

SUBJECT: BIOLOGY

AWARD RECEIVED: NATIONAL 4

Biology affects everyone and aims to find solutions to many of the world's problems. Biology, the study of living organisms, plays a crucial role in our everyday existence, and is an increasingly important subject in the modern world. Advances in technologies have made this varied subject more exciting and relevant than ever.

Biology Courses should encourage development of skills and resourcefulness, which lead to becoming a confident individual. Successful learners in biology think creatively, analyse and solve problems. Biology aims to produce responsible citizens, through studying of relevant areas of biology, such as health, environment and sustainability.

ENTRY LEVEL

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

Cell Biology (National 4)

In this Unit, learners will develop skills of scientific inquiry, investigation and analytical thinking, along with knowledge and understanding in the context of cell biology. Learners will research issues and communicate information related to their findings, which will develop skills of scientific literacy.

The key areas covered are: cell division and its role in growth and repair, DNA, genes and chromosomes, therapeutic use of cells, properties of enzymes and use in industries, properties of microorganisms and use in industries, photosynthesis – limiting factors, factors affecting respiration, and controversial biological procedures.

Biology: Multicellular Organisms (National 4)

In this Unit, learners will develop skills of scientific inquiry, investigation and analytical thinking, along with knowledge and understanding in the context of multicellular organisms. Learners will research issues and communicate information related to their findings, which will develop skills of scientific literacy.

The key areas covered are: sexual and asexual reproduction and their importance for survival of species, propagating and growing plants, commercial use of plants, genetic information, growth and development of different organisms, and biological actions in response to internal and external changes to maintain stable body conditions.

Biology: Life on Earth (National 4)

In this Unit, learners will develop skills of scientific inquiry, investigation and analytical thinking, along with knowledge and understanding in the context of life on Earth. Learners will research issues and communicate information related to their findings, which will develop skills of scientific literacy.

The key areas covered are how animal and plants species depend on each other, impact of population growth and natural hazards on biodiversity, nitrogen cycle, fertiliser design and environmental impact of fertilisers, adaptations for survival, and learned behaviour in response to stimuli linked to species survival.

Added Value Unit: Biology 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 Biology 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 Biology.

SUBJECT: BIOLOGY

AWARD RECEIVED: NATIONAL 5

Biology, the study of living organisms, plays a crucial role in our everyday existence and is an increasingly important subject in the modern world. Biology affects everyone and aims to find solutions to many of the world's problems. Advances in technologies have made this varied subject more exciting and relevant than ever.

Biology courses should encourage development of skills and resourcefulness which lead to becoming a confident individual. Successful candidates in biology think creatively, analyse and solve problems. Studying relevant areas of biology such as health, environment and sustainability produces responsible citizens.

ENTRY LEVEL

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

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

Cell biology

The key areas covered are:

- ❖ cell structure
- ❖ transport across cell membranes
- ❖ DNA and the production of proteins
- ❖ Proteins
- ❖ genetic engineering
- ❖ respiration

Biology: multicellular organisms

The key areas covered are:

- ❖ producing new cells
- ❖ control and communication
- ❖ reproduction
- ❖ variation and inheritance
- ❖ transport systems – plants
- ❖ transport systems – animals
- ❖ absorption of materials

Biology: life on Earth

The key areas covered are:

- ❖ ecosystems
- ❖ distribution of organisms
- ❖ photosynthesis
- ❖ energy in ecosystems
- ❖ food production
- ❖ evolution of species

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, 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 very good progression from this Course on to Higher Biology or Higher Human Biology.