

## KS5 Long Term Curriculum Plan: A LEVEL BIOLOGY Year 12 2021-2022

**Curriculum Aim:** In A Level Biology we extend on the knowledge of GCSE and aim to prepare, inspire and nurture a passion for Biology, whilst laying the groundwork for further study in courses like the biological sciences and medicine. We do this by covering a wide range of biological knowledge and essential practical skills. This includes preparing students to be analytical thinkers and problem solvers.

**Link to prior learning:** The subject builds on key knowledge and skills from GCSE Sciences, whilst diving deeper into key topics such as biological basis of life, cell theory, immunity, and energy transfers through organisms.

**Rationale of sequencing:** We begin the course by focusing on essential carbon-based components of all living things, including how they interact and testing for their presence. This is taught alongside cell theory. These topics allow students to gain understanding of the essential biological reactions and key vocabulary required for all other topics. We then move onto the exchange of substances between internal and external environments and the energy transfers through ecosystems, this is where we embed the key vocabulary and skills learnt prior in the course. Throughout all topics we practice essential practical skills. Topics link from one to another, we use continuous recall starters to embed content.

	Focus / Topic	Knowledge & Skills (from NC/Programmes of Study)	Assessment
Autumn 1	Biological molecules Cell Structure Cell transport	Students will gain an understanding of: <ul style="list-style-type: none"> <li>• The use and structure of the fundamental carbon-based molecules and how to test for their presence.</li> <li>• The use of enzymes in organisms, specifically digestion.</li> <li>• How to plot logarithmic scales and calculate rate.</li> </ul> Learn and observe the detailed structure of cells and the cell cycle. Describe the structure and movement of substances across a cell membrane.	Baseline exam to assess students GCSE knowledge that is essential for the A level course. <b>w/b 6<sup>th</sup> September 2021</b>
Autumn 2	Nucleic acids		
Spring 1	Cell recognition and immune system DNA, Genes and Protein Synthesis	Students will gain knowledge on: <ul style="list-style-type: none"> <li>• The role of proteins on the cell-surface membrane, in particular the role they play in immune response.</li> <li>• How DNA is stored in both eukaryotic and prokaryotic organisms and how proteins are synthesised.</li> <li>• Key practical skills including: calculations of mitotic index and magnification, interpreting and plotting data, and ability to evaluate methodology, evidence and data.</li> </ul>	

Spring 2	Genetic Diversity Gas exchange	<p>Students will gain knowledge of:</p> <ul style="list-style-type: none"> <li>• Causes and effects of gene mutations.</li> <li>• How genetic variation arises within a population, which specific knowledge of Meiosis.</li> <li>• How substances are exchanged between internal and external surfaces and the effect on organisms.</li> </ul> <p>They will develop key practical skills such as dissecting and use of an optical microscope. Whilst embedding other skills such as interpreting information and data. The ability to analyse and evaluate experimental data and recognising correlation and causal relationships.</p>	<p>2 x Year 1 style papers on all content covered to this date. 1 paper per teacher.</p> <p><b>Assessment week (w/b 21<sup>st</sup> Feb 2022)</b></p>
Summer 1	Mass Transport Biodiversity	<p>Students will gain knowledge of:</p> <ul style="list-style-type: none"> <li>• How organisms are classified and identified using DNA, features and behaviours.</li> <li>• Calculating the Index of Diversity and the techniques to investigate diversity.</li> <li>• Understand how efficient movement of substances over exchange surfaces is provided by mass transport.</li> </ul> <p>They will continue to develop key practical skills such designing an investigation and using potometers. Whilst continuing to embed other skills such as interpreting information and data. The ability to analyse and evaluate experimental data and recognising correlation and causal relationships.</p>	
Summer 2	Populations and ecosystems	<p>Students will gain knowledge of:</p> <ul style="list-style-type: none"> <li>• Understanding of the interactions within ecosystems and techniques used to measure frequency and percentage cover.</li> </ul> <p>They will continue to develop key practical skills such as using given data to calculate population sizes. The use of logarithmic scales in representing the growth of a population of microorganisms.</p>	<p>End of year Mock based on Year 1 content. <b>End of Year exams (w/b 20<sup>th</sup> June 2022)</b></p>

Further Information

The Course Specification <https://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF>

All topics will be assessed with an end of module exam (every 3-4 weeks). Practical skills will be assessed throughout the course during required practicals. Students are expected to complete 5 hours of additional study per week for this course.