

**Biology Trilogy**

**Year 10**

**Note all KS3 links refer to the year 9 course which was previously studied by these students.**

Term 1 content and skills	Term 2 Content and skills	Term 3 Content and Skills	Extended Curriculum (trips/visits/afterschool activities)
<p><b>Module 1: Cell Biology (Links to KS3 T24)</b></p> <ul style="list-style-type: none"> <li>The structure of animal cells, plant cells and prokaryotic cells.</li> <li>The subcellular structures within eukaryotic and prokaryotic cells.</li> <li>How microscopy techniques have changed over time and carry out calculations involving magnification, real size and image size.</li> </ul> <p><b>Required Practical:</b> Using a microscope to observe, draw and label cells.</p> <ul style="list-style-type: none"> <li>Specialised cells.</li> <li>Mitosis and the cell cycle.</li> <li>Stem cells, how we can use them and the ethics of this.</li> <li>Transport in cells: diffusion, osmosis and active transport.</li> </ul> <p><b>Required Practical:</b> Investigating the effect of a range of concentrations</p>	<p><b>Module 2: Organisation (links to KS3 T11 and T17 and PSHE)</b> (Continued from last term)</p> <ul style="list-style-type: none"> <li>Coronary heart disease: what it is and how we treat it</li> <li>Relationship between health and disease and the interactions between different types of disease</li> <li>The effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases</li> <li>Different types of cancer</li> <li>The structures of plant tissues and organs and how they are related to their functions</li> </ul> <p><b>Module 3: Infection and Response (links to PSHE)</b> (taught across this term and next term)</p> <ul style="list-style-type: none"> <li>How diseases caused by viruses, bacteria, protists and fungi are spread in</li> </ul>	<p><b>Module 4: Bioenergetics (links to KS3 T17, T21 and GCSE Chem Module 9)</b></p> <ul style="list-style-type: none"> <li>Photosynthesis and the conditions which affect the rate of photosynthesis.</li> <li></li> </ul> <p><b>Required Practical:</b> investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed</p> <ul style="list-style-type: none"> <li>Aerobic and anaerobic respiration How the body responds to exercise Metabolism</li> </ul>	<ul style="list-style-type: none"> <li>Medtech challenge – links to engineering, design + tech, business skills. Provide industry mentor.</li> <li>Stem Club</li> <li>Launchpad- working with Form the Futures and local industry</li> <li>Engineering Club</li> <li>STEM leaders</li> </ul>

<p>of salt or sugar solutions on the mass of plant tissue.</p> <p><b>Module 2: Organisation (links to KS3 T11 and T17 and Chemistry GCSE module 7)</b></p> <ul style="list-style-type: none"> <li>• The human digestive system and the enzymes involved in digesting proteins, fats and carbohydrates.</li> <li>• How enzymes work by the 'lock and key' model.</li> </ul> <p><b>Required Practical:</b> use qualitative reagents to test for a range of carbohydrates, lipids and proteins.</p> <p><b>Required Practical:</b> investigate the effect of pH on the rate of reaction of amylase enzyme.</p> <ul style="list-style-type: none"> <li>• The structure of the heart and blood vessels.</li> <li>• The constituents of blood.</li> </ul>	<p>animals and plants (and how we try to prevent these diseases from spreading)</p> <ul style="list-style-type: none"> <li>• Human defences against pathogens (including non-specific defences and the immune system)</li> <li>• Vaccinations and antibiotics to protect us from pathogens - Discovery and development of drugs</li> </ul>		
<p><b>Assessment:</b> A key skills set task per topic (based on practical work, numeracy, data analysis or literacy), end of topic test (which can be open book or closed book). Additionally low stakes testing (eg Microsoft forms quizzes, exam questions etc) are used within lessons.</p>			
<p><b>Assessment:</b> End of term closed book written test</p>	<p><b>Assessment:</b> End of term closed book written test</p>	<p><b>Assessment:</b> End of term paper 1 exam</p>	

**Biology Separate Science**

**Year 11**

All students are taught in mixed ability teaching groups recording their work on their iPads using their lab books for note taking in practical work.

Term 1 content and skills	Term 2 Content and skills	Term 3 Content and Skills	Extended Curriculum (trips/visits/afterschool activities)
<p><b>Module 5:</b> Homeostasis and response (<a href="#">links to PSHE</a>)</p> <ul style="list-style-type: none"> <li>• Homeostasis</li> <li>• Structure and function of the human nervous system</li> </ul> <p><b>Required Practical:</b> plan and carry out an investigation into the effect of a factor on human reaction time</p> <ul style="list-style-type: none"> <li>• Human endocrine system (glands and hormones)</li> <li>• Control of blood glucose concentration</li> <li>• Two types of diabetes and how they are treated</li> <li>• Hormones in reproduction and the menstrual cycle</li> <li>• Contraception</li> </ul>	<p><b>Module 6:</b> Inheritance, variation and evolution (<a href="#">links to KS3 T5 and T20</a>)</p> <ul style="list-style-type: none"> <li>• Sexual and asexual reproduction</li> <li>• Meiosis</li> <li>• DNA and the genome</li> <li>• Genetic inheritance and inherited disorders</li> <li>• Sex determination</li> <li>• -How a combination of genetics and environmental factors shape our characteristics</li> <li>• Evolution by natural selection</li> <li>• Selective breeding of plants and domesticated animals</li> <li>• Genetic engineering: science and ethics</li> <li>• Fossils and evidence for evolution How organisms become extinct</li> <li>• Classification of living organisms</li> </ul>	<p><b>Module 7: Ecology</b> (<a href="#">links to KS3 T8 and GCSE Chem Module 9</a>)</p> <ul style="list-style-type: none"> <li>• Ecosystems and how the community of living organisms (biotic) interacts with the non-living (abiotic) parts of their environment.</li> <li>• Organisms have adaptations which may be structural, behavioural or functional.</li> <li>• Feeding relationships within a community can be represented by food chains</li> </ul> <p><b>Required Practical:</b> use sampling techniques to measure the population size of a common species in a habitat.</p> <ul style="list-style-type: none"> <li>• Explain how the carbon and water cycles are important to living organisms</li> <li>• the impact of environmental changes on the distribution of species in an ecosystem</li> </ul>	<p>STEM Club Engineering Club</p>

		<ul style="list-style-type: none"> <li>• biodiversity and the stability of ecosystems</li> <li>• The impact that human have had on ecosystems: waste management, land use, deforestation and global warming.</li> <li>• The importance of maintaining biodiversity</li> </ul> <p>Consolidation work and revision for exams</p>	
<p><b>Assessment:</b> A key skills set task per topic (based on practical skills, numeracy, data analysis or literacy), end of topic test (which can be open book or closed book). Additionally low stakes testing (eg Microsoft forms quizzes, exam questions etc) are used within lessons.</p>			
<p><b>Assessment:</b> Interim exam on paper 1 content</p>	<p><b>Assessment:</b> Mock exam on Paper 2 content</p>	<p><b>Assessment:</b> GCSE exams</p>	