

# Draft National Unit Specification



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**Unit title:** Biology: Cell Biology (National 5)

**SCQF:** level 5 (6 SCQF credit points)

**Unit code:** to be advised

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## Unit outline

The general aim of this Unit is to develop skills of scientific inquiry, investigation, analytical thinking and knowledge and understanding in the context of cell biology. Learners will use a variety of approaches and will consider applications of cell biology on our lives, as well as environmental and/or ethical implications. Learners will research issues, apply scientific skills and communicate information related to their findings, which will develop skills of scientific literacy.

Learners who complete this Unit will be able to:

- 1 Draw on knowledge, understanding and skills to investigate, through experimentation, a topic/process in cell biology
- 2 Draw on knowledge, understanding and skills to explore moral and/or ethical implications related to an industrial application of cell biology
- 3 Use knowledge and understanding of cell biology

This Unit is a mandatory Unit of the Biology (National 5) Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes* which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in the *National Assessment Resource*.

## Recommended entry

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

- ◆ Biology (National 4) Course or relevant component Units
- ◆ Environmental Science (National 4) Course or relevant component Units
- ◆ Science (National 4) 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 Unit. Further information on relevant experiences and outcomes will be given in the *Unit Support Notes*.

## **Equality and inclusion**

This Unit 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 *Unit Support Notes*.

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# Standards

## Outcomes and assessment standards

### Outcome 1

The learner will:

- 1 Draw on knowledge, understanding and skills to investigate, through experimentation, a topic/process in cell biology by:**
  - 1.1 Identifying an aim for the investigation
  - 1.2 Explaining the key features of the topic/process
  - 1.3 Planning and designing an experiment to test an aim/purpose/hypothesis
  - 1.4 Carrying out an experiment to test an aim/purpose/hypothesis
  - 1.5 Recording measurements and observations appropriately
  - 1.6 Processing the results
  - 1.7 Drawing a valid conclusion
  - 1.8 Commenting on the aim/purpose/approach/hypothesis and suggesting improvements

### Outcome 2

The learner will:

- 2 Draw on knowledge, understanding and skills to explore moral and/or ethical implications related to an industrial application of cell biology by:**
  - 2.1 Gathering information from at least two sources to describe an industrial application of cell biology
  - 2.2 Describing the moral/ethical issues arising from an industrial application

### Outcome 3

The learner will:

- 3 Use knowledge and understanding of cell biology by:**
  - 3.1 Describing, in detail, cell processes, systems and concepts
  - 3.2 Solving given problems in cell biology

## Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

Evidence can be drawn from a variety of sources and presented in a variety of formats.

Evidence may be presented for individual Outcomes or gathered for the Unit as a whole, by combining assessment holistically in a single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

Concepts to be covered in the Unit will include: the cell, exchange across membranes, photosynthesis, respiration, DNA, protein and enzymes, and biotechnology.

In these concepts, evidence will be drawn from:

- ◆ **structure of cells** — plant cells, animal cells, differences between cells and their environment, osmosis, active transport
- ◆ **new cells** — mitosis
- ◆ **genetic information** — DNA, mRNA, proteins, enzymes' functions in living cells, and genetic information
- ◆ **chemical energy in cells** — photosynthesis, chlorophyll, ATP, limiting external factors, respiration, ADP, stored and released energy, aerobic and anaerobic pathways

Exemplification of assessment will be provided in the *National Assessment Resource*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

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

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit 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 Unit where there are appropriate opportunities.

### 1 Literacy

#### 1.1 Reading

### 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 is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

## Administrative information



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**Published:** August 2011 (draft version 1.0)

**Superclass:** to be advised

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### History of changes

Version	Description of change	Authorised by	Date

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Note: readers are advised to check SQA's website: [www.sqa.org.uk](http://www.sqa.org.uk) to ensure they are using the most up-to-date version of the Unit Specification.