



National Unit specification

General information

Unit title: The Human Body (SCQF level 4)

Unit code: HL94 44

Superclass: RH

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Unit purpose

This unit is designed to provide learners with an understanding of the structure and functions of the human body. This unit is suitable for learners studying at NC level, and will provide the necessary underpinning knowledge and skills to enable progression to further study of the human body at SCQF level 5.

Outcomes

On successful completion of the unit the learner will be able to:

- 1 Describe the functions of body systems.
- 2 Investigate the structure and function of a body system.
- 3 Perform experiments related to body functions.

Credit points and level

1 National Unit credit at SCQF level 4: (6 SCQF credit points at SCQF level 4)

Recommended entry to the unit

Entry is at the discretion of the centre, however it is recommended that learners should have experience of either Biology, Chemistry, Environmental Science, Physics or Science at SCQF level 3.

National Unit specification: General information (cont)

Unit title: The Human Body (SCQF level 4)

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes for this unit specification.

There is no automatic certification of Core Skills or Core Skill components in this unit.

Context for delivery

If this unit is delivered as part of a group award, it is recommended that it should be taught and assessed within the subject area of the group award to which it contributes.

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.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

National Unit specification: Statement of standards

Unit title: The Human Body (SCQF level 4)

Acceptable performance in this unit will be the satisfactory achievement of the standards set out in this part of the unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Describe the functions of body systems.

Performance criteria

- (a) The identification of the principal organs of given body systems is correct.
- (b) The description of body processes is correct in terms of the function of both organs and systems.

Outcome 2

Investigate the structure and function of a body system.

Performance criteria

- (a) The extraction of key points from a variety of sources is correct.
- (b) The collation of the relevant information is complete.
- (c) The presentation of the information is accurate and appropriate to the body system.

Outcome 3

Perform experiments related to body functions.

Performance criteria

- (a) The preparation for an experimental procedure is in accordance with given specification.
- (b) The experimental procedure is carried out correctly and safely.
- (c) The recorded results are in an appropriate format.
- (d) The interpretation of results is correct with respect to the identification of factors affecting the experiment.
- (e) The conclusions drawn are valid.

National Unit specification: Statement of standards (cont)

Unit title: The Human Body (SCQF level 4)

Evidence requirements for this unit

Evidence is required to demonstrate that learners have achieved all outcomes and performance criteria.

Written and/or oral recorded evidence for Outcome 1 should be assessed using a closed-book assessment under supervised conditions. It is recommended that the assessment be completed within 30 minutes.

Written and/or oral recorded evidence for Outcome 2 should be assessed using an open-book assessment in unsupervised conditions.

Written and/or oral recorded evidence for Outcome 3 should be assessed by completion of an appropriate pro forma.

Outcome 1

A learner's response will be judged satisfactory where the evidence shows that the learner can:

- ◆ identify the principal organs of four of the following body systems: skeletal; respiratory; circulatory; digestive; excretory; nervous; endocrine; reproductive.
- ◆ describe the function of both organs and systems in relation to four of the following body processes: movement; gas exchange; transport; digestion and assimilation of food; removal of waste; response to change; reproduction; obtaining energy.

The assessment will cover four of the eight body systems and four of the eight body processes. Learners will not have prior knowledge of which body systems/processes are being assessed. Those body systems/processes which are not assessed must be covered in the alternative (resit) assessment.

Outcome 2

A learner's response will be judged satisfactory where the evidence shows that the learner can:

- ◆ extract key points from a variety of sources.
- ◆ collate relevant information.
- ◆ present information accurately and appropriate to the body system.

Learners will investigate the structure, function and one disorder of a body system. Learners will be required to produce a 1,000 word report or equivalent. The report must contain at least one graph, one diagram, one table and a bibliography.

Where a report does not meet the required standard, then the learner will be given a single opportunity to re-draft. If the required standard is still not attained, then an alternative body system to research will be set.

National Unit specification: Statement of standards (cont)

Unit title: The Human Body (SCQF level 4)

Outcome 3

Learners will perform two practical experiments, the content of which will be related to body functions. A learner's response will be judged satisfactory where the evidence shows that the learner can:

- ◆ prepare for an experimental procedure in accordance with given specification.
- ◆ carry out an experimental procedure correctly and safely.
- ◆ record results in an appropriate format.
- ◆ interpret results correctly with respect to the identification of factors affecting the experiment.
- ◆ draw valid conclusions.

