
CHEMISTRY

Where would we be without Chemistry? Chemists have learned how to take naturally occurring materials and transform them into materials that improve all of our lives. Chemists around the world are developing about half a million new materials each year. Chemistry is diverse – covering areas from cosmetics and perfumes to explosives. Chemistry is awesome!

Examining Board
OCR

Specification
A Level H432

ENTRY REQUIREMENTS TO THE A LEVEL COURSE

Please see the Sixth Form Admissions Policy for the entry requirements to this course.

A LEVEL COURSE

Module 1: Development of Practical Skills:

Practical science allows researchers to test theories, explore the world and make new discoveries. It is important that scientists can design a valid experiment, collect data accurately then interpret the results while modifying techniques as necessary. Teaching of practical skills is integrated with the theoretical topics and they are assessed both through a written exam papers and the Practical Endorsement.

Module 2: Foundations in Chemistry:

A knowledge of atoms and reactions is essential for studying chemistry. This topic looks at what atoms and particles are made of and how they interact with each other in chemical reactions. It includes the use of mathematical skills to determine the number of moles in weighed substances, solutions and gases and how this applies to chemical reactions. The arrangement of electrons is studied in more detail which allows different types of structures and their physical properties to be explained.

Module 3: Periodic Table and Energy:

This topic looks at the organisation of the periodic table and how it is used to predict the physical properties of elements along with how they behave chemically. It includes how the Group 2 elements and the Group 17 elements undergo reactions and how these change on moving down the group. This topic also covers energy changes that occur during reactions, how to monitor the rate of reaction and how conditions can be controlled to make processes as economically viable, chemically feasible and sustainable as possible.

Module 4: Core Organic Chemistry:

Organic chemistry is the study of how carbon atoms bond to make compounds. This topic introduces different types of organic compounds and the reactions that they can participate in. It considers the structure of these compounds and how their functional groups affect their chemical reactions. Analytical chemistry is also covered which allows you to use information from different techniques to infer the structure of an unknown chemical such as those found in toxicology, in medicine or forensic investigations.

Module 5: Physical Chemistry and Transition Elements:

Physical chemistry considers how a reaction occurs and what factors affect it. It includes rates of reactions and the ways in which reactions are affected by temperature, as well as reversible reactions and the role of the equilibrium constant in controlling the position of equilibrium. Acid and base reactions are covered in detail along with a range of redox reactions including processes that occur within fuel cells to release energy. This topic also covers the transfer of energy in reactions and why some occur spontaneously and others do not. Transition metals and their reactions are also studied in detail as these chemicals have a variety of uses including dyes and catalysts.

Module 6: Organic Chemistry and Analysis:

This topic builds upon module 4 and introduces some new groups of organic compounds such as aromatic compounds and polymers and how they react. It looks at how research chemists will design multi-stage reactions, using different reagents and conditions, to change one functional group into another, for example; in the pharmaceutical industry. A range of analysis techniques are studied in order to determine the structure of complex organic molecules.

A Level Paper 1 – Periodic Table, Elements and Physical Chemistry (100 marks) – 2 hrs 15 min, 37% of total A Level mark.

A Level Paper 2 – Synthesis and Analytical Techniques (100 marks) – 2 hrs 15 min, 37% of total A Level mark.

A Level Paper 3 – Unified Chemistry (70 marks) – 1 hr 30 min, 26% of total A Level mark.

Practical Endorsement - Pass/Fail, reported separately.

STUDENT VIEWPOINT

“A Level Chemistry is difficult and a huge step up from GCSE, but it is definitely worth doing”, “A fun and friendly classroom environment”. “The practicals are exciting and the relationship between Sixth Formers and teachers is really good”

COMPLEMENTARY SUBJECTS

Many subjects are complementary to chemistry. There is a slight overlap with the other sciences – Biology and Physics and this combination is useful if a student wishes to study medicine or something similar at university. The skills developed at A Level Mathematics also make the mathematical element at A Level Chemistry easier. However, it can be paired with subjects such as English and History, for example, if a student was interested in something such as Chemical Law.

CAREER AND UNIVERSITY OPPORTUNITIES

A Level Chemistry is generally regarded as essential for many higher education courses: chemistry, medicine, dentistry, chemical engineering, pharmacy, biochemistry, physiotherapy, forensic science, veterinary science and is useful for those aiming to follow courses in one of the other sciences or related subjects.