



Biology (National 4)

Draft National Course Specification



Valid from August 2013

This edition: April 2011, draft version 1.0

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Please refer to the note of changes at the end of this Course Specification for details of changes from previous version (where applicable).

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Course outline

Course title:	Biology (National 4)
SCQF:	level 4 (24 SCQF credit points)
Course code:	to be advised

Mandatory Units

Biology: Cell Biology (National 4) 6 SCQF credit points

Biology: Multicellular Organisms (National 4) 6 SCQF credit points

Biology: Life on Earth (National 4) 6 SCQF credit points

Added Value Unit

Biology (National 4) 6 SCQF credit points

This Course includes six SCQF credit points for the assessment of added value in the Added Value Unit. Further information on this Unit is provided in the Assessment section.

Recommended entry

Entry to this Course is at the discretion of the centre. However, learners would normally be expected to have attained the skills and knowledge required by one or more of the following or by equivalent qualifications and/or experience:

- ◆ Biology (Access 3) Course or relevant component Units
- ◆ Chemistry (Access 3) Course or relevant component Units
- ◆ Environmental Science (Access 3) Course or relevant component Units
- ◆ Physics (Access 3) Course or relevant component Units
- ◆ Science (Access 3) Course or relevant component Units

In terms of prior learning and experience, relevant experiences and outcomes may also provide an appropriate basis for doing this Course. Further information on relevant experiences and outcomes will be given in the *Course Support Notes*.

Progression

This Course or its components may provide progression to:

- ◆ Biology (National 5)
- ◆ further study, employment or training

Further details are provided in the Rationale section.

Equality and inclusion

This Course Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information please refer to the *Course Support Notes* and the *Course Assessment Specification*.

Rationale

All new and revised National Courses reflect Curriculum for Excellence values, purposes and principles. They offer flexibility, provide more time for learning, more focus on skills and applying learning, and 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 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 biology are needed across all sectors of society and the economy.

Biology Courses should encourage resilience, which leads to becoming a confident individual. Successful learners in biology think creatively, analyse and solve problems. Biology can produce responsible citizens through studying areas such as health, environment and sustainability.

The Course allows learners to understand and investigate the living world in an engaging and enjoyable way. It develops learners' abilities 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 topical 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.

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.

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.

The Course develops scientific understanding of biological issues and aims to generate enthusiasm for biology by developing learners' interests through a variety of approaches to learning, with an emphasis on practical activities. The Course will be of value to those wishing to develop skills, knowledge and understanding of biology.

The Course is a broad and up-to-date selection of concepts and ideas relevant to the central position of life science within our society. The Course covers major areas of biology, and the scale of topics ranges from molecular to whole organism and up to ecosystems. In addition, to increase the relevance of the Course, within each Unit the most relevant applications of biological understanding are highlighted. The Course allows flexibility and personalisation by offering choice in the contexts studied. Skills will be developed in each of the Units in the context of discrete areas of content.

The Course aims to:

- ◆ develop scientific and analytical thinking skills in a biological context
- ◆ develop understanding of biological issues
- ◆ acquire and apply knowledge and understanding of biological concepts
- ◆ develop understanding of relevant applications of biology in society

Information about typical learners who might do the Course

The Course provides opportunities for learners to become scientifically literate citizens, while developing their literacy and numeracy skills. It will also develop learners' investigative and experimental skills in a biological context. In addition, learners will be able to develop a lifelong interest in biology and will recognise the impact biology makes on their lives, the lives of others, the environment, and on society.

Through this Course, learners can develop relevant skills for learning, for use in everyday life and in employment. Due to the inter-disciplinary nature of the sciences, learners benefit from studying biology along with other science subjects, as this enhances the learner's skills, knowledge and understanding.

This Course or its components may provide the learner with progression to:

- ◆ Biology (National 5)
- ◆ National 4 or 5 in another science subject
- ◆ Skills for Work Courses (SCQF levels 4 or 5)
- ◆ National Certificate Group Awards
- ◆ National Progression Awards (SCQF levels 4 or 5)
- ◆ employment

Course structure and conditions of award

Course structure

The Course develops skills in a biological context. Learners will gain knowledge and understanding of 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 biology, including: scientific and analytical thinking skills in a biological context; understanding of biological issues; knowledge and understanding of biological concepts; and understanding of relevant applications of biology in society.

In addition to 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.

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

The Course has four mandatory Units totalling 24 SCQF credit points.

