# Sandwell Academy

# Advanced General Certificate of Education
# CHEMISTRY

## WHY CHEMISTRY?

The opportunities for students of Science, on completion of full-time education, are enormous. There are many possible careers within the scientific world and qualifications in Science subjects are acceptable as an entry into many other careers.

Science students at Sandwell Academy will be prepared to move into Higher Education courses and careers in a wide variety of different fields including;

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| Medicine | Education |
| Forensic Science | Pharmacy |
| Veterinary | Dentistry |
| Finance | Consultancy, Sales and Marketing |
| Research Chemistry | Electronic Engineering |
| Nursing | Aeronautics |
| Computing | Biological Sciences |
| Chemical Engineering | Food Science |

The Science courses offered at Sandwell Academy are designed to provide academic and vocational experiences. They will prepare students for their choice of career in both the world of work and Higher Education.

## SPECIFIC ENTRY REQUIREMENTS

- Grade 6,6 overall GCSE Combined Science (Trilogy) or grade 6 for GCSE Chemistry (Separate Science)
- Grade 5 in GCSE Mathematics

## COURSE DETAILS

**OCR Specification: HO32 Year 1: 4 modules**

**1 Development of Practical Skills in Chemistry Practical Endorsement**

**2 Foundations in Chemistry Written examination**

This module will enable you to develop an understanding of some of the fundamental chemical concepts, quantitative techniques and procedures in Chemistry. You will study the atomic structure, construct equations and calculate chemical quantities using the concept of amount of substance. You will also study the reactions of acids and bases and identify oxidation numbers of elements in reactions. You will also study the different types of bonding and structure.

**3 Periodic table and energy** **Written examination**

You will study the periodic table in depth and identify periodic and group properties. You will also study enthalpy changes, rates of reaction and apply knowledge of rate to reversible reactions. You will study the applications of energy use to everyday life and industrial processes, and current environmental concerns associated with sustainability.

**4 Core organic chemistry** **Written examination**

This module provides a foundation for the study of organic chemistry and to illustrate and raise issues regarding the applications of organic chemistry to everyday life. You will study functional groups, organic reactions and isomerism. You will specialise in organic practical skills and synthesis organic compounds. You will also study instrumental analytical techniques to provide evidence of structural features in molecules.

**Examinations**:

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|---|---|---|
| 1 Breadth in Chemistry | Content from modules 1-4 | Weighting: 50% |
| 2 Depth in Chemistry | Content from modules 1-4 | Weighting: 50% |

**OCR specification H432 Year 2: 2 new modules alongside 4 modules from Year 1**

**5 Physical chemistry and transition elements** **Written examination**

You will study rate equations and be able to calculate orders of reactions and the rate determining step. You will study chemical equilibrium further and be able to calculate equilibrium constants. You will also study the reactions of acids in depth and explain how buffers are produced and carry out their function. For particular reactions you will calculate entropy, free energy construct Born-Haber cycles. You will study redox reactions and explain the properties of transition metals.

**6 Organic chemistry and analysis** **Written examination**

This module gives you a deeper knowledge and understanding of how organic chemistry shapes the natural world and how organic chemicals provide many important materials such as dyes and perfumes. You will study the reactions of many functional groups. You will explain how dyes and perfumes are synthesised and synthesise dyes in the laboratory. You will also study the use of NMR spectroscopy in the identification of organic molecules.

**Examinations**:

1 Periodic table and physical chemistry: Content from modules 1, 2, 3 and 5 Weighting: 37%

2 Synthesis and analysis techniques: Content from modules 1, 2, 4 and 6 Weighting: 37%

3 Unified Chemistry: Content from modules 1-6 Weighting: 26%