

<u>Timeline</u>	<u>Topic</u>	<u>Key concepts and knowledge</u>	<u>Skills development</u>	<u>Rationale</u>
<u>Y11 Half term 1</u>	Classification and Ecology	<p>Show understanding of the Linnaean system and describe how biological developments impacted the classification system.</p> <p>Recall Carl Woese 3 domain system.</p> <p>Extract and interpret information from charts, graphs and tables relating to the interaction of organisms within a community.</p> <p>Students should be able to extract and interpret information from charts, graphs and tables relating to the effect of biotic and abiotic factors on organisms within a community.</p> <p>Explain how organism are adapted to live in their natural environments.</p>	<p><u>Skill development and application</u></p> <p>Required practical- 7. Quadrats</p> <p><u>Practice of tier 3 literacy include:</u></p> <p>Because Anomalous Analyse Conclude Control Dependent Describe Divisions Evaluation Explanation Line graph Line of best fit Relationship Repeat Result Trend</p> <p><u>Links to careers in:</u> Environmental studies – habitat management/conservation etc Farming</p>	<p>Students are introduced to new concepts such as the classification system whilst building on previous knowledge on adaptations and competition.</p> <p>Opportunities in this topic to incorporate maths skills such as analysing and interpreting data and making conclusions from trends in data.</p>

			<p>Genetic modification</p> <p><u>Development of employability skills:</u> Problem solving Communication Team work Numeracy Informed</p> <p><u>Development of British Values</u> Rule of law – surrounding GM/waste management/pollution Democracy – evaluating GM</p> <p><u>Cultural Capital</u> Some students may not have encountered exotic or aquatic organisms Lack of awareness of pollution and sustainability Range of uses of GM in other countries e.g golden rice where certain food deficiencies are present</p>	
	Using resources	State examples of natural products that are supplemented or replaced by agricultural and synthetic products	<p><u>Skill development and application</u> Required practical- 8. Water purification</p>	Students explore the use of chemistry in various life situations, allowing them to apply their knowledge to real life applications.

		<p>Distinguish between finite and renewable resources given appropriate information.</p> <p>Distinguish between potable water and pure water and give reasons for the steps used to produce potable water.</p> <p>Describe the differences in treatment of ground water and salty water.</p> <p>Outline treatment of waste water and comment on the relative ease of obtaining potable water from waste, ground and salt water.</p> <p>Higher tier only - evaluate alternative biological methods of metal extraction, given appropriate information.</p>	<p>Maths – fractions, ratios, percentages, graphical forms.</p> <p>Extended response – comparative writing, extended response.</p> <p><u>Practice of tier 3 literacy include:</u></p> <p>Create Design Environment Ethic Method Evaluate Proportion/percent Investigate</p> <p><u>Links to careers in:</u></p> <p>Environment agency Farming/Agriculture Water treatment Recycling centres Builder Metal worker Politician/local governance Police/Law enforcement</p> <p><u>Development of employability skills:</u></p> <p>Problem solving Communication</p>	<p>Opportunities for extended response through evaluation and comparative writing.</p>
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	Magnetism	<p>Describe attraction and repulsion between poles of permanent magnets and the difference between permanent and induced magnets</p> <p>Describe how to plot the magnetic field pattern of a magnet using a compass</p> <p>Draw the magnetic field pattern of a bar magnet and a straight wire (carrying current) and solenoid showing how strength and direction change from one point to another</p>	<p><u>Skill development and application</u> Maths Extended writing</p> <p><u>Practice of tier 3 literacy include:</u> Calculate Conclude Data Explain Formula Method Range</p> <p><u>Links to careers in:</u> Navigation – pilot/ ship captain Electrician</p>	<p>The topic builds upon previous concepts taught on forces, magnetism and electromagnets.</p> <p>The challenge builds through the introduction of new concepts such as induced magnets and solenoids.</p>

