



Curriculum Map



Subject: Science - CHEMISTRY

Year group: Year 10

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Content</p> <p><i>Declarative Knowledge – ‘Know What’</i></p>	<p>Chem 1: Modelling atoms. Development of atomic model. Carbon dating and existence of isotopes. Patterns of reactivity. Transition metal properties.</p>	<p>Chem 2: Particles model of state change. How bonding affects properties. The different types of bonding. Properties of metals, alloys, diamonds, graphite and nanoparticles.</p>	<p>Chem 3: Conservation of Mass. Thermal decomposition. Measuring amounts of substances – using grams and moles. Calculating amounts needed during a reaction: titration. Calculating yields and atom economy.</p>	<p>Chem 4: Reactivity to predict displacement reactions. How we extract metals using different techniques. Oxidation and reduction reactions. The reactions of acids with bases. Difference between strong and weak acids. Electrolysis of compounds.</p>	<p>Chem 5: Definition of endo and exo thermic reactions. Representing energy changes using profile diagrams. Use collision theory to explain energy changes. Using different reactivity’s of metals to produce a voltage. Energy from fuel cells.</p>	<p>Chem 6: Factors that affect the rate of a reaction. Factors that affect the end of a reaction. Explain how reactions can be in equilibrium, show how changes introduced affect the equilibrium – Le Chatelier’s principle.</p>
<p>Skills</p> <p><i>Procedural Knowledge – ‘Know How’</i></p>	<p>Chem 1: Use of standard form and estimates. Balance symbol equations. How to separate mixtures.</p>	<p>Chem 2: Work with orders of magnitude. Visualise and represent 2D and 3D shapes. Represent different bonding.</p>	<p>Chem 3: Using balanced symbol equations to predict reaction quantities.</p>	<p>Chem 4: How to write ionic half equations. Preparation of pure, dry sample of a soluble salt. Using titration to find reacting volumes of acid and alkali. Electrolysing aqueous solutions using inert electrodes.</p>	<p>Chem 5: Investigate the variables that affect temperature change in reacting solutions.</p>	<p>Chem 5: How to measure reaction rate.</p>
<p>Key Questions</p>	<p>How did new evidence change our understanding of matter? How can we predict the reactivity and properties of different elements and substances?</p>	<p>How do elements form bonds with each other, how does this affect their properties? What happens to effect and during changes of state?</p>	<p>How much will be produced? Is needed? How much were you expecting?</p>	<p>How do we extract different metals? What is the difference between strong and weak acids? Concentrated and dilute acids? What are the products of electrolysis?</p>	<p>Is the reaction endothermic or exothermic? How would you evaluate the use of fuel cells?</p>	<p>How does xxx affect the rate of reaction? If yyyy changes, what happens to this reversible reaction?</p>



Curriculum Map



Assessment	Chem 1 topic test – Exampro.	Chem 2 and 1 topic test – Exampro.	Chem 3, 2 and 1 topic test - Exampro	Chem 4, 3, 2 and 1 topic test – exampro. Year 10 PPE – April.	Chem 5, 4, 3, 2, 1 topic test – exampro.	Chem 6 topic test
Literacy / Numeracy / SMSC / Character	Use of standard form. Chemical equations. Scientific method, peer review and building on the work of others.	Working with orders of magnitude – converting large and small values.	Calculating atom economy and yield. Working between mass, moles and molar mass. Working out concentrations. Rearranging equations.	Orders of magnitude calculations. Writing balanced equations.	Calculation of energy transfer from bond energy information. Use expressions in decimal form.	Calculating mean rate, using tangents to calculate gradient.