

<p><b>Year 9: Separate Chemistry</b></p>	<p>- <b>Curriculum Intent:</b> Year 10 Chemistry tackles more complex ideas and concepts in the subject. It builds on the key knowledge from years 7 and 8 to link together all the areas of the subject. The key areas of particles, reactions, monitoring reactions and earth and environmental science are developed through more challenging topics such as structure and bonding, advanced chromatographic methods, mole calculations, electrolysis and trends in the periodic table. Knowledge of key industrial chemical processes is also developed. Procedural knowledge and practical skills are developed further, building on experience with making salts, neutralisation, redox and displacement reaction. The curriculum in year 10 aims to bring everything together so that students have a complete understanding of the Chemistry aspect of the Combined Science course.</p>						
	<p><b>Autumn 1</b></p>	<p><b>Autumn 2</b></p>	<p><b>Spring 1</b></p>	<p><b>Spring 2</b></p>	<p><b>Summer 1</b></p>	<p><b>Summer 2</b></p>	
<p><b>Key ideas and sequence of learning</b></p>	<p><b>Chemistry module C1 - particles</b></p> <ul style="list-style-type: none"> <li>• Particles</li> <li>• Chemical &amp; physical changes</li> <li>• Atomic structure</li> <li>• History of the development of the atom</li> <li>• Periodic table</li> </ul> <p><b>Chemistry module C2 – elements &amp; compounds</b></p> <ul style="list-style-type: none"> <li>• Relative formula mass</li> <li>• Empirical formula</li> <li>• Filtration and crystallisation</li> <li>• Distillation</li> <li>• Fractional distillation</li> <li>• Chromatography</li> </ul>	<p><b>Chemistry module C2 – elements &amp; compounds</b></p> <ul style="list-style-type: none"> <li>• Metals and non-metals</li> <li>• Electronic structure</li> <li>• Forming ions</li> <li>• Ionic compounds</li> <li>• Simple molecules</li> <li>• Giant covalent</li> <li>• Polymer</li> <li>• Structure of metals</li> <li>• Allotropes of carbon</li> </ul>	<p><b>Chemistry module C2 – elements &amp; compounds</b></p> <ul style="list-style-type: none"> <li>• Bulk properties</li> <li>• Nanoparticles</li> </ul> <p><b>Chemistry module 4 C4- Monitoring and Predicting chemical reactions</b></p> <ul style="list-style-type: none"> <li>• Group 1</li> <li>• Group 7</li> <li>• Group 0</li> <li>• Reactivity of metals</li> </ul>	<p><b>Module 5: Monitoring and controlling chemical reactions.</b></p> <ul style="list-style-type: none"> <li>• Detecting gases (module 4)</li> <li>• Rates of reactions</li> <li>• Calculating the rate of reactions from graphs and data</li> <li>• Calculating average rate</li> <li>• Calculating instantaneous rate</li> </ul>	<p><b>Module 5: Monitoring and controlling chemical reactions.</b></p> <ul style="list-style-type: none"> <li>• reversible reactions</li> <li>• equilibrium</li> <li>• choosing reaction conditions</li> </ul> <p><b>Module 6: Global challenges</b></p> <ul style="list-style-type: none"> <li>• Choosing and recycling materials</li> <li>• Formation of atmosphere</li> <li>• Pollution and atmosphere</li> <li>• Climate change</li> <li>• Potable water</li> <li>• Composite materials</li> </ul>	<p>Students revise and sit their EoY exams</p> <p>Students will complete practical investigations.</p> <p>Students will review their PPE exam papers</p>	

<p><b>Key Questions</b></p>	<ol style="list-style-type: none"> <li>How are particles arranged in solids, liquids and gases?</li> <li>What in inside the atoms?</li> <li>How did we discover the atom?</li> <li>How do we separate chemical compounds?</li> <li>How can we determine masses of reactants?</li> <li>How can we purify and analyse chemicals?</li> </ol>	<ol style="list-style-type: none"> <li>How are chemical bonds formed?</li> <li>What are the allotropes of carbon?</li> <li>What is the structure of metals and plastics?</li> </ol>	<ol style="list-style-type: none"> <li>How can we predict trends in the periodic table for Group 1 and Group 7 ?</li> <li>Can you write and balance reactions with group 1?</li> <li>How can we predict the products in a displacement reaction</li> </ol>	<ol style="list-style-type: none"> <li>Can you describe gas tests and observations?</li> <li>Can you describe and explain the factors that affect rate of reaction?</li> <li>Can you calculate the average rate of reaction from data or a graph?</li> <li>Can you calculate the instantaneous rate of reaction from a graph?</li> </ol>	<ol style="list-style-type: none"> <li>What is equilibrium?</li> <li>How does temperature affect equilibrium position?</li> <li>How are materials recycled?</li> <li>Choosing materials by analysing the properties</li> <li>How was our atmosphere formed and how has it evolved?</li> <li>Cause, effect and controlling pollutants</li> <li>Impact of carbon emission on climate change</li> </ol>	
<p><b>Vocabulary</b></p>	<ul style="list-style-type: none"> <li>Solid</li> <li>Liquid</li> <li>Gas</li> <li>Melting Point</li> <li>Boiling Point</li> <li>Ion</li> <li>Isotope</li> <li>Relative Formula Mass</li> <li>Rf value</li> <li>Filtration</li> <li>Fractional Distillation</li> </ul>	<ul style="list-style-type: none"> <li>Group</li> <li>Period</li> <li>Ionic Compound</li> <li>Covalent Compound</li> <li>Dot And Cross Diagram</li> <li>Giant Lattice</li> <li>Allotrope</li> <li>Polymer</li> <li>Metals</li> <li>Lattice</li> </ul>	<ul style="list-style-type: none"> <li>Reactivity</li> <li>Trends</li> <li>Nuclear attraction</li> <li>Outer electron</li> <li>Displacement reaction</li> </ul>	<ul style="list-style-type: none"> <li>Average rate</li> <li>Instantaneous rate</li> <li>Tangent</li> <li>Gradient</li> <li>Reactant</li> <li>Product</li> </ul>	<ul style="list-style-type: none"> <li>Equilibrium</li> <li>Forward reaction</li> <li>Reverse reaction</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>
<p><b>Practical Skills</b></p>	<ul style="list-style-type: none"> <li>Comparing chemical and physical changes</li> </ul>	<ul style="list-style-type: none"> <li>Comparing properties of metals, ionic compounds</li> </ul>	<ul style="list-style-type: none"> <li>Reactivity trends for halogens-</li> </ul>	<ul style="list-style-type: none"> <li>testing oxygen, carbon dioxide,</li> </ul>	<ul style="list-style-type: none"> <li>Making and recoding</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>

	<ul style="list-style-type: none"><li>• Filtration and crystallisation</li><li>• Distillation</li><li>• Chromatography</li></ul>	and covalent compounds	displacement reaction <ul style="list-style-type: none"><li>• Reactivity of metals- making and recording observations in displacement reactions</li></ul>	chlorine and hydrogen gases <ul style="list-style-type: none"><li>• Monitoring rates of reaction to investigate the effect to temperature, catalyst, concentration and surface area on the rate of reaction</li></ul>	observations in a reversible reaction	
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