

# Y9 BIOLOGY

## SCIENCE AT YARDLEYS

**INTENT:** Science helps students gain an understanding of the world around them, from the micro-level of particles and atoms to the macro-level of our expanding universe. It encourages students to question and enquire in order to learn more. We want our students to acquire the scientific knowledge and skills to meet their academic, practical and “real life” challenges of the future.

## Y9 BIOLOGY

Year 9 builds on from Cycles of life topic which was taught at the end of year 8. The focus of this topic is how organisms interact with each other and their environment and how humans can impact their environments. It links to current issues that are affecting our environment and how we can address these issues and make our environments more biodiverse and reduce pollution. This follows on with the key concepts and the central ideas in biology such as cells, enzymes and how substances are transported in and out of cells.

## YEAR 9

|                               | Ecosystems and Material cycles  | Key concepts  | Exchange and transport in Animals   | Plant structures and their functions  |
|-------------------------------|---|---|---|---|
| <b>SUBSTANTIVE KNOWLEDGE</b>  | <ul style="list-style-type: none"> <li>Ecosystems</li> <li>Pollution</li> <li>Feeding relationships.</li> <li>Biodiversity</li> <li>Food security</li> <li>Cycles</li> </ul>  | <ul style="list-style-type: none"> <li>Eukaryotic and prokaryotic cells</li> <li>Virus structure and lifecycle</li> <li>Microscopes</li> <li>Enzymes</li> <li>Testing foods.</li> <li>Transporting substance</li> </ul>   | <ul style="list-style-type: none"> <li>The circulatory system</li> <li>Cardiovascular disease</li> <li>Treatments for cardiovascular disease</li> <li>Cellular respiration</li> </ul>   | <ul style="list-style-type: none"> <li>Photosynthesis.</li> <li>Diffusion, osmosis and active transport.</li> <li>Plant tissue</li> <li>Plant adaptations, defence and disease</li> <li>Plant hormones</li> </ul>   |
| <b>DISCIPLINARY KNOWLEDGE</b> | <ul style="list-style-type: none"> <li>Identify patterns and trends and draw conclusions</li> <li>Interpreting data</li> <li>To make predictions and draw hypothesis</li> <li>Apply mathematical concepts</li> <li>Apply sampling techniques</li> </ul> | <ul style="list-style-type: none"> <li>Apply mathematical concepts</li> <li>To interpret observations and other data, including identifying patterns and trends, making inferences and drawing conclusions</li> <li>Use scientific theories and explanations to make predictions</li> </ul> | <ul style="list-style-type: none"> <li>Use mathematical concepts</li> <li>Select appropriate equipment</li> <li>Evaluate risks</li> <li>Evaluate methods of treatment bearing in mind the benefits and risks.</li> <li>Interpret data</li> <li>Suggest improvements to scientific methods.</li> </ul> | <ul style="list-style-type: none"> <li>To use mathematical equations</li> <li>Select appropriate apparatus</li> <li>Present observations into tables and graphs and evaluate data and suggestions for improvements.</li> <li>Recognise patterns and trends, make inferences and draw conclusions when carrying out a range of photosynthesis practicals.</li> </ul> |