

Year 13 Chemistry

Students follow the AQA two-year A-level course. The course is split between year 1 and year 2. The AS content is taught first with the A-level content, starting at the end of Year 12 and into Year 13. In Year 13 the students build upon the core concepts that they have met in Year 12 and apply them to both deepen existing knowledge and as a basis for new learning. There are two teachers delivering the A-level course, each teacher will deliver a combination of physical, inorganic and organic chemistry. Through the course, practical skills are developed and competencies are assessed so that evidence is built up towards the awarding of the practical endorsement at the end of Year 13. These skills are developed in context, when the appropriate practical opportunity allows for it. Students are assessed every term with a progress assessment with builds in volume and complexity as the year progresses. In addition students complete smaller tests at the end of topics which allows strengths and weaknesses in specific topics areas to be identified.

Methods of deepening and securing knowledge:	
Spaced practice	Many topics are revisited from year 1 to year 2 of the course. The ideas from the Bonding topic run through many other topics both later in Year 12 as well as in Year 13, for example periodicity and organic chemistry. The principles in the Energetics topic in year 1 are seen again, and expanded upon, in Thermodynamics in year 2. The analytical techniques visited during the Organic analysis topic are revisited in Organic synthesis.
Retrieval practice	The vast majority of topics studied at A-level build on ideas from GCSE Chemistry, this necessitates the need for retrieval of this prior learning, especially in the early part of the A-level course. In addition, the fundamental topics of Atomic structure, Amount of substance and Bonding, covered at the beginning of year 1 act as the building blocks for all other topics covered over the two-year course. The knowledge from these topics therefore is continually revisited, retrieved and expanded upon.
Concrete examples	There are many abstract concepts taught throughout the Chemistry curriculum. The teaching of concrete examples are used to either make them more accessible or because of the requirements of assessments.
Dual coding	Students encounter many examples of graphical or diagrammatic representations of data and chemistry concepts.

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Topic(s)	Electrode potentials and electrochemical cells - Electrode potentials, the electrochemical series, batteries and fuel cells.		Carboxylic acids and their derivatives - Naming, drawing and reaction of carboxylic acids and esters. Acyl chlorides and purifying organic compounds.	Aromatic chemistry - Structure of benzene, Friedel-Crafts acylation and nitration.	Revision Preparation for A-level examinations.	

	<p>Acids and bases - Acids, bases, Kw, pH calculations, pH curves and indicators, titration calculations, buffer action.</p> <p>Rate equations and Kp - Rate equations, rate experiments, the rate determining step, the Arrhenius equation, gas equilibria and Kp.</p> <p>Period 3 - The physical and chemical properties of the period 3 elements and their oxides.</p> <p>Aldehydes and ketones - Naming, drawing and reactions of aldehydes, ketones.</p> <p>Amines - Naming, drawing and reactions of amines and amides.</p>		<p>Transition metals - Physical and chemical properties, complex ions, formation of coloured ions and variable oxidation states.</p> <p>Revision for PPE</p>	<p>Reaction of ions in aqueous solutions - Titrations with transition metals, catalysis and reactions of metal Aqua-ions.</p> <p>Polymers - Condensation polymers and disposing of polymers.</p> <p>Amino acids, DNA and proteins - Naming amino acids, zwitterions, TLC of amino acids, proteins and enzymes and DNA.</p> <p>Organic synthesis - Constructing synthetic reaction routes for aliphatic and aromatic compounds.</p>		
Assessment	End-of-topic reviews. Progress test 1. (Progress tests examine all content covered from the beginning of the year.)	End-of-topic reviews. Progress test 2	End-of-topic reviews. Pre-public examinations.	End-of-topic reviews. Progress test 3.		

Independent Learning:

Regular independent learning is set to establish, reinforce and revisit key concepts throughout the course.

Best Choice, an online learning platform, is used in conjunction with other forms of independent learning to give students a way of checking understanding while getting immediate feedback.

Revision tasks, including completion of past exam papers are used in the lead in to Aiming High assessments and formal examinations.