



A Level Chemistry

KS5 Leader: Dr C Gregory • Exam Board: OCR

Course Entry Requirements:

GCSE Grade 5 in Mathematics and a minimum of GCSE Grade 55 in Combined Science/GCSE Grade 5 in Chemistry. (Students achieving a grade 7 in GCSE Mathematics and/or taking A-Level Mathematics will find the course easier due to its numerical content, but a higher level 5 is the required minimum). Recommended for students who have taken the higher tier paper.

Course Outline:

Chemistry is a subject that has global impact. As a fundamental science it has a profound effect on our planet and is involved in nearly every facet of everyday life. Almost every new technological change and important discovery has its foundation in chemistry. A qualification in Chemistry allows access into many career pathways, including research, medicine, dentistry, forensic science, food technology, polymer science and public health analysis. Chemical research is breaking new ground at an ever increasing pace, particularly in the fields of environmental science and nanotechnology, making Chemistry more exciting than ever and opening new opportunities for careers in these and other related areas.

Many university science based courses include A level Chemistry as a required subject.

Modules:

1. **Development of Practical skills:** Throughout the course students will learn to use lab equipment ranging from burettes and glass pipettes to Quick Fit apparatus for organic chemistry. These skills will then be demonstrated in a minimum of 12 assessed practical activities which are completed over the two years of the course.
2. **Foundations in Chemistry:** This module provides the extension from GCSE content into A level content starting with chemical calculations using moles and further development of bonding and structure. Later in the module topics studied include shapes of molecules, ionisation energies and redox reactions.
3. **Periodic table and energy:** Study of the Periodic Table includes periodicity and qualitative tests for Group 7 elements. The energy section investigates practical and mathematical methods used to find out about the energetics of chemical reactions.
4. **Core Organic Chemistry:** Students are introduced to the different functional groups of organic chemistry from alkanes to carboxylic acids including methods of synthesis and analysis (MS and IR).
5. **Physical Chemistry and Transition elements:** An in depth study of reaction rates and equilibrium leads into application to pH and buffers. This is followed by an introduction to entropy, free energy and electropotentials. This section has a high mathematical demand. Ideas from the course are brought together by learning about transition metals.
6. **Organic Chemistry and analysis:** Organic chemistry is continued from module 4 in greater depth, learning about more ways to synthesise more and more complex organic molecules and advanced methods for analysis including NMR spectroscopy.



Assessment:

Paper 1: Period Table, Elements & Physical Chemistry

Paper 2: Synthesis & Analytical Techniques

Paper 3: Unified Chemistry

- **The assessment is linear so all papers are sat at the end of the final year.**
- 20% of A Level Chemistry assessment involves mathematics at higher tier GCSE level standard or above.

Learning strategies:

- Actively engaged enquiry into problems, issues and questions.
- Laboratory work during lessons plus additional whole day practical workshops at the end of year 12
- Group discussions.
- Presentation assignments (individual and group) including use of ICT.
- Regular homework booklets including research, use of Kerboodle on line activities and examination questions.
- Self-study during study periods and at home. This will be monitored whilst students are developing this skill.
- Participation/ appropriate use of support offered.
- School visits to chemistry conferences.
- Opportunities for high achieving students to take part in the Chemistry Olympiad