



## **SUBJECT: Curriculum Overview**

### **Year 10**

From September 2025, there will be a change in the sequencing of topics in KS4. This will not affect those starting Y10 in 2025. Please find below the topics covered and how this fits into the overall curriculum throughout KS4.

Term	Topic studied	What will I learn?	How will I be assessed?
Year 10 Autumn	<i>Energy Changes</i>	<i>Exothermic and endothermic reactions Reaction profiles and the activation energy. Be able to calculate the energy changes in reactions. What an electrochemical cell and a battery is. The differences between non-rechargeable and rechargeable cells. What a fuel cell is</i>	<i>End of topic test</i>
	<i>Quantitative Chemistry</i>	<i>Conservation of mass and how to balance equations. Relative formula mass. Moles and Avogadro's number. Mole calculations, including gas volumes. What limiting reactants are and how to identify them. Concentration of solutions. The pH scale, neutralisation, how to do a titration and titration calculations. Percentage yield, atom economy.</i>	<i>End of topic test</i>
Year 10 Spring	<i>The rate and extent of chemical change</i>	<i>How to measure the rate of a chemical reaction How concentration of reactants in solution, the pressure of reacting gases, the surface area of solid reactants, the temperature and catalysts can affect the rates of chemical reactions. Collision theory and activation energy. That catalysts are not used up in chemical reactions and provide an alternative reaction pathway with a lower activation energy. What a reaction profile is and how to interpret them. Reversible reactions and dynamic equilibrium. Energy changes and reversible reactions. Equilibrium. The effect of changing conditions, concentration, temperature and pressure on equilibrium and the use of Le Chatelier's principle.</i>	<i>End of topic test</i>
	<i>Organic chemistry</i>	<i>Crude oil, alkanes. Cracking and the production of alkenes. Alcohols.</i>	
Year 10 Summer	<i>Organic chemistry (cont)</i>	<i>Carboxylic acids, esters. Synthetic and naturally occurring polymers. Addition polymerisation of alkenes Condensation polymers. Amino acids, polypeptides and proteins. DNA Other naturally occurring polymers important for life include proteins, starch and cellulose.</i>	<i>End of topic test (end of year exam)</i>

Year 11 Autumn	Chemical analysis	<p>What a pure substance is, how you can tell if a substance is pure using melting and boiling points. Know what a formulation is.</p> <p>How chromatography can be used to separate mixtures and help to identify substances.</p> <p>Know the tests for hydrogen, oxygen, carbon dioxide and chlorine.</p> <p>(Separate only) Flame tests</p> <p>Reaction with sodium hydroxide can be used to identify some metal ions</p> <p>Test for metal carbonates, halides and sulfates.</p> <p>Instrumental methods are accurate, sensitive and rapid. How flame emission spectroscopy (an instrument method which is used to analyse metal ions in solution), is done and how it tells you the ions present in solution and their concentration.</p>	End of topic test
Year 11 Spring	Use of resources	<p>Using the Earth's finite and natural resources. How chemistry plays a vital part in improving agriculture and industrial processes and provide new products</p> <p>Definition of sustainable development. What potable water is and the processes of how it is produced. How waste water is treated.</p> <p>What a life cycle assessment is, how they are produced and the limitations of using selective or abbreviated ones. Ways of reducing the use of resources by reduced use, reuse and recycling.</p> <p>(Combined Higher and Separate only) What an ore is, the use of phytomining and bioleaching. Use of displacement, and electrolysis to extract copper.</p> <p>(Separate only) Corrosion and its prevention. Alloys as useful materials, including the use of carats to express the proportion of gold in an alloy.</p> <p>Properties, structure linked to uses of ceramic, polymers and composites.</p> <p>The Haber process including where the reactants come from, the catalyst and the conditions used.</p> <p>How the ammonia is removed. Be able to apply the principles of dynamic equilibria to this important process.</p> <p>The production and use of NPK (nitrogen, phosphorous, potassium) fertilisers.</p>	End of topic test
Year 11 Summer	Revision	Revision of topics from the last 3 years	<p><u>Past paper 2</u></p> <p><u>Past paper questions</u></p>