

Overview

The AS and A-level chemistry courses have been designed to be a practical experience for students, with students following this course spending time doing both practical and theory work. The practical activities included will help the students to consolidate their understanding of the main aspects of Chemistry and prepare them with the skills required to study science at higher levels. Students will study, amongst many things, aspects of chemistry that are often seen in the media or that affect their lives; including green chemistry, pharmaceuticals and climate change. A course is designed to prepare students for progression either into higher education or employment and to develop their interest and enthusiasm in the subject. It also aims to help the students to appreciate how society makes decisions about scientific issues and how they contribute to the success of the economy and society, developing a deeper understanding of *'How Science Works'* and how areas of the subject relate to each and the world around us

Course Structure & Content

AS: Unit 1 The Core Principles of Chemistry

This unit includes 5 modules; shown below

- Module 1.3: Formulae, equations and moles
- Module 1.4: Energetics
- Module 1.5: Atomic structure and the Periodic table
- Module 1.6: Bonding
- Module 1.7: Introductory Organic Chemistry

Each module taught within this unit will include both theory, practical aspects. Connections will also be made to *'How Science Works'* throughout the module

Assessment: Written paper of 1hr 15mins. There are two sections A and B

Section A: Objective test – core ideas in the unit.

Section B: Short and extended answer questions including analysis and evaluation of practical

AS: Unit 2 Application of Core Principles of Chemistry

This unit includes 5 modules; shown below

- Module 2.3: Shapes of molecules and ions
- Module 2.4: Intermediate bonding and bond polarity
- Module 2.5: Intermolecular forces
- Module 2.6: Redox
- Module 2.7: The periodic table – groups 2 and 7

Each module taught within this unit will include both theory, practical aspects. Connections will also be made to *'How Science Works'* throughout the module

Assessment: This unit is assessed by a written paper of 1hr 15mins.

There are three sections A, B and C.

Section A: Objective test – core ideas in the unit

Section B: Short and extended answer questions

Section C: Extended answer questions on the chemistry behind contemporary contexts

AS: Unit 3 – Chemistry Laboratory Skills I (Coursework)

This unit assesses the practical skills of the students. The work is assessed throughout the year based on the associated practicals for units 1 and 2. Their skills will be assessed in four different ways

- A) General practical competence (8 assessed practicals over the year – covering organic, inorganic and physical chemistry)
- B) Qualitative observations (one assessed piece)
- C) Quantitative measurements (one assessed piece)
- D) Preparations (one assessed piece)

Two of physical, inorganic or organic must be covered by activities B, C and D. Students can complete more practical assessments than one for each section and submit the best piece of work

A2: Unit 4 – General Principles of Chemistry I – Rates, Equilibria and Further Organic Chemistry

This unit contains the following modules...the teaching of each module will be similar to that of the AS course.

- How fast? – rates
- How far? – entropy
- Equilibria
- Application of rates and equilibria
- Acid/base equilibria
- Further organic chemistry
- Spectroscopy and chromatography

Assessment: This unit is assessed as a written paper of 1hr 40mins. There are 3 sections A, B and C

Section A: Objective test – core ideas in the unit

Section B: Short and extended answer questions

Section C: Data style questions related to laboratory work (inc. use of data booklet)

A2: Unit 5 – General principles of Chemistry II – Transition Metals and Organic Nitrogen Chemistry

The following modules are included in this unit... taught again in a similar way to that discussed above

- Redox and the chemistry of the transition metals
- Organic chemistry – arenes, nitrogen compounds and synthesis

Assessment: This unit is assessed as a written paper of 1hr 40mins. There are 3 sections A,B and C

Section A: Objective test – core ideas in the unit

Section B: Short and extended answer questions including questions on analysis and evaluation of practicals

Section C: Extended answer questions on the chemistry behind contemporary contexts

A2: Unit 6 – Chemistry Laboratory Skills II (Coursework)

This unit assesses the practical skills of the students., as in AS The work is assessed throughout the year based on the associated practicals for units 4 and 5. Their skills will be assessed in four different ways

- E) General practical competence (8 assessed practicals over the year – covering organic, inorganic and physical chemistry)
- F) Qualitative observations (one assessed piece)
- G) Quantitative measurements (one assessed piece)
- H) Preparations (one assessed piece)

Two of physical, inorganic or organic must be covered by activities B, C and D. Students can complete more practical assessments than one for each section and submit the best piece of work. Sections C and D can be completed via 2 pathways

- Pathway 1 – Sections C and D are assessed separately; as in AS
- Pathway 2 – Sections C and D are assessed as a multi-stage experiment.

Entry qualifications

GCSE grade B in Core Science, Additional Science or B in Chemistry is normally required. Students applying for this course should be prepared to complete high levels of independent study and must therefore show interest and motivation for the subject.

Career Prospects

There are a huge number of different careers that an A-level in Chemistry would pave the way for. It is also a very useful A-level for continuing on to a wide variety of different higher education courses. Some of the careers that a Chemistry A-level would lead to are forensic science, engineering, pharmacology, research and development as well as law, journalism and education.