

SUBJECT: HUMAN 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 Biology to follow this course, in which case they should speak with either a Biology teacher or Mrs McDowell (Principal Teacher of Biology & Chemistry) for advice.

COURSE CONTENT

The Course is split up into 4 Units, with the Key Areas covered in each outlined below:

Unit 1 - Human Cells

This Unit covers the Key Areas of:

division and differentiation in human cells; structure and replication of DNA; gene expression; genes and proteins in health and disease; human genomics; metabolic pathways; cellular respiration; energy systems in muscle cells.

In this Unit, learners will develop knowledge and understanding through studying stem cells, differentiation in somatic and germline cells, and the research and therapeutic value of stem cells and cancer cells.

Analytical thinking and problem solving skills will be developed in context, through investigation of DNA, the expression of the genotype, and protein production, which allows study of mutations and genetic disorders. DNA technology is covered, including sequencing and medical and forensic applications. In addition, the Unit covers metabolic pathways and their control, through enzymes, with emphasis on cellular respiration and the role of ATP.

Unit 2 - Physiology and Health

This Unit covers the Key Areas of:

the structure and function of reproductive organs and gametes and their role in fertilisation; hormonal control of reproduction; the biology of controlling fertility; ante- and postnatal screening; the structure and function of arteries, capillaries and veins; the structure and function of the heart; pathology of cardio vascular disease (CVD); blood glucose levels and obesity (linked to cardiovascular disease and diabetes)

By studying these systems, learners will be able to develop their problem solving and analytical thinking skills. Reproduction covers hormonal control and the biology of controlling fertility, including fertile periods, treatments for infertility, contraception, ante-natal care and post-natal screening. The Unit also covers relevant tissues and circulation and the pathology of cardiovascular disease, including the impact on society and personal lifestyle.

Unit 3 - Neurobiology and Communication

In this Unit, learners will develop knowledge and understanding through the key areas of: **divisions of the nervous system and parts of the brain; perception and memory (as storage, retention and retrieval of information); the cells of the nervous system and neurotransmitters at synapses; communication and social behaviour.**

The approach is more on function than structure, and covers neural communication and the links between neurotransmitters and behaviour, while considering personal and social citizenship. This approach enables the development of both analytical thinking and problem solving skills in context.

Unit 4 - Immunology and Public Health

In this Unit, learners will develop knowledge and understanding through the key areas of: **non-specific defences; specific cellular defences; the transmission and control of infectious diseases; active immunisation and vaccination and the evasion of specific immune responses by pathogens.**

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 Human Biology, including: researching, ICT, reporting, numeracy, literacy, graphing, investigating, practical experimental skills, analysing, presentation, evaluating, to name a few.

PROGRESSION

There is good progression from this Course on to Advanced Higher Biology.