		<p>Explain how the behaviour of a magnetic compass is related to evidence that the core of the Earth must be magnetic.</p>	<p>Engineering Recycling technician Energy advisor Sound technician</p> <p><u>Development of employability skills:</u> Numeracy Problem solving Self- management Team work Creativity</p> <p><u>Development of British Values</u> British values to be demonstrated in the over-arching culture established within the classroom and school: Self-help Self-responsibility</p> <p><u>Cultural Capital</u> Careers events – engineering etc Investigations- making loudspeakers and electromagnets</p>	
<p><u>Year 11 half term 2</u></p>	<p>Organisation of an ecosystem and Biodiversity</p>	<p>Correctly represent feeding relationships as food chains.</p> <p>Interpret predator prey relationships.</p> <p>Recall that many different materials cycle through the</p>	<p><u>Skill development and application</u> <u>Required practical – quadrats.</u></p> <p style="text-align: center;">Maths</p> <p>Extended writing - opportunities for evaluative writing, extended responses on the water, carbon cycle and global warming.</p> <p><u>Practice of tier 3 literacy include:</u></p>	<p>This topic continues to build challenge on ecosystems and communities. Cross curricular links with maths provide opportunities to apply maths skills such as mean, median, mode and graphs.</p>

		<p>abiotic and biotic components of an ecosystem</p> <p>Explain the importance of the carbon and water cycles to living organisms (and the importance of the microorganisms in carbon cycle).</p> <p>Describe the effect on biodiversity of waste, land use, deforestation and global warming.</p> <p>Describe some programmes to reduce the negative effect of humans on biodiversity.</p>	<p>Because Anomalous Analyse Conclude Control Dependent Describe Divisions Evaluation Explanation Line graph Line of best fit Relationship Repeat Result Trend</p> <p><u>Links to careers in:</u> Environmental studies – habitat management/conservation etc Farming Genetic modification</p> <p><u>Development of employability skills:</u> Problem solving Communication Team work Numeracy Informed</p> <p><u>Development of British Values</u></p>	<p>Cross curricular links with chemistry and geography allow students to amalgamate ideas to deepen their knowledge of the effects of human activities on the environment.</p>
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	<p>Life cycle assessment and recycling</p>	<p>Carry out simple comparative LCAs for shopping bags made from plastic and paper.</p> <p>Evaluate ways of reducing the use of limited resources, given appropriate information</p>	<p>Skill development and application</p> <p>Maths – fractions, ratios, percentages, graphical forms.</p> <p>Extended response – comparative writing, extended response.</p> <p>Practice of tier 3 literacy include:</p> <p>Create Design Environment Ethic Method Evaluate</p>	<p>Students continue to explore the use of chemistry in various life situations, allowing them to apply their knowledge to real life applications.</p> <p>Opportunities for extended response through evaluation and comparative writing.</p>

			<p>Proportion/percent Investigate <u>Links to careers in:</u></p> <p>Environment agency Farming/Agriculture Water treatment Recycling centres Builder Metal worker Politician/local governance Police/Law enforcement</p> <p><u>Development of employability skills:</u></p> <p>Problem solving Communication Creativity Informed</p> <p><u>Development of British Values</u></p> <p>Mutual respect Democracy Rule of law</p> <p><u>Cultural Capital</u></p> <p>Droughts in Australia (areas had no rain for 3 years), South East USA, reservoirs lower than they've ever been in Alabama (in 2021) Recycling at home...what happens to it after? Mining – impact on environment/planet/habitats Natural vs artificial fertilisers</p>	
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	<p><u>Electromagnets (+ Electric motors (HT only))</u></p>	<p>Explain how a solenoid arrangement can increase the magnetic effect of the current.</p> <p>Higher tier only –</p> <p>Demonstrate Fleming’s left-hand rule</p> <p>Recall the factors that affect the size of the force on the conductor</p> <p>Apply the equation: $force = magnetic\ flux\ density \times current \times length$</p> <p>Explain how the force on a conductor in a magnetic field causes the rotation of the coil in an electric motor</p>	<p><u>Skill development and application</u></p> <p>Maths Extended writing</p> <p><u>Practice of tier 3 literacy include:</u></p> <p>Calculate Conclude Data Explain Formula Method Range</p> <p><u>Links to careers in:</u></p> <p>Navigation – pilot/ ship captain Electrician Engineering Recycling technician Energy advisor Sound technician</p> <p><u>Development of employability skills:</u></p> <p>Numeracy Problem solving Self- management Team work Creativity</p> <p><u>Development of British Values</u></p>	<p>The topic builds upon previous concepts taught on forces, magnetism and electromagnets.</p> <p>The challenge builds through the introduction of new concepts such as induced magnets and solenoids.</p>
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