# Higher Human Biology — draft Course rationale and summary

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# Course rationale

## Background

All new and revised National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide time for learning, more focus on skills and applying learning, and more scope for personalisation and choice.

In this Course, and its component Units, there will be an emphasis on skills development and the application of those skills. Assessment approaches will be proportionate, fit for purpose and will promote best practice, enabling learners to achieve the highest standards they can.

This Course provides learners with opportunities to continue to acquire and develop the attributes and capabilities of the four capacities, as well as skills for learning, skills for life and skills for work.

All Courses provide opportunities for learners to develop breadth, challenge and application, but the focus and balance of the assessment will be appropriate for the subject area.

# Relationship between the Course and Curriculum for Excellence values, purposes and principles

Through enjoyable learning in human biology, learners develop their interest in and understanding of the world. They engage in a wide range of investigative tasks, which allows them to develop important skills to become creative, inventive and enterprising, in a world where the skills and knowledge developed in human biology are needed across all sectors of society and the economy.

The Course allows learners to understand and investigate the living world in an engaging and enjoyable way. It develops learners' ability to think analytically, creatively and independently, and to make reasoned evaluations. The Course provides opportunities for learners to acquire and apply knowledge to evaluate biological issues, assess risk and make informed decisions. This enables learners to develop an informed and ethical view of complex issues.

Learners will be able to develop their communication, collaborative working and leadership skills, and be able to apply critical thinking in new and unfamiliar contexts to solve problems. The Course will further the development of responsible citizens through studying areas such as human health.

# Purpose and aims of the Course

Science is vital to everyday life and allows us to understand and shape the world in which we live and influence its future. Scientists play a key role in meeting society's needs in areas such as medicine, energy, industry, material development, the environment and sustainability. As the importance and application of science continues to grow and develop, more trained scientists will be required. It is also important that everyone has an informed view of science.

The Course provides a broad-based, integrated study of a range of biological topics which build on previous study, such as the Biology (National 5) Course. The Course content is set in contexts that are of particular significance and relevance to the human species. The Course provides the opportunity for learners to acquire a deeper understanding of cellular processes, physiological mechanisms, communication between organisms, and the biology of populations as they apply to the human species. The Course allows flexibility and personalisation by offering choice in the contexts studied.

Due to the interdisciplinary nature of the sciences, learners may benefit from studying Higher Human Biology along with other science subjects, as this may enhance their skills, knowledge and understanding.

The Course contributes to the learner's scientific literacy by developing their skills of scientific experimentation, investigation and enquiry, and skills for learning, life and work. Skills will be developed in each of the Units in the context of discrete

areas of content. These skills prepare learners for life in the 21st century by enabling them to adapt their learning to new situations, solve problems, make decisions based on evidence, and evaluate the impact of science developments on their own health and wellbeing and on society and the environment.

By setting the acquisition of biological knowledge and skills in the context of Higher Human Biology, a stimulating, relevant and enjoyable curriculum prepares learners for further education, training or employment in areas associated with life sciences.

The Course aims to enable learners to:

- develop scientific and analytical thinking skills in a human biology context
- develop an understanding of human biology issues
- acquire and apply knowledge and understanding of human biology concepts
- develop understanding of relevant applications of human biology in society
- develop a deeper understanding of cellular processes, physiological mechanisms, communication between organisms, and the biology of populations as they apply to the human species
- develop applied problem solving skills in a human biology context

# Information about typical learners who might do the Course

The Course is suitable for learners who are secure in their attainment of Biology (National 5) or an equivalent qualification.

This Course emphasises practical and experiential learning opportunities, with a strong skills-based approach to learning. It takes account of the needs of all learners and provides sufficient flexibility to enable learners to achieve in different ways.

The Course will allow opportunities for learners to develop biological knowledge and skills that directly relate to everyday life, including thinking skills, inquiry and investigative skills, and problem solving and practical skills.

