questions in the lessons</p> <p>Trust wide standardised 45min exam question test</p>	

					<p>Why could increased Greenhouse gases lead to Global Climate change?</p> <p>What effects could Global Climate change have?</p> <p>What is a Carbon Footprint?</p> <p>How can carbon emissions be reduced through the life cycle of a product?</p> <p>What is Combustion?</p> <p>How is Acid rain formed?</p> <p>How are solid particles and unburned Hydrocarbons an issue in the atmosphere?</p> <p>What are the harmful effects of atmospheric pollutants?</p> <p>What is a Finite resource?</p> <p>Name examples of natural products that are supplemented or replaced by agricultural and synthetic products</p> <p>What is Potable Water?</p>		
11	Spring	7	Magnetism and Electromagnetism	This topic builds on the KS3 topic electricity and magnetism	<p>What is the difference between Permanent and Induced Magnets?</p> <p>What is an Electromagnet?</p> <p>How do electromagnets work in devices?</p>	<p>Cold calling</p> <p>Regular check point questions in the lessons</p> <p>Trust wide standardised</p>	

					<p>What is the Motor Effect?</p> <p>How can we use the Motor Effect?</p> <p>What is a Generator?</p> <p>How do Transformers help supply our Energy?</p>	45min exam question test	
11	Spring	17	Ecology	<p>This topic builds on the KS3 topics biodiversity and plant reproduction and energy and ecosystems.</p>	<p>What is a population?</p> <p>What is a community?</p> <p>What is an Ecosystem?</p> <p>What is a Habitat?</p> <p>What do animals and Plants compete for?</p> <p>What is a Biotic factor?</p> <p>What is an Abiotic factor?</p> <p>What is Interdependence?</p> <p>What is Adaptation?</p> <p>What is an Extremophile?</p> <p>What is a Producer?</p> <p>What is a Consumer?</p>	<p>Cold calling</p> <p>Regular check point questions in the lessons</p> <p>Trust wide standardised</p> <p>45min exam question test</p>	<p>RP- investigating distribution of a species across an environment</p> <p>TRP – effect of pH on rate of decay of milk.</p>

				<p>What do Carnivore, Herbivore and Omnivore mean?</p> <p>What do food chains Show?</p> <p>How can we investigate Distribution and abundance?</p> <p>What is a Transect?</p> <p>What is a Quadrat?</p> <p>What is a predator-prey cycle?</p> <p>Describe the water cycle.</p> <p>How is Carbon cycled through an environment?</p> <p>What factors affect the rate of decomposition?</p> <p>How can environmental changes impact the distribution of species?</p> <p>What is Biodiversity?</p> <p>Why is Biodiversity important?</p> <p>How is rapid population growth of humans affecting waste management?</p> <p>How are Humans reducing available land?</p>		
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				<p>What is deforestation and why is it a problem?</p> <p>What are the biological consequences of global warming?</p> <p>How are humans impacting biodiversity?</p> <p>What is a trophic level?</p> <p>Why is a pyramid of biomass useful?</p> <p>How is biomass lost from each trophic level?</p> <p>What is food security?</p> <p>What biological factors can affect food security?</p> <p>What is meant by sustainable fisheries?</p> <p>Can biotechnology help with food security?</p>		
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