

SUBJECT: BIOLOGY

AWARD RECEIVED: HIGHER

ENTRY LEVEL

Students should ideally have N5 Biology, at A or B. It could be possible for a student without previous experience of Chemistry to follow this course, in which case they should speak to Mrs McDowell (Principal Teacher of Biology & Chemistry) for advice.

COURSE CONTENT

The Course is split up into 3 Units, with the Key Areas covered in each outlined below:

Unit 1 - DNA and the Genome

This Unit covers the Key Areas of:

The structure of DNA; replication of DNA; control of gene expression; cellular differentiation; the structure of the genome; mutations; evolution; genomic sequencing.

This Unit explores the molecular basis of evolution and biodiversity, while the unity of life is emphasised in the study of gene expression. This approach enables the development of both analytical thinking and problem solving skills in context. An understanding of gene expression, at the cellular level, leads to the study of differentiation in organisms. In addition, the Unit covers the evolution and structure of the genome and genomics, including personal genomics.

Unit 2 - Metabolism and Survival

This Unit covers the Key Areas of:

metabolic pathways and their control; cellular respiration; metabolic rate; metabolism in conformers and regulators; metabolism and adverse conditions; environmental control of metabolism; genetic control of metabolism; ethical considerations in the use of microorganisms - hazards and control of risks.

Analytical thinking and problem solving skills will be developed in context, through investigation of how cellular respiration is fundamental to metabolism and by examining the stages of respiration. In whole organisms, it considers adaptations for the maintenance of metabolism for survival. In addition, it examines the importance of the manipulation of metabolism in microorganisms, both in the laboratory and in industry, including ethical considerations.

Unit 3 - Sustainability and Interdependence

This Unit covers the Key Areas of:

food supply, plant growth and productivity; plant and animal breeding; crop protection; animal welfare; symbiosis; social behaviour; mass extinction and biodiversity; threats to biodiversity.

In this Unit, learners will develop knowledge by investigating how humans depend on sufficient and sustainable food production from a narrow range of crop and livestock species, focusing on photosynthesis in plants.

Analytical thinking and problem solving skills will be developed contextually within these topics. The importance of plant productivity and the manipulation of genetic diversity to maintain food security are emphasised. The Unit also covers interrelationships and dependence, through symbiosis and social behaviour. By studying biodiversity, the Unit attempts to measure, catalogue, understand and address the human impact, including mass extinction.

ASSESSMENT

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

- **Unit Assessment** for each of the Units – these are marked internally in school;
- **Course Assessment**, which is marked by the SQA and includes an:
 1. **Assignment** (20 marks)
 2. **Exam** (100 marks)

The Course assessment is graded A–D. The grade is determined on the basis of the total mark for all components of the Course assessment.

HOMEWORK

Homework is an essential part of the course. Homework will include practise problems, questions from a 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 Biology, 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 Advanced Higher Biology.