



A2 Chemistry Year 2 Course outline

Students have eight Chemistry lessons per cycle taught by two specialist Chemistry teachers.

Teacher A Autumn term

Term	Topic and approximate duration	Key learning areas
Autumn term	Electrode Potentials (7 weeks)	Students will use standard electrode values to predict which species will be oxidised and which will be reduced, and use this information to construct half equations. They will also use this information to predict whether redox reactions are feasible. They will look in context at batteries using electrode potentials to evaluate their uses. They will calculate electrode potentials experimentally. Required Practical 8: Measuring the EMF of an electrochemical cell.
	K_p (2 weeks)	Students will recap ideas about equilibrium studied in Year 12, and extend these to look in depth at gases. They will calculate K _p values for complex equilibria.
	Acids and Bases (5 weeks)	Students will define acids, buffers and bases. They will calculate pH values for: strong acids, strong bases, weak acids and buffers. They will also use K _w , K _a and pK _a values. They will look at the use of different indicators and choose appropriate ones based on data. They will draw acid-base titration curves using experimental data. Required Practical 9: Investigate how pH changes when a weak acid reacts with a strong base and when a strong acid reacts with a weak base.
	Nature of landmark assessment	Interim will be mostly shorter answer questions requiring the application of knowledge. Landmark will be MCQs, with a few short answer questions, and 1 extended response question. Students will have 3 mock exam papers this term.

Teacher B Autumn Term

Term	Topic and approximate duration	Key learning areas
Autumn term	Kinetics (6 weeks)	Students will learn how to construct rate equations for reactions. They will use data to construct orders for reactions, construct the rate equations and calculate values for the rate constant. Students will also obtain rate values experimentally and work out orders of reactions experimentally. They will also work out activation energy using the Arrhenius equation. Required Practical 7: Measuring the rate of reaction: • by an initial rate method • by a continuous monitoring method.
	Aromatic Chemistry (2 weeks)	Students will look at the structure of benzene and how our ideas about its structure have evolved over time, using scientific evidence and knowledge of attitudes over time. They will then look at reactions of benzene and aromatic compounds.
	Carbonyl Chemistry (3 weeks)	Students will be able to draw and name ketones, aldehydes, carboxylic acids, esters and acyl chlorides. They will look at reactions and mechanisms for these families of compounds.
	<i>Nature of landmark assessment</i>	Interim will be mostly shorter answer questions requiring the application of knowledge. Landmark will be MCQs, with a few short answer questions, and 1 extended response question. Students will have 2 mock exam papers in this term.

Teacher A Spring term

Term	Topic and approximate duration	Key learning areas
Spring term	Transition metals	<p>Students will study in transition metals and their properties in detail. They will name and draw complexes and complex formation, explain why transition metal ions form compounds with colour, discuss the fact that they form variable oxidation states, and relate this to their use as catalysts. They will perform redox titrations and perform complex mathematical problems based on these results.</p> <p>They will look at shapes and the stereo factors surrounding transition metal complexes. They will also look at substitution reactions and acid-base reactions and the factors that influence these.</p> <p>Required Practical 11: Carry out simple test-tube reactions to identify transition metal ions in aqueous solution.</p>
	Periodicity	<p>Students will study properties of period 3 and period 3 oxides. They will write reactions and describe and explain trends. They will link bonding and atomic structure to the trends observed.</p>
	<i>Nature of landmark assessment</i>	<p>Interim will be mostly shorter answer questions requiring the application of knowledge. Landmark will be MCQs, with a few short answer questions, and 1 extended response question.</p>

Teacher B Spring term

Term	Topic and approximate duration	Key learning areas
Spring term	Amino acids (5 weeks)	Students will study amino acids in detail and the role they have in our body. They will identify optical isomerism and write and draw reactions for condensation polymerisation. They will then look at protein structure and synthesis, and enzyme structure and mechanisms. Students will also study DNA structure and replication in the body.
	Analysis (5 weeks)	Students will look at the principles of carbon and hydrogen NMR, infra-red, and mass spectrometry in detail. They will analyse spectra in order to work out the structure of compounds, and predict spectra based on molecular structure.
	<i>Nature of landmark assessment</i>	Interim will be mostly shorter answer questions requiring the application of knowledge. Landmark will be MCQs, with a few short answer questions, and 1 extended response question.

Teacher A+ B Summer term

Term	Topic and approximate duration	Key learning areas
Summer term	<i>Revision before study leave</i>	Practical skills and data analysis + AS and A2 content