

Subject: <b>KS5 Year 13 Biology</b>		Year Group: <b>13</b>
<p>Term 1 Key Focus/Topic(s)</p> <p><b>Neuronal communication</b></p> <ul style="list-style-type: none"> <li>● Coordination and neurones</li> <li>● Sensory receptors</li> <li>● Action potential and the synapse</li> <li>● Structure of the PNS and CNS</li> <li>● Reflexes, voluntary and involuntary muscles</li> <li>● Sliding filament model</li> </ul> <p><b>Genetics</b></p> <ul style="list-style-type: none"> <li>● Mutation and variation</li> <li>● Control of gene expression</li> <li>● Body plans</li> <li>● Inheritance</li> <li>● Evolutionary genetics</li> <li>● Speciation and artificial selection</li> </ul>	<p>Term 2 Key Focus/Topic(s)</p> <p><b>Hormonal communication and homeostasis</b></p> <ul style="list-style-type: none"> <li>● Hormonal communication</li> <li>● Structure and function of the pancreas</li> <li>● Blood glucose and diabetes</li> <li>● Coordination and heart rate</li> <li>● Principles of homeostasis</li> <li>● Ectotherms and endotherms</li> <li>● Excretion, the liver, kidney and osmoregulation</li> <li>● Urine, diagnosis and kidney failure</li> </ul> <p><b>Manipulating genomes</b></p> <ul style="list-style-type: none"> <li>● DNA profiling</li> <li>● DNA sequencing and analysis</li> <li>● Genetic engineering</li> <li>● Gene technology and ethics</li> </ul>	<p>Term 3 Key Focus/Topic(s)</p> <p><b>Plant responses</b></p> <ul style="list-style-type: none"> <li>● Hormones and growth in plants</li> <li>● Abiotic stress in plants</li> <li>● Responses to herbivory</li> <li>● Tropisms in plants</li> <li>● Use of plant hormones</li> </ul> <p><b>Cloning and biotechnology</b></p> <ul style="list-style-type: none"> <li>● Natural and artificial cloning in plants</li> <li>● Cloning in animals</li> <li>● Microorganisms and biotechnology</li> <li>● Medicine and bioremediation</li> <li>● Culturing of microorganisms</li> <li>● Immobilised enzymes</li> </ul>
<p>Term 1 Assessment Opportunities:</p> <ul style="list-style-type: none"> <li>● End of unit tests.</li> <li>● Homework.</li> </ul>	<p>Term 2 Assessment Opportunities:</p> <ul style="list-style-type: none"> <li>● End of unit tests.</li> <li>● Homework.</li> <li>● PAGES – Gel electrophoresis, Kidney dissection, glucose concentration in urine.</li> </ul>	<p>Term 3 Assessment Opportunities:</p> <ul style="list-style-type: none"> <li>● End of unit tests.</li> <li>● Homework.</li> <li>● PAGES – Bacterial growth, immobilised enzymes.</li> </ul>
<p>Term 4 Key Focus/Topic(s)</p> <p><b>Energy and respiration</b></p> <ul style="list-style-type: none"> <li>● Energy cycles and ATP</li> <li>● Photosynthesis</li> <li>● Glycolysis</li> <li>● Link reaction, Krebs cycle and the ETC</li> </ul>	<p>Term 5 Key Focus/Topic(s)</p> <p><b>Revision and Exams</b></p>	

<ul style="list-style-type: none"> <li>● Respiratory substrates and aerobic respiration</li> </ul> <p><b>Ecosystems, populations and sustainability</b></p> <ul style="list-style-type: none"> <li>● Energy transfer and recycling in ecosystems</li> <li>● Succession, distribution and abundance</li> <li>● Population size</li> <li>● Competition and predator – prey relationships</li> <li>● Conservation, preservation and sustainability</li> <li>● Environmentally sensitive ecosystems</li> <li>● Case studies</li> </ul>		
<p>Term 4 Assessment Opportunities:</p> <ul style="list-style-type: none"> <li>● End of unit tests.</li> <li>● Homework.</li> <li>● PAGES – Respiration in yeast</li> </ul>	<p>Term 5 Assessment Opportunities:</p>	

Rationale:  
 In Year 12 the foundations of Biology are covered along with an overview of basic systems biology for example how gases and other essential molecules are exchanged and transported in both plants and animals. These foundations and system overviews pave the way for a more in-depth and cross topic approach that is used in Year 13.

In Year 13 students apply the skills gained in Year 12 to an in-depth review of communication systems, homeostasis, genetics, biotechnology, biochemistry and ecology.

A big feature of the A level Biology scheme of work is to develop the students critical thinking and analytical skills. Students are expected to develop higher level thinking skills, participate actively in lessons, demonstrating a greater level of knowledge and to make connections across topics. The lessons are sequenced and designed to do this. Students are also set reading work and are assessed on their quality of understanding in end of unit assessments. Students are asked to read some of the lesson's content before the lesson, thereby allowing for a deeper understanding to be developed through discussion with peers and problem-solving activities. Reading outside of lessons also promotes independence and allows students to consolidate lesson content better. Examination practice and retrieval practice is also a key feature in A level Biology.

Evaluation:

- Assessment opportunities will involve teacher, self and peer assessment. The assessment is focused around work produced in theoretical and practical sessions where the students are required to demonstrate their practical and analytical skills as well as their scientific knowledge of the theory covered.
- Early intervention is a key feature of the A level assessment so that gaps in attainment can be determined promptly and barriers in the students learning addressed. Lesson observations, work scrutiny and particularly student discussions and self-assessment are key aspects in ensuring that students can close gaps and make good progress. It also results in greater student retention from Year 12 to Year 13.
- In lessons students should be able to apply advanced knowledge to novel situations and make connections between topics.
- Homework is set that tests the students' knowledge and ability to apply their knowledge to a wide range of biological phenomena.
- Students should demonstrate an understanding of how theory is used to explain scientific concepts with clarity and detail.
- Lesson observations, work scrutiny, teacher and self-assessment play a key role in student outcomes.