


## Year 10 Combined Science Curriculum Plan

Biology, chemistry and physics units are taught in rotation.

	Key concept/ Key question	Overview of the unit	Assessment	Cross Curricular Skills	Suggested reading material and websites:
<b>Biology 3</b>	How are living things organised?	Building on Y9 work on cells the unit looks at tissues, organs and organ systems – focusing on the human digestive system.	Assessment is based around <b>end of topic tests</b> – typically around 55 min. at the end of each unit.	<p><b>Numeracy:</b> Calculation of rates of reaction. Plotting graphs.</p> <p><b>Thinking Skills:</b> Use and evaluation of models (lock and key for enzymes)</p>	<p>Students are following the AQA science specifications.</p> <p><a href="http://www.aqa.org.uk/subjects/science/gcse">http://www.aqa.org.uk/subjects/science/gcse</a></p> <p>All students have access to Kerboodle which contains a digital copy of the biology, chemistry and physics textbooks used at KS4</p> <div style="text-align: center;">  </div> <p><a href="https://www.kerboodle.com/users/login">https://www.kerboodle.com/users/login</a></p> <p>A number of KS4 revision guides and student workbooks are available such as those from CPG and these can be helpful in supporting student learning. As this is a new specification many resources are still being developed.</p> <p><a href="https://www.cgpbooks.co.uk/">https://www.cgpbooks.co.uk/</a></p>
	How does the digestive system work?	Protein structure is introduced in the context of enzyme function.	These tests contain a mixture of recall and application questions based on the current topic.		
<b>Chemistry 3</b>	What are enzymes?	Factors which effect enzyme function are considered then linked back into enzymes in the digestive system.	Towards the end of the year students will sit papers in biology, chemistry and physics. This is to begin to prepare students for the linear exam based terminal assessment they will encounter at GCSE.	<p><b>Literacy:</b> reading newspaper/scientific articles to extract evidence and draw balanced conclusions.</p> <p><b>Numeracy:</b> scale, nanometre conversions</p>	
	Structure and bonding in chemistry.	Ionic, covalent and metallic bonding.	Giant structures		
	What are fullerenes?	Fullerenes and graphene			

			Working grades will be reported as a running average showing how students have been performing in all assessments thus far.	<b>Thinking Skills:</b> Implications of new technology. Ideas around benefit and risk.	Useful websites to support learning. BBC KS4 science <a href="http://www.bbc.co.uk/education/subjects/zrkw2hv">http://www.bbc.co.uk/education/subjects/zrkw2hv</a>
<b>Physics 3</b>	<p>What is energy?</p> <p>How can we model how energy behaves and quantify energy mathematically?</p> <p>How is thermal energy transferred?</p>	<p>The energy store and energy transfer model.</p> <p>Calculation of energy stores (potential, kinetic, elastic).</p> <p>Efficiency of energy transfer and power.</p> <p>Energy transfer by conduction and radiation.</p> <p>Insulation of homes as an example of controlling heat transfer.</p>	<p>Individual grades will be reported for each of the sciences</p>	<p><b>Literacy:</b> Extracting mathematical information from written texts – selecting appropriate equations.</p> <p><b>Numeracy:</b> Range of calculations to learn and apply. Conversion of units.</p> <p><b>Thinking Skills:</b> How scientists use models even if the models are limited.</p>	<p>Please note this material is no longer exam board specific.</p>

<p><b>Biology 4</b></p>	<p>How are transport systems organised in animals and plants?</p> <p>What is a communicable disease?</p>	<p>Structure and function of blood.</p> <p>The human circulatory and gas exchange systems. Relating structure to function.</p> <p>Diseases of the heart and treatments.</p> <p>Plant organs (leaf, root, stem) – mass transport system in plants. Role of specialised tissues in plants.</p> <p>What is a pathogen?</p> <p>What diseases are caused by viruses and bacterial?</p>		<p><b>Literacy:</b> Extracting information from complex texts – subject specific vocabulary.</p> <p><b>Numeracy:</b> Data interpretation, calculating % change, rate of gas/water uptake.</p> <p><b>Thinking Skills:</b> Cause and correlation. Evaluating the strength of scientific evidence. Recognising questions relating to relative values and importance that science can't answer directly.</p>	
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<p><b>Biology 5</b></p>	<p>How can communicable disease be prevented?</p> <p>What are non-communicable diseases?</p>	<p>Role of medicine – antibiotics, vaccination</p> <p>Drug discovery</p> <p>Cancer</p> <p>Disease linked to lifestyle choices (smoking, alcohol, exercise).</p>		<p><b>Literacy:</b> Reading to extract information – historical accounts of drug discovery</p> <p><b>Numeracy:</b> Disease data</p> <p><b>Thinking Skills:</b> Ethical issues, considering how different people can come to different conclusions when presented with the same choices or information (vaccination).</p>	
<p><b>Chemistry 5</b></p>	<p>What is electrolysis?</p>	<p>Principles of electrolysis</p> <p>Extraction of aluminium</p>		<p><b>Literacy:</b> Writing equations and half equations. Accuracy and presentation of scientific formula.</p> <p><b>Numeracy:</b> Balancing equations and half equations.</p> <p><b>Thinking Skills:</b> Synoptic links to earlier work on structure and bonding and the formation of ions.</p>	

