

SUBJECT: CHEMISTRY

AWARD RECEIVED: NATIONAL 4

Chemistry, the study of matter and its interactions, contributes essential knowledge and understanding across all aspects of our lives. Chemistry explains the links between the particulate nature of matter and the macroscopic properties of the world. Chemistry research and development is essential for the introduction of new products. The chemical industry is a major contributor to the economy of the country.

An experimental and investigative approach is used to develop knowledge and understanding of chemistry key areas.

The Course provides opportunities for learners to recognise the impact chemistry makes on developing sustainability, and its effects on the environment, on society and on the lives of themselves and others.

ENTRY LEVEL

Ideally, students should have completed the S2/3 Elective in Chemistry.

The course may be suitable for those wishing to study biology for the first time. In which case, they should speak to Mrs McDowell (Principal Teacher of Biology & Chemistry) for advice.

COURSE CONTENT

The Course has four mandatory Units including the Added Value Unit.

Chemical Changes and Structure (National 4)

In this Unit,

learners will develop scientific skills and knowledge of the chemical reactions in our world. Through practical experience learners will investigate rates of reaction, energy changes of chemical reaction, and the reactions of acids and bases and their impact on the environment. Focusing on these reactions, learners will work towards the concept of chemical equations. Learners will research atomic structure and bonding related to properties of materials.

Nature's Chemistry (National 4)

In this Unit,

learners will research the Earth's rich supply of natural resources which are used by each and every one of us. Learners will investigate how fossil fuels are extracted and processed for use. They will investigate: the chemistry of using fuels, their effect on the environment and the impact that renewable energy sources can have on this; plants as a source of fuels, carbohydrates and consumer products; and how chemists use plants in the development of products associated with everyday life.

Chemistry in Society (National 4)

In this Unit,

learners will focus on the chemical reactions, properties and applications of metal and alloys. The chemistry of metals in chemical cells is explored. Through research, learners will compare and contrast the properties and applications of plastics and new materials. Learners will investigate the use of fertilisers, the formation of elements, and the presence of background radiation, and will

research the use of chemical analysis for monitoring the environment.

Added Value Unit: Chemistry Assignment (National 4)

In this Unit,

learners will draw on and extend the skills they have learned from across the other Units, and demonstrate the breadth of knowledge and skills acquired, in unfamiliar contexts and/or integrated ways.

ASSESSMENT

All Units are internally assessed. They will be assessed on a pass/fail basis.

CONDITIONS OF AWARD

To achieve the National 4 Chemistry Course, learners must pass all of the required Units, including the Added Value Unit. The required Units are shown in the Course content section. National 4 Courses are not graded.

HOMEWORK

Homework is an essential part of the course. Homework will include practice problems, questions from the textbook and regular revision of all the material covered in the course.

TRANSFERABLE SKILLS

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

PROGRESSION

There is progression from this Course on to National 5 Chemistry.

SUBJECT: CHEMISTRY

AWARD RECEIVED: NATIONAL 5

Chemistry is the study of matter at the level of atoms, molecules, ions and compounds. These substances are the building blocks of life and all of the materials that surround us. Chemists play a vital role in the production of everyday commodities. Chemistry research and development is essential for the introduction of new products. The study of chemistry is of benefit not only to those intending to pursue a career in science, but also to those intending to work in areas such as the food, health, textile or manufacturing industries.

An experimental and investigative approach is used to develop knowledge and understanding of chemical concepts.

ENTRY LEVEL

Ideally, students should have completed the S2/3 Elective in Chemistry. The course may be suitable for those wishing to study chemistry for the first time. In which case they should speak to Mrs McDowell (Principal Teacher of Biology & Chemistry) for advice.

COURSE CONTENT

Chemical changes and structure

In this area, topics covered are:

- ❖ rates of reaction
- ❖ atomic structure and bonding related to properties of materials
- ❖ formulae and reacting quantities
- ❖ acids and bases

Nature's chemistry

In this area, topics covered are:

- ❖ homologous series
- ❖ everyday consumer products
- ❖ energy from fuels

Chemistry in society

In this area, topics covered are:

- ❖ metals
- ❖ plastics
- ❖ fertilisers
- ❖ nuclear chemistry
- ❖ chemical analysis

ASSESSMENT

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

Course Assessment components, marked by the SQA:

1. **Assignment** (represents 20% of the overall marks for the course assessment)
2. **Exam** (represents 80% 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 is an essential part of the course. Homework will include practice problems and regular revision of all the material covered in the course.

TRANSFERABLE SKILLS

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

PROGRESSION

There is very good progression from this Course on to Higher Chemistry.