On successful completion of this Course, the learner could progress to:

- Advanced Higher Biology
- Higher in another science subject
- National Certificate Group Awards
- HNC, HND or degree in a biology-based course or a related area
- employment

# Course summary

## Course title: Higher Human Biology

## SCQF level 6 (24 SCQF credit points)

## Course outline

**Mandatory Units**

| | |
|---|---|
| Biology: Human Cells (Higher) | (6 SCQF credit points) |
| Biology: Physiology and Health (Higher) | (6 SCQF credit points) |
| Biology: Neurobiology and Communication (Higher) | (3 SCQF credit points) |
| Biology: Immunology and Public Health (Higher) | (3 SCQF credit points) |

**Course assessment** (6 SCQF credit points)

This Course includes six SCQF credit points for 40 additional programmed hours to allow preparation for Course assessment. The Course assessment covers the added value of the Course. Further information on the Course assessment is provided in the Assessment section.

# Course structure and conditions of award

The Course is practical and experiential, developing skills in a human biology context. Learners will gain knowledge and understanding of human biology and develop this through a variety of approaches, including practical activities.

By completing this Course, learners will develop important skills, attitudes and attributes related to human biology, including: developing scientific and analytical thinking skills in a biological context; developing understanding of biological issues; and acquiring and applying knowledge and understanding of biological concepts.

Learners will also develop understanding of relevant applications of human biology in society, and develop problem solving skills.

As well as developing specific scientific skills, in areas such as experimentation and investigation, learners will also gain valuable transferable skills, for learning, life and work, such as literacy, numeracy and communication.

The Course has four Units totalling 18 SCQF credit points, with an additional six SCQF credit points to allow the use of an extended range of learning and teaching approaches, remediation, consolidation of learning, integration and preparation for external assessment.

Units are statements of standards for assessment and not programmes of learning and teaching. They can be delivered in a variety of ways.

**Biology: Human Cells (Higher)**
In this Unit, learners will develop knowledge 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. The Unit also covers metabolic pathways and their control, through enzymes, with emphasis on cellular respiration and the role of ATP.

**Biology: Physiology and Health (Higher)**
In this Unit, learners will develop knowledge by focusing on reproduction and the cardiovascular system. 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 their impact on society and on personal lifestyle.

**Biology: Neurobiology and Communication (Higher)**
In this Unit, learners will develop knowledge by investigating the nervous system and the biological basis of psychology. The approach to the nervous system 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. Human communication is linked to social behaviour and includes looking at the effects of infant attachment, group behaviour, social influence and learning.

**Biology: Immunology and Public Health (Higher)**
In this Unit, learners will develop knowledge through study of disease transmission, public health measures and immunisation programmes. Analytical thinking and problem solving skills will be developed contextually within these topics. This Unit details the immune system's role through allergic and defence responses and looks at the varied defences the body employs. Emphasis is placed on the control of infectious diseases, the principles of active immunisation and vaccination and vaccine clinical trials. Herd immunity and public health policy are considered through population biology.

To gain the award of the Course, the learner must pass all the Units as well as the Course assessment. The required Units are shown in the Course outline section. Course assessment will provide the basis for grading attainment in the Course award.

# Assessment

Information about assessment standards for the Course will be included in the *Course Assessment Specification*, which will provide full details including advice on how a learner's overall attainment for the Course will be determined.

## Unit assessment

All Units are internally assessed against the requirements shown in Unit specifications.

They will be assessed pass/fail within centres.

SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgements are consistent and meet national standards.

Exemplification of possible assessment approaches for these Units will be provided in the *National Assessment Resource.*

## Course assessment

Courses from National 4 to Advanced Higher include assessment of added value[1]. At National 5, Higher and Advanced Higher, the added value will be assessed in the Course assessment. The added value for the Course must address the key purposes and aims of the Course as defined in the Course Rationale. It will do this by addressing one or more of breadth, challenge or application.

In the Higher Human Biology Course, added value will focus on:

- breadth
- challenge
- application

Learners will draw on and extend the skills they have learned during the Course. This will be assessed within a question paper [2]and a case study[3], requiring demonstration of the breadth of knowledge and skills acquired from across the Units in unfamiliar contexts and/or integrated ways.

[1] Definitions can be found here: www.sqa.org.uk/sqa/45528.html

[2] See link above for definitions.

[3] See link above for definitions.