

## (Science - Separate) Year 10 Long Term Plan

**Rationale (with end points):** Throughout the course, the scientific process is taught, with many opportunities to safely plan, risk assess, investigate, record, conclude and evaluate practical investigations, together with the relevant maths skills, and key subject-specific vocabulary that will enable students to be scientifically literate. In Years 10 we continue the work started in Year 9 as we build on the knowledge and understanding of biology, chemistry and physics gained during Key Stage 3. At Key Stage 4 we follow the AQA Scheme of Learning. All students in Years 10 and 11 follow the Combined Science Trilogy course. In Year 10 Biology, students study Organisation, Infections and Response, Bioenergetics and Homeostasis and Response. In Year 10 Chemistry, we move on to history and design of the Periodic Table, Structure and Bonding, Chemical Quantities and Chemical Changes and Energy changes. In Year 10 Physics we learn about Energy, electricity, particle model of matter and atomic structure.

Term	Topic	Knowledge	Skills	Reading /wider reading
<b>Autumn term 1</b>	<ul style="list-style-type: none"> <li>• Biology – B2 Organisation</li> <li>• Chemistry – C2 Bonding, structure &amp; properties of matter</li> <li>• Physics – P1 Energy</li> </ul>	<ul style="list-style-type: none"> <li>• Animal tissues, organs and organ systems.</li> <li>• Plant tissues, organs and systems</li> <li>• Chemical bonds, ionic, covalent and metallic</li> <li>• Bonding and structure</li> <li>• Bulk and surface properties of matter</li> <li>• Energy changes in a system</li> <li>• Conservation and dissipation of energy</li> </ul>	<ul style="list-style-type: none"> <li>• Practical Skills - Microscopes</li> <li>• Mathematical Skills - Magnification Calculations</li> <li>• Extended Writing – Experimental Method</li> </ul>	Wider Reading 1: Selected Article (Scientific Paper/Magazine)

		<ul style="list-style-type: none"> <li>National and global energy resources</li> </ul>		
<b>Autumn 2</b>	<ul style="list-style-type: none"> <li>Reteach Week</li> <li>Biology – B3 Infection &amp; response</li> <li>Chemistry – C3 Quantitative chemistry</li> <li>Physics - P2 Electricity</li> </ul>	<ul style="list-style-type: none"> <li>Communicable diseases</li> <li>Monoclonal antibodies</li> <li>Chemical measurements</li> <li>Amounts of substance</li> <li>Yield and atom economy</li> <li>Concentrations of solutions</li> <li>Volumes of gases</li> <li>Current, potential difference and resistance</li> <li>Series and Parallel circuits</li> </ul>	<ul style="list-style-type: none"> <li>Graphical Skills – Charts, graphs and tables.</li> <li>Analysing &amp; Evaluation Skills - Graphs &amp; Calculations</li> <li>Extended Writing – Menstrual Cycle</li> </ul>	Wider Reading 2: Selected Article (Scientific Paper/Magazine)
<b>Spring 1</b>	<ul style="list-style-type: none"> <li>Reteach Week</li> <li>Biology – B3 Infection &amp; response</li> <li>Chemistry – C4 Chemical changes</li> </ul>	<ul style="list-style-type: none"> <li>Plant diseases</li> <li>Reactivity of metals</li> <li>Domestic uses and safety</li> <li>Energy transfers</li> <li>Static electricity</li> </ul>	<ul style="list-style-type: none"> <li>Practical Skills – Experimental Method</li> <li>Mathematical Skills - Balancing Equations – Ratios</li> </ul>	Wider Reading 3: Selected Article (Scientific Paper/Magazine)

	<ul style="list-style-type: none"> <li>Physics - P2 Electricity</li> </ul>			
<b>Spring 2</b>	<ul style="list-style-type: none"> <li>Reteach Week</li> <li>Biology – B4 Bioenergetics</li> <li>Chemistry – C4 Chemical changes</li> <li>Physics – P3 Particle Model of Matter</li> </ul>	<ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Reactions of acids</li> <li>Changes of State and Particle model</li> <li>Internal energy and energy transfers</li> <li>Particle Model and pressure</li> </ul>	<ul style="list-style-type: none"> <li>Analysing &amp; Evaluating Skills – Renewable Energy resources</li> <li>Mathematical Skills - Multi-step calculations</li> <li>Graphical Skills – Describing trends</li> </ul>	Wider Reading 4: Selected Article (Scientific Paper/Magazine)
<b>Summer 1</b>	<ul style="list-style-type: none"> <li>Reteach Week</li> <li>Biology – B4 Bioenergetics</li> <li>Chemistry – C4 Chemical changes</li> <li>Physics – P4 Atomic Structure</li> </ul>	<ul style="list-style-type: none"> <li>Respiration</li> <li>Electrolysis</li> <li>Atoms and Isotopes</li> <li>Atoms and nuclear radiation</li> <li>Hazards &amp; uses of radiation</li> <li>Nuclear fission and fusion</li> </ul>	<ul style="list-style-type: none"> <li>Extended writing – Evaluate Bioleaching &amp; Phytomining</li> </ul>	Wider Reading 5: Selected Article (Scientific Paper/Magazine)
<b>Summer 2</b>	<ul style="list-style-type: none"> <li>Reteach Week</li> </ul>	<ul style="list-style-type: none"> <li>Homeostasis</li> <li>Human nervous system</li> </ul>	<ul style="list-style-type: none"> <li>Mathematical Skills – Wave property calculations</li> </ul>	Wider Reading 6: Selected Article (Scientific Paper/Magazine)

	<ul style="list-style-type: none"><li>• Biology – B5 Homeostasis &amp; Response</li><li>• Chemistry – C5 Energy Changes</li><li>• Physics – P5 Forces</li></ul>	<ul style="list-style-type: none"><li>• Hormonal coordination in humans</li><li>• Plant hormones</li><li>• Exothermic &amp; endothermic reactions</li><li>• Chemical cells and fuel cells</li></ul>	<ul style="list-style-type: none"><li>• Practical Skills – Angle measurements</li><li>• Practical Skills – Building Circuits and taking measurements.</li><li>• Mathematical Skills - Calculations &amp; Rearranging Formulae</li></ul>	
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