SCOTTISH QUALIFICATIONS AUTHORITY

National Unit Specification: general information

UNIT Health and Technology (Intermediate 1)

NUMBER D023 10

COURSE Biology (Intermediate 1)

SUMMARY

The unit seeks to develop knowledge and understanding, problem solving and practical abilities related to the use of technology in measuring, recording and monitoring health.

OUTCOMES

1 Demonstrate knowledge and understanding related to physiological measurements.
2 Carry out physiological measurements related to health and technology.
3 Solve problems by an investigation related to Intermediate 1 Biology.

RECOMMENDED ENTRY

While entry is at the discretion of the centre and no previous biology experience is required, the unit would be suitable for those with an award in Standard Grade Biology, Chemistry, Physics or Science at grades 4-7.

CREDIT VALUE

1 credit at Intermediate 1.

Administrative Information

Superclass: PE

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Version: 04

National Unit Specification: general information (cont)

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CORE SKILLS

Core skills for this qualification remain subject to confirmation and details will be available at a later date.

Additional information about core skills is published in the *Catalogue of Core Skills in National Qualifications* (SQA, 2001).

National Unit Specification: statement of standards

UNIT Health and Technology (Intermediate 1)

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 the Scottish Qualifications Authority.

OUTCOME 1

Demonstrate knowledge and understanding related to physiological measurements.

Performance criteria

(a) Facts, ideas and terminology are described correctly in relation to physiological measurements.
(b) Explanations given are supported by evidence.

Note on range for the outcome

Physiological measurements related to: heart, lungs, whole body.

Evidence requirements

Evidence of an appropriate level of attainment must be generated from a closed book test with items covering all the performance criteria for all of the range.

OUTCOME 2

Carry out physiological measurements related to health and technology.

Performance criteria

(a) The procedures are followed accurately and safely.
(b) Relevant measurements and observations are recorded in an appropriate format.

Note on range for the outcome

Physiological measurements: pulse rate, body temperature.

Evidence requirements

A checklist of the individual work of the candidate must be produced for all of the performance criteria for both categories in the range.

National Unit Specification: statement of standards (cont)

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OUTCOME 3

Solve problems by an investigation related to Intermediate 1 Biology.

Performance criteria

(a) The aims of the investigation are clearly stated.
(b) Appropriate data is identified and collected.
(c) The collected data is analysed and presented in an appropriate format.
(d) Conclusions drawn are valid.

Evidence requirements

A report of one investigation must be provided covering all of the performance criteria and related to the contents and notes specified for Intermediate 1 Biology.

The teacher/lecturer responsible must attest that the report is the individual work of the candidate derived from participating in solving a problem involving the candidate in planning, deciding how the activity is to be managed, identifying and obtaining the necessary resources, and carrying out the activity. Depending on the activity, the investigation may be carried out as group work.

National Unit Specification: support notes

UNIT Health and Technology (Intermediate 1)

This part of the unit specification is offered as guidance. The support notes are not mandatory.

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

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

Outcome 1

1 What is health and technology?

i The meaning of health.
The health triangle
The importance of a healthy lifestyle.

ii The value of physiological measurements as indicators of health.
The advantages and disadvantages of high tech and low tech approaches to measuring temperature, body fat, blood pressure and heart rate (pulse rate).

2 Healthy heart

i The heart and circulatory system.
The heart as a muscle which pumps blood around the body.
The three main blood vessels are arteries, veins and capillaries.
Transport function.

ii Pulse rate as a health indicator.
Pulse rate, its measurement and the normal range of values.
Recovery time.
Effect of exercise on pulse rate and recovery time.

iii The concept of blood pressure.
Blood pressure, its measurement and average value.
Blood pressure under different conditions and its significance for health.

iv Blood tests and cell counts.
Detection of infection and other medical conditions to include anaemia, diabetes and leukaemia.
Identification of blood groups.
Measurement of alcohol or drug concentration in blood.

3 Healthy lungs

i The lungs and breathing.
Positions and parts of the breathing system.
The function of the lungs.
The effect of exercise on breathing and recovery time.

ii The physiological measurements of the lungs.
Tidal volume, vital capacity and peak flow depend on the size, age, sex and fitness of a person.
Peak flow can be used in