

Chemistry A Level Course Guide.

Each year's course is taught by two teachers. P1 means examined on paper 1. All topics are examined on Paper 3

	Yr. 12		Yr. 13	
	Teacher A	Teacher B	Teacher A	Teacher B
Term One	<p>Topic 01: Atomic Structure and the Periodic Table. (P1) Students consider how models for the atom have developed as evidence becomes available. There is a big overlap with GCSE building confidence and ensuring that all students are starting on the same page.</p> <p>Topic 02: Bonding and Structure. (P1 & P2) Students explain how substances stick together. bonding models, and understand how predictions and generalisations have been made about electron-pair-repulsion theory.</p>	<p>Topic 05: Formulae, Equations and Amounts of Substance. (P1 & P2) Students work to analyse data and make calculations of uncertainty and their sources. They will be able to make unit conversions using standard form, Avogadro's constant and Molar quantities. There is a big overlap with GCSE building confidence and ensuring that all students are starting on the same page</p>	<p>Topic 11: Equilibrium II. (P1) Students develop and understanding of equilibrium processes, describe how equilibria can be used to make quantitative predictions, and can calculate Kc and Kp values.</p> <p>Topic 12: Acid-base Equilibria. (P1) Students calculate pHs, explain acidic and basic behaviour, how buffer solutions work and link their knowledge to biological applications. K_a calculations link with T11.</p> <p>Topic 13: Energetics II. (P1) Students understand how models are evaluated by comparing real values with theoretical data. Students use entropy and Gibbs free energy to understand stability and the direction of chemical change.</p>	<p>Topic 14: Redox II. (P1) Students calculate redox potentials and balance half equations. They will develop some understanding of how chemistry can be used to create chemical cells and batteries.</p> <p>Topic 15: Transition Metals. (P1) Students link electron orbital filling and reactions, identifying limitations of the models. Students should appreciate how these metals form coloured complexes and appreciate the importance of ligand exchange reactions. Students also study the behaviour of catalysts.</p>
	<p>Topic 03: Redox I. (P1 & P2) Students consider how the oxidation number can be used to balance chemical equations, and complete balanced redox reactions from their ionic half-equations</p> <p>Topic 04: Inorganic Chemistry and the Periodic Table. (P1) Students explain how data is used to make predictions about properties from patterns and relationships within the periodic table</p>	<p>Topic 06: Organic Chemistry I. (P2) Students will describe the properties and reactions of alkanes and alkenes, halogenoalkanes and alcohols. They will complete a number of functional group identifications, considering potential hazards and precautions.</p> <p>Topic 07: Modern Analytical Techniques I. (P2) Students are familiarised with different analysis methods for the process of biochemical testing or chemical change study (such as mass spectrometry).</p>	<p>Topic 17: Organic Chemistry II. (P2) Students understand the use and chemical mechanisms of organic chemical synthesis to produce useful materials. They are able to represent chiral molecules with diagrams. They study carbonyls and carboxylic acids.</p>	<p>Topic 16: Kinetics II (P2) Students assess different methods of collecting data to measure reaction rates. They should be able to use data to justify mechanism models, and the shape of graphs. They will be required to use graphs and calculations to find orders of reaction, relating these to mechanisms and activation energies.</p>
	<p>Topic 08: Energetics I. (P1) Students investigate enthalpy changes and use Hess's Law and assess the use of mean bond enthalpy for theoretical calculations.</p>	<p>Topic 09: Kinetics I. (P2) Students use collision theory and Maxwell-Boltzmann distribution to explain how different variables affect the rate of reaction.</p> <p>Topic 10: Equilibrium I. (P1) Students develop and understanding of equilibrium processes, describe how equilibria can be used to make quantitative predictions, and can calculate Kc</p>	<p>Topic 18: Organic Chemistry III. (P2) Practical organic chemistry. Students explain the evidence supporting the benzene structure, and purify organic compounds. They study arenes, amines, amides, amino acids and proteins.</p>	<p>Topic 19: Modern Analytical Techniques II. (P2) Students consider more instrumental analysis methods such as NMR and chromatography and research the different applications of these techniques</p>

There are 17 core practicals which will take place during the course. The successful completion of these leads to 'practical competence' and a statement to that effect will go on the results certificate. The majority of the assessment of these practicals takes place in class although students may be expected to do research for homework for some of the skills.