

SUBJECT: CHEMISTRY

AWARD RECEIVED: ADVANCED HIGHER

Chemistry, the study of matter and its interactions, plays an increasingly important role in most aspects of modern life. This course allows candidates to develop a deep understanding of the nature of matter, from its most fundamental level to the macroscopic interactions driving chemical change.

Candidates develop their abilities to think analytically, creatively, and independently to make reasoned evaluations, and to apply critical thinking in new and unfamiliar contexts to solve problems.

ENTRY LEVEL

Students should have Higher Chemistry, ideally at A or B.

It is designed for candidates who can respond to a level of challenge, especially those considering further study or a career in chemistry and related disciplines.

COURSE CONTENT

The course content includes the following areas of chemistry:

Inorganic chemistry

The topics covered are:

- ♦ electromagnetic radiation and atomic spectra
- ♦ atomic orbitals, electronic configurations and the periodic table
- ♦ transition metals

Physical chemistry

The topics covered are:

- ♦ chemical equilibrium
- ♦ reaction feasibility
- ♦ kinetics

Organic chemistry and instrumental analysis

The topics covered are:

- ♦ molecular orbitals
- ♦ synthesis
- ♦ stereo chemistry
- ♦ experimental determination of structure
- ♦ pharmaceutical chemistry

Researching chemistry

The topics covered are:

- ♦ common chemical apparatus
- ♦ skills involved in experimental work
- ♦ stoichiometric calculations
- ♦ gravimetric analysis
- ♦ volumetric analysis
- ♦ practical skills and techniques

Project

Candidates carry out an in-depth investigation of a chemistry topic. Candidates choose their topic and individually investigate/research its underlying chemistry.

This is an open-ended task that may involve candidates carrying out a significant part of the work without close supervision. Throughout the project candidates work autonomously, making independent and rational decisions based on evidence and interpretation of scientific information, which involves analysing and evaluating results. Through this, candidates further develop and enhance their scientific literacy skills. Candidates must produce a project report.

ASSESSMENT

To gain an overall Award for this Course, students need to pass the:

Course Assessment components, marked by the SQA:

1. **Project** (represents 25% of the overall marks for the course assessment)
2. **Exam** (represents 75% of the overall marks for the course assessment)

CONDITIONS OF AWARD

Candidates' overall grades are determined by their performance across the course assessment. The course assessment is graded A-D on the basis of the total mark for all course assessment components.

HOMEWORK

Homework and self-supported study are essential parts aspects of the course. Homework will take the form of among other things: write up of course lab work; past paper questions and preparation of the investigation report.

TRANSFERABLE SKILLS

There are many very useful and valuable transferable skills gained by studying Advanced Higher Chemistry, including: researching, ICT, reporting, numeracy, literacy, graphing, investigating, practical experimental skills, analysing, presentation, evaluating, to name a few.

PROGRESSION

- ♦ a Higher National Diploma (HND), or degree in Chemistry or a related area, such as medicine, law, dentistry, veterinary medicine, engineering, environmental and health sciences
- ♦ a career in a Chemistry-based discipline or related area such as renewable energy development, engineering, technology, pharmaceuticals, environmental monitoring, forensics, research and development, oil and gas exploration, management, civil service and education, or in a wide range of other areas