



## A LEVEL – YEAR 12 – BIOLOGY – CURRICULUM OVERVIEW

Autumn Term		Spring Term		Summer Term	
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Themes	Key Themes	Key Themes	Key Themes	Key Themes	Key Themes
<p><b>Biological Molecules</b></p> <ul style="list-style-type: none"> <li>• Monomers &amp; polymers</li> <li>• Monosaccharides, disaccharides, polysaccharides</li> <li>• Relating structure to function in carbohydrates</li> <li>• Prac: Biochemical tests for carbohydrates</li> <li>• Prac: Quantifying sugars</li> <li>• Lipids &amp; Prac: Testing for lipids</li> <li>• Amino acids</li> <li>• Prac: Testing for proteins</li> </ul> <p><b>Cells</b></p> <ul style="list-style-type: none"> <li>• Biological drawings</li> <li>• Eukaryotic cells</li> <li>• Methods of studying cells</li> <li>• Prokaryotes &amp; viruses</li> <li>• Magnification calculations</li> <li>• Use an eyepiece graticule.</li> </ul> <p><b>Transport across membranes</b></p> <ul style="list-style-type: none"> <li>• Diffusion, osmosis, active transport</li> </ul>	<p><b>Biological Molecules</b></p> <ul style="list-style-type: none"> <li>• Protein structure</li> <li>• Relating structure to function in proteins</li> <li>• Importance of water</li> <li>• Inorganic ions</li> </ul> <p><b>Enzymes</b></p> <ul style="list-style-type: none"> <li>• Properties &amp; models</li> <li>• Factors affecting enzymes</li> <li>• Interpreting graphs – exam technique training</li> <li>• Practical planning – in preparation for required practical 1.</li> </ul> <p><b>Transport across membranes</b></p> <ul style="list-style-type: none"> <li>• Cotransport</li> <li>• Required practical 3 – investigating water potential.</li> <li>• Required practical 4 – effects of named variable on cell membranes.</li> </ul>	<p><b>Enzymes</b></p> <ul style="list-style-type: none"> <li>• Required practical 1 – effect of chosen variable on enzyme activity.</li> <li>• Practical writeup.</li> </ul> <p><b>Nucleic Acids</b></p> <ul style="list-style-type: none"> <li>• DNA &amp; RNA structure</li> <li>• DNA replication</li> <li>• Evidence for semi-conservative replication</li> <li>• ATP structure &amp; function</li> </ul> <p><b>Cell Division</b></p> <ul style="list-style-type: none"> <li>• Cell cycle and mitosis</li> <li>• Required practical 2 – root tip squash to observe mitosis</li> <li>• Cancer and its treatments</li> <li>• Division in bacteria and viruses.</li> </ul> <p><b>Cells in the immune system</b></p> <ul style="list-style-type: none"> <li>• Defence mechanisms &amp; phagocytosis</li> <li>• Cell-mediated immunity</li> <li>• Humoral immunity</li> <li>• Vaccinations</li> </ul>	<p><b>DNA and Protein Synthesis</b></p> <ul style="list-style-type: none"> <li>• Genes, chromosomes</li> <li>• Genetic code</li> <li>• Comparing types of RNA</li> <li>• Transcription &amp; splicing</li> <li>• Translation</li> </ul> <p><b>Genetic diversity and adaptation</b></p> <ul style="list-style-type: none"> <li>• Mutations</li> <li>• Meiosis</li> </ul> <p><b>Cells in the immune system</b></p> <ul style="list-style-type: none"> <li>• Prac: blood smear</li> <li>• Monoclonal antibodies</li> <li>• HIV</li> </ul> <p><b>Exchange surfaces</b></p> <ul style="list-style-type: none"> <li>• Surface area to vol ratio</li> <li>• Required practical – fish gill dissection</li> <li>• Gas exchange in leaves</li> <li>• Lung structure</li> <li>• Lung disease</li> </ul>	<p><b>Genetic diversity and adaptation</b></p> <ul style="list-style-type: none"> <li>• Natural selection</li> <li>• Types of selection</li> <li>• Adaptations</li> <li>• Aseptic technique</li> <li>• Required practical – testing antimicrobials</li> </ul> <p><b>Classification and Biodiversity</b></p> <ul style="list-style-type: none"> <li>• Species and courtship</li> <li>• Principles of classification</li> <li>• Biodiversity and calculating index of diversity</li> <li>• Investigating populations</li> </ul> <p><b>Exchange surfaces</b></p> <ul style="list-style-type: none"> <li>• Enzymes and digestion</li> <li>• Absorption</li> </ul> <p><b>Transport in Animals</b></p> <ul style="list-style-type: none"> <li>• Heart and circulation</li> <li>• Required practical – heart dissection</li> <li>• Blood vessels</li> <li>• Cardiac cycle</li> </ul>	<p><b>Classification and Biodiversity</b></p> <ul style="list-style-type: none"> <li>• Human impacts on biodiversity</li> <li>• Required practical 12 – using quadrats</li> <li>• Phylogeny</li> <li>• Investigating genetic diversity</li> <li>• Using statistical tests</li> </ul> <p><b>Transport in Animals</b></p> <ul style="list-style-type: none"> <li>• Tissue fluid formation</li> <li>• Haemoglobin curves</li> <li>• Cardiovascular disease</li> <li>• Data interpretation</li> <li>• Prac: daphnia heart rates</li> </ul> <p><b>Transport in Plants</b></p> <ul style="list-style-type: none"> <li>• Structure of xylem and phloem</li> <li>• Transport of water</li> <li>• Prac: plant dissection &amp; biological drawings recap</li> <li>• Potometers</li> <li>• Transport of sugars</li> <li>• Evidence for mass flow</li> </ul>
Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks	Assessment / Composite Tasks
<p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• Biological molecules</li> <li>• Cells x2</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• Cells</li> </ul>	<p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• Biological molecules</li> <li>• Transport across membranes</li> <li>• Enzymes</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• Biological molecules</li> <li>• Transport across membranes</li> </ul>	<p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• Enzymes</li> <li>• Nucleic Acids</li> <li>• Cell division</li> <li>• Cells in the immune system</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• Enzymes</li> <li>• Nucleic Acids</li> <li>• Cell division</li> </ul>	<p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• DNA and protein synthesis</li> <li>• Genetic diversity and adaptation</li> <li>• Cells in the immune system</li> <li>• Exchange surfaces</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• DNA and protein synthesis</li> <li>• Cells in the immune system</li> </ul>	<ul style="list-style-type: none"> <li>• UCAS Examinations – AQA A-level Biology Paper 1.</li> </ul> <p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• Genetic diversity and adaptation</li> <li>• Classification &amp; biodiversity</li> <li>• Transport in animals</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• Genetic diversity and adaptation</li> <li>• Exchange surfaces</li> </ul>	<p><i>Formative feedback (GMAs):</i></p> <ul style="list-style-type: none"> <li>• Classification &amp; biodiversity</li> <li>• Transport in animals</li> <li>• Transport in plants</li> </ul> <p><i>End of topic test(s):</i></p> <ul style="list-style-type: none"> <li>• Classification &amp; biodiversity</li> <li>• Transport in animals</li> <li>• Transport in plants</li> </ul>