An assessor observation checklist will be used to record the learner's performance of the practical work in line with given instructions and health and safety requirements.

Learners may report results by completion of an appropriate pro forma. Where a learner does not perform an assessed practical experiment to the required standard, they will be given the chance to either reattempt the same practical experiment, or to undertake a different practical experiment of similar complexity. Where a pro forma does not meet required standard, then the learner will be given a single opportunity to re-draft. If the required standard is still not attained, then an alternative practical experiment will be set.

National Unit Support Notes



Unit title: The Human Body (SCQF level 4)

Unit support notes are offered as guidance and are not mandatory.

While the exact time allocated to this unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this unit

This unit is intended as part of the framework for NC Applied Sciences but may be suitable for inclusion in other science awards. It is designed to provide learners with an understanding of the structure and functions of the human body.

Definition of an organ for the purposes of this unit is any structure containing more than one tissue.

Outcome 1 — Describe the functions of body systems

Skeletal system

Principal organs of this system should be restricted to the naming of different bones, eg clavicle, cranium, scapula, mandible, tibia, sternum, carpals, metacarpals. This is not an exhaustive list but gives an indication of the level required.

Respiratory system

Principal organs to include nose, trachea, bronchus, bronchioles, alveoli, lungs, intercostal muscles, diaphragm, ribs.

Circulatory system

Principal organs to include heart and names of major arteries and veins. The lymphatic system should be discussed as an overflow system but may be more appropriately assessed under Performance Criterion (b).

Digestive system

Principal organs of the alimentary canal to include, eg oesophagus, duodenum, colon. Associated organs such as the liver and pancreas could also be included. This is not an exhaustive list but gives an indication of the level required.

Excretory system

The urinary system, to include kidney, ureter, bladder, urethra; the skin and the lungs.

Nervous system

Principal organs to include regions of brain such as cerebellum, cerebrum, medulla oblongata, hypothalamus, spinal cord, nerves, sense organs, eg eye, ear, nose, tongue.

National Unit Support Notes (cont)

Unit title: The Human Body (SCQF level 4)

Endocrine system

Principal organs to include pituitary, thyroid, pancreas, adrenal, ovary, testis.

Reproductive system

Male reproductive organs, eg testis, penis, scrotum, urethra, epididymus, sperm duct.
Female reproductive organs, eg ovary, oviduct, uterus, vagina.

Movement

Action of antagonistic muscle pairs, levers, points of origin and insertion, and joints as appropriate. This could be exemplified by the movement of the arm.

Gas exchange

Provision of large surface area, inspiration, expiration, diffusion of gases across alveolar wall.

Transport

Heart and arteries as pumps. Blood as the transport medium. Veins and lymphatics as returning vessel.

Digestion and assimilation of food

The discussion of food should refer to carbohydrates, proteins and fats and their simple breakdown products. Mechanical and chemical breakdown of food to include the principal of enzyme action. Specific enzyme names are not necessary at this level. Assimilation of food function of villi in relation to absorption and increased surface area, immediate destination of food products. Assimilation of vitamins and minerals should also be included.

Removal of waste

Kidney functions to include filtration and selective reabsorption in the removal of salt and water. Skin removal of heat. Lung removal of CO₂.

Response to change

Examples could include the body's response to changes in light, temperature, sound, blood sugar concentration, blood water concentration, blood salt concentration.

Reproduction

Gamete production, copulation, fertilisation, implantation, gestation, birth.

Obtaining energy

Need for energy for body processes. Digestive system and breathing system provide raw materials, circulatory system transports raw materials to and waste products away from cells.

National Unit Support Notes (cont)

Unit title: The Human Body (SCQF level 4)

Outcome 2 — Investigate the structure and function of a body system

Learners will investigate the structure, function and one disorder of a body system. The investigation should cover one of the following body systems:

- ◆ The skeletal system
- ◆ The respiratory system
- ◆ The circulatory system
- ◆ The digestive system
- ◆ The excretory system
- ◆ The nervous system
- ◆ The endocrine system
- ◆ The reproductive system

Learners should be encouraged to pursue their own interest in relation to the human body, and the investigation could cover any aspect of one of the body systems noted above. Investigations can include malfunction(s) or disease as well as normal operations of the chosen system.

Outcome 3 — Perform experiments related to body functions

Guidance on suitable practical experiments for assessment purposes is given elsewhere in this document. However, it is envisaged that learners will also participate in a range of other practical experiments which will develop their laboratory skills.

