



**Year 9 - Science**

<b>Curriculum intent</b>	During year 9 learners will consolidate the knowledge they have learnt so far in science, to further develop their scientific knowledge and conceptual understanding through the study of biology, chemistry and physics. Learners will deepen their understanding of the nature, processes and methods of science through different types of scientific enquiries that help them to answer scientific questions about the world around them. Through this learners will be given the opportunities to apply their scientific knowledge to understand the uses and implications of science, today and for the future.					
<b>Term</b>	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Knowledge</b>	<p><b>Digestion:</b> Learners will learn about the different nutrients needed for a balanced diet, and which foods contain which nutrients. They will also learn how to test for these nutrients in different foods. Learners will look at the side effects of having an unbalanced diet, and how it impacts the body.</p> <p><b>Rates of reaction:</b> Learners will use a range of investigative techniques to understand how certain factors can</p>	<p><b>Waves -</b> Learners will use a range of investigative techniques to understand how to measure Waves on water and ropes and understand wave models.</p> <p><b>Plant cell organisation:</b> Learners will use a range of investigative techniques to understand how cells in different organisms vary and will model how substances are transported between cells in both unicellular and multicellular plants.</p>	<p><b>Energy Changes:</b> They will use a range of investigative and modelling techniques to understand the value of energy, how it is transferred between objects and can be used in physical processes and mechanisms.</p> <p><b>Electromagnets:</b> Learners will learn how to construct an electromagnet, and how to vary the strength of them. They will also learn how electromagnets are used in everyday life.</p>	<p><b>Static electricity:</b> Learners will use a range of investigative techniques to understand how current is generated between charged objects and their impact on the space around them.</p> <p><b>Photosynthesis -</b> Learners will use a range of investigative techniques to understand the effect of enzymes on photosynthesis and how a plant is</p>	<p><b>Chemical Patterns:</b> Learners will use a range of investigative techniques to understand how reactivity impacts chemical reactions and products formed.</p> <p><b>Inheritance -</b> Learners will use a range of investigative and modelling techniques to understand how DNA controls the structure and function of organisms.</p>	<p><b>Bonding:</b> Learners will use a range of investigative techniques to understand how chemical bonds are formed and some of the properties of differently bonded compounds.</p> <p><b>Electricity Usage:</b> Learners will use a range of investigative techniques to understand how reaction energy may be transferred to or from the surroundings and apply this to the efficiency of</p>

	<p>impact the rate of a reaction and how we can measure this.</p>		<p><b>Cells:</b> Learners will use a range of investigative techniques to understand how cells in different organisms vary and will model how substances are transported between cells in both unicellular and multicellular organisms.</p>	<p>adapted for this process.</p>		<p>electrical appliances.</p>
<p><b>Skills</b></p>	<p><b>The following skills will be developed throughout the whole of year 9 and will enable learners to build a deep understanding of science:</b></p> <p><b>Scientific attitudes:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility</li> <li><input type="checkbox"/> understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</li> <li><input type="checkbox"/> evaluate risks.</li> </ul> <p><b>Experimental skills and investigations:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience</li> <li><input type="checkbox"/> make predictions using scientific knowledge and understanding</li> <li><input type="checkbox"/> select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate</li> <li><input type="checkbox"/> use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety</li> </ul>					



	<input type="checkbox"/> make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements <input type="checkbox"/> apply sampling techniques.  <b>Analysis and evaluation:</b> <input type="checkbox"/> apply mathematical concepts and calculate results <input type="checkbox"/> present observations and data using appropriate methods, including tables and graphs <input type="checkbox"/> interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions <input type="checkbox"/> present reasoned explanations, including explaining data in relation to predictions and hypotheses <input type="checkbox"/> evaluate data, showing awareness of potential sources of random and systematic error <input type="checkbox"/> identify further questions arising from their results.  <b>Measurement:</b> <input type="checkbox"/> understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature <input type="checkbox"/> use and derive simple equations and carry out appropriate calculations <input type="checkbox"/> undertake basic data analysis including simple statistical techniques.					
<b>Assessments</b>	End of half term tests & HFL'S	End of half term tests & HFL'S	End of half term tests & HFL'S	End of half term tests & HFL'S	End of half term tests & HFL'S	End of half term tests & HFL'S
<b>Enrichment</b>	Lab Rats Leaders-Opportunity to complete crest award Trip to Manchester museum- Small group activities Science career talks					



**Rayner Stephens**  
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