



## Year 9: Biology

**Curriculum Intent:** Year 9 Biology looks to build on the foundations from years 7&8 and work towards developing knowledge of the 6 areas from GCSE; Cell Level Systems, Scaling up, Organism Level Systems, Community Level Systems, Genes, Inheritance and Selection and Global Challenges. The subject and procedural knowledge demands increase in this year, and students will be exposed to more complex ideas, models and explanations. Practical Activities (PAG) will be coupled with mathematical skills to build more procedural knowledge; focusing on areas such as data analysis and interpretation of graphs. The Biological knowledge developed through this year will provide the basis for further study in these 6 areas as students enter year 10, with the whole of the combined science content being taught before the year 10 PPE.

	<b>B1 – Cell Level Systems</b>	<b>B2 – Scaling Up</b>	<b>B3 – Organism Level Systems</b>	<b>B4 – Community Level Systems</b>	<b>B5 – Genes, Inheritance and Selection</b>	<b>B6 – Global Challenges</b>
<b>Key ideas</b>	B1.1.1 – B1.1.3 (Maths skills) <ul style="list-style-type: none"> <li>Plant and animal cells</li> <li>Bacterial Cells</li> <li>Light Microscopes</li> </ul> B1.2.1 & B1.2.3 <ul style="list-style-type: none"> <li>DNA Structure</li> <li>Enzyme lock and key model</li> </ul> B1.3.1 – B1.3.2 <ul style="list-style-type: none"> <li>Biological Molecules (2 lessons including food tests)</li> <li>Aerobic + Anaerobic Respiration (word equations and application)</li> </ul> B1.4.1 – 1.4.2 <ul style="list-style-type: none"> <li>Photosynthesis</li> </ul>	B2.1.1 + B2.1.2 <ul style="list-style-type: none"> <li>Diffusion</li> <li>Osmosis (Maths skills)</li> </ul> B2.2.1 -B2.2.3 <ul style="list-style-type: none"> <li>Exchange and Transport</li> <li>Circulatory System</li> <li>Heart and blood (2 lessons)</li> </ul>	B3.1.1 – B3.1.2 <ul style="list-style-type: none"> <li>Nervous system</li> <li>Reflexes</li> </ul> B3.2.1 – B3.2.2 <ul style="list-style-type: none"> <li>Hormones</li> <li>Negative Feedback</li> </ul> B3.3.1 <ul style="list-style-type: none"> <li>Controlling blood sugar levels</li> </ul>	B4.1.1 – B4.1.4 <ul style="list-style-type: none"> <li>Ecosystems (minus decomposition)</li> <li>Intro to Sampling</li> <li>Abiotic and Biotic Factors</li> <li>Competition and Interdependence</li> <li>Analysis of predator/prey graphs (assessment including graph drawing)</li> <li>Nutrient cycling (Water)</li> </ul>	B5.1.1, B5.1.3 – B5.1.4, B5.1.6, B5.2.1 <ul style="list-style-type: none"> <li>Variation</li> <li>Dominant and recessive alleles</li> <li>Genetic crosses</li> <li>Mutations</li> <li>Natural Selection</li> </ul>	B6.2.1 – B6.2.2, B6.3.1 – 6.3.4, B6.3.6 – B6.3.7, B6.3.10 – B6.3.12 <ul style="list-style-type: none"> <li>Selective breeding</li> <li>Genetic engineering (basic)</li> <li>Health and Disease</li> <li>Spread of communicable diseases</li> <li>Preventing the spread of communicable diseases</li> <li>Human infections</li> <li>Blood and Body defence mechanisms (2 lessons)</li> <li>Vaccinations</li> </ul>

	<ul style="list-style-type: none"> <li>• Testing for starch</li> </ul>					<ul style="list-style-type: none"> <li>• Non-Communicable disease</li> <li>• Smoking and CVD</li> <li>• Treating CVD</li> </ul>
<p><b>Sequence of Learning -Key Questions</b></p>	<p>Understanding Biology at a cellular level Comparison between plant and animal cell?</p> <p>What is the structure of DNA?</p> <p>How an enzyme is a Biological catalyst?</p> <p>How respiration involves the breakdown of organic molecules to enable the chemical processes necessary for life?</p> <p>How do plant make carbohydrates in their leaves?</p>	<p>How do materials move in and between cells?</p> <p>Explain how the human gaseous exchange system functions</p>	<p>How does the body respond to its surroundings?</p> <p>How does the body maintain its internal environment through hormones?</p>	<p>How organisms affect the environment and each other?</p> <p>How the environment affects the organisms in a habitat?</p>	<p>How is genetic information passed on from one generation to the next?</p>	<p>How do species adapt to their environment over time?</p> <p>Understand how lifestyle choices can have an impact on your Health?</p> <p>How does the body defend itself against pathogens?</p>
<p><b>Practical Skills</b></p>	<p>B1 Pag - Light Microscopy</p> <p>B2 Pag- Food Tests</p> <p>Testing for Starch</p>	<p>Osmosis practical demo (data collected after 1 day)</p>	<p>Reaction time experiment</p>	<p>Sampling</p>		<p>Face mask investigation</p>

<p style="text-align: center;"><b>Assessment (Related to mastery grids)</b></p>	<p>B1 Pag Write up – Looking at an onion cell using a light microscope</p> <p>Test based on past paper questions.</p> <p>Dirt Lesson</p> <p>Model making and evaluation</p> <p>(12 lessons)</p>	<p>Analysis of osmosis practical data – including graph drawing</p> <p>Test based on past paper questions</p> <p>Journey of a blood cell</p> <p>Heart dissection practical assessment</p> <p>(6 lessons)</p>	<p>B1 – B3 assessment</p> <p>Extended writing task on reflex arc</p> <p>Level assessed task – Why do I jump when watching a scary movie</p> <p>(6 lessons + 1 Dirt)</p>	<p>See above.</p> <p>(6 lessons)</p>	<p>Research and Slow writing on antibiotic resistance</p> <p>Test B4 – B5 – past paper questions.</p> <p>(6 lessons + 1 Dirt)</p>	<p>Marking face mask investigation.</p> <p>Vaccination storyboard</p> <p>HIV factfile</p> <p>Test B4 – B6 past paper questions</p> <p>(13 + 1)</p>
---	---	--	---	--------------------------------------	---	--