Biology: Cell Biology (National 4)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to study and investigation of the cell. This will include cell structure and processes within cells, such as transport, photosynthesis and respiration, as well as DNA, protein and biotechnology.

Biology: Multicellular Organisms (National 4)

In this Unit, learners will develop knowledge and skills and carry out practical and other learning activities related to study and investigation of whole organisms. This will include a comparative approach to the study of plants and animals, through areas such as reproduction and inheritance, the need for transport within organisms, digestion and associated enzymes, control and communication, and health.

Biology: Life on Earth (National 4)

In this Unit, learners will develop knowledge, skills and carry out practical and other learning activities related to study and investigation of life on Earth. This will include world ecosystems, evolution, natural selection and competition, behaviour, biodiversity, decay, recycling and microorganisms and ethical issues.

Biology: Added Value Unit (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.

Conditions of award

To achieve the Biology (National 4) Course, learners must pass all of the required Units, including the Added Value Unit. The required Units are shown in the Course outline section.

National 4 Courses are not graded.

Skills and knowledge

Full skills and knowledge for the Course will be given in the *Course Assessment Specification*. A broad overview of the mandatory subject skills, knowledge and understanding that will be assessed in the Course includes:

- ◆ demonstrating basic knowledge of Biology by making accurate statements
- ◆ applying basic biology knowledge to straightforward situations, interpreting information and solving problems
- ◆ demonstrating basic understanding of Biology by providing explanations
- ◆ selecting relevant information from a variety of straightforward sources
- ◆ presenting information appropriately in a variety of straightforward forms
- ◆ processing basic information accurately, using calculations, where appropriate
- ◆ planning, designing and carrying out straightforward experimental procedures to test basic hypotheses or to illustrate effects
- ◆ evaluating straightforward experimental procedures
- ◆ drawing simple valid conclusions and giving basic explanations supported by evidence or justification
- ◆ making predictions and generalisations based on straightforward evidence/information

Assessment

Information about assessment 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 the Unit Specification.

They can be assessed on a Unit-by-Unit basis or by combined assessment.

They will be assessed on a pass/fail basis within centres. SQA will provide rigorous external quality assurance, including external verification, to ensure assessment judgments are consistent and meet national standards.

The assessment of the Units in this Course will be as follows:

Biology: Cell Biology (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate selecting, processing and presenting information in the context of cell biology
- ◆ demonstrate skills of applying knowledge and understanding related to cell biology

Biology: Multicellular Organisms (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate planning, designing, carrying out and evaluating experimental procedures or investigations in the context of multicellular organisms
- ◆ demonstrate skills of applying knowledge and understanding related to multicellular organisms

Biology: Life on Earth (National 4)

Learners who complete the Unit will be able to:

- ◆ demonstrate analysing and evaluating information, drawing conclusions, giving explanations and making predictions in the context of life on earth
- ◆ demonstrate skills of applying knowledge and understanding related to life on earth

Added Value Unit

Courses from National 4 to Advanced Higher include assessment of [added value](#)¹. At National 4, added value will be assessed in an Added Value Unit. The Added Value Unit will 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.

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

successful learner, confident individual, responsible citizen, effective contributor

In this Course, the Added Value Unit will focus on breadth and application

Learners will draw on and extend the skills they have learned during the Course. This will be assessed through both a [project](#)² and a [test](#)³. These will offer opportunities to demonstrate the breadth of knowledge and skills acquired from across the other Units, in unfamiliar contexts and/or integrated ways.

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

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² Definitions can be found here: www.sqa.org.uk/sqa/45528.html

³ See link above for definition.

Development of skills for learning, skills for life and skills for work

(Note: The information given below reflects the initial thinking on significant opportunities for development of skills for learning, skills for life and skills for work. These may be subject to change as the development process progresses.)

It is expected that learners will also develop broad, generic skills through this Course. The skills that are likely to be appropriate for this Course are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Course where there are appropriate opportunities.

2 Numeracy

- 2.1 Number processes
- 2.2 Money, time and measurement
- 2.3 Information handling

5 Thinking skills

- 5.3 Applying
- 5.4 Analysing and evaluating

Amplification of these skills is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills will be appropriate to the level of the Course. Further information on building in skills for learning, skills for life and skills for work for the Course is given in the *Course Support Notes*.

Administrative information

Published: April 2011 (version 1.0)

Superclass: to be advised

History of changes to National Course Specification

Course details	Version	Description of change	Authorised by	Date

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