In carrying out such activities, learners should become familiar with the risk and Control of Substances Hazardous to Health (COSHH) assessments on all procedures undertaken.

Guidance on approaches to delivery of this unit

The unit could be delivered in a variety of contexts including, for example health, sport, care and beauty therapy. In each case it is strongly recommended that, where possible, systems are taught in ways relevant to the learner.

A learner-centred resource-based approach is likely to be most suitable for this unit. Use of visual aids such as models, posters and videos is strongly recommended along with reference to appropriate internet sites.

Practical experimental work may be used to demonstrate and investigate key processes within the human body. Suggested experiments include:

- ◆ Investigating the specificity of enzymes
- ◆ Examining a mammalian (sheep) heart, lungs or kidneys
- ◆ Demonstrating a reflex arc
- ◆ Examining a prepared slide of blood

National Unit Support Notes (cont)

Unit title: The Human Body (SCQF level 4)

Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Outcome 1 could be assessed by a closed-book assessment with a 60% cut-off score. Assessment should be carried out in supervised conditions, and it is recommended that the assessment be completed within 30 minutes.

In Outcome 2 learners are required to produce a 1,000 word report or equivalent. Assessment should be open-book and carried out in unsupervised conditions. The report must contain at least one graph, one diagram, one table and a bibliography.

In Outcome 3 learners are required to undertake two assessed practical experiments, the content of which will be related to body functions. Examples of suitable experiments are given below. However, this list is not prescriptive, and other practical experiments of similar complexity may be used by the centre.

Suitable practical experiments are:

- ◆ Effects of exercise on breathing rate
- ◆ Tidal volume comparisons
- ◆ Spirometry
- ◆ Effect of exercise on pulse rates
- ◆ Enzyme experiments on digestion
- ◆ 'Model Gut' experiment with visking tubing
- ◆ Reaction times
- ◆ Sensitivity of different area of the skin

Assessed practical experiments will usually be performed individually. However, there may be some experiments that are suitable to be undertaken in pairs or small groups. If this is the case then the assessor should ensure that all participants are actively involved and are able to adequately demonstrate the required skills.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the evidence requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

National Unit Support Notes (cont)

Unit title: The Human Body (SCQF level 4)

Opportunities for developing Core and other essential skills

The delivery and assessment of this unit will provide learners with the opportunity to develop the Core Skills of *Numeracy and Problem Solving* at SCQF level 3.

Numeracy — Using Number at SCQF level 3

Learners will be required to apply simple numerical skills in everyday situations.

Problem Solving — Critical Thinking at SCQF level 3

Learners will be required to analyse a simple situation or issue.

History of changes to unit

Version	Description of change	Date

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General information for learners

Unit title: The Human Body (SCQF level 4)

This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

This is a 1 credit unit at SCQF level 4, which you are likely to be studying as part of an NC Applied Sciences programme. Before progressing to this unit it would be beneficial to have studied either Biology, Chemistry, Environmental Science, Physics or Science at SCQF level 3.

On completion of the unit you should be able to:

- 1 Describe the functions of body systems.
- 2 Investigate the structure and function of a body system.
- 3 Perform experiments related to body functions.

Outcome 1

In this outcome you will learn about the following body systems: skeletal; respiratory; circulatory; digestive; excretory; nervous; endocrine; reproductive. You will also learn about the function of the organs and systems in relation to the following body processes: movement; gas exchange; transport; digestion and assimilation of food; removal of waste; response to change; reproduction; obtaining energy.

Outcome 2

In this outcome you will research the structure and function of one of the following body systems: skeletal; respiratory; circulatory; digestive; excretory; nervous; endocrine; reproductive.

Outcome 3

In this outcome you will undertake practical experiments, the content of which will be related to body functions.

During this practical work, you will become familiar with risk and Control of Substances Hazardous to Health (COSHH) assessments.

Assessment

For Outcome 1 you will take a closed-book assessment.

Outcome 2 will be assessed by a 1,000 word report or equivalent.

Outcome 3 will be assessed after you have learned the necessary practical skills, and will take the form of two practical experiments, for which you will report your results by completion of pro forma reports.

General information for learners

Unit title: The Human Body (SCQF level 4)

Core Skills

Although there is no automatic certification of Core Skills in the unit, you will have opportunities to develop the Core Skills of *Numeracy and Problem Solving* at SCQF level 3.