# KS5 CURRICULUM: A Level Chemistry Year 12

Overview

A level Chemistry attempts to answer the big question 'what is the world made of' and its search for this answer that makes this subject so fascinating. From Investigating how one substance can be changed drastically into another, to researching a new wonder drug to save millions of lives, the opportunities that chemistry provides are endless.
Throughout the course students will be learning the 3 main areas of chemistry: Physical Chemistry, Inorganic Chemistry and Organic Chemistry.

| | Focus / Topic | Knowledge & Skills | Assessment |
|---|---|---|---|
| Autumn 1 | Atomic Structure<br><br>Amount of substance | Revises the idea and evidence for the atom, introduces the mass spectrometer used to measure mass of atoms. Evidence for arrangement of electrons is studied including sophisticated model of atomic orbitals is developed.<br>Working with moles, masses, Mr, concentration, and volume. | Baseline exam on key GCSE knowledge |
| Autumn 2 | Bonding<br><br>Periodicity<br><br>Energetics | Revisits ionic, covalent and metallic bonding and introduces intermolecular forces. Examines forces involved in state of matter and explores shapes of molecules and ions.<br>Gives an overview of the Periodic Table and classifies blocks of elements. Studies properties of elements in Period 3.<br>Describe enthalpy change of combustion and formation quantitatively including Hess's Law. | Assessment on all content covered to this date. |
| Spring 1 | Kinetics<br><br>Introduction to Organic Chemistry<br>Alkanes | Explain using kinetic theory factors affecting rates of reaction incorporation Maxwell-Boltzmann distribution.<br>Looks at nature of carbon compounds and different types of formulae used to represent compounds. Use IUPAC naming system to name compounds and looks at types of isomerism.<br>Looks at crude oil and its fractional distillation, combustion and making smaller alkanes by cracking. | |
| Spring 2 | Equilibria<br>Halogenoalkanes<br><br>Alkenes | Use Le Chatelier's Principle to explain the factors that affect the position of equilibrium.<br>Describes how these compounds are formed, react and their role in depleting the ozone layer.<br>Describes the reactions of these compounds which have one or more double bonds. | Assessment on all content covered to this date. |
| Summer 1 | Redox<br>Alcohols<br>Organic Analysis | Use half equations to explain redox reactions in terms of energy transfer.<br>Explains the importance of ethanol and describes the structure and their reactions.<br>Revisits the mass spectrometer and describes its use. Infra-red spectroscopy is introduced as an important tool for identifying functional groups in organic chemistry. | |
| Summer 2 | Group 2 & 7 elements<br>Isomerism in Organic Chemistry | Explain the trends and patterns in Group 2 and Group 7 elements.<br>IUPAC naming system is revisited and applied to further families of organic compounds.<br>Optical isomerism based on mirror image molecules is introduced. | End of Year Mock exams – 2 x 90 minute papers on all content from Year 1. |

Further Information

All topics will be assessed with an end of module exam (approx. every 3-4 weeks). Practical skills will be assessed throughout the course during required practical's. Students are expected to complete 5 hours of additional study per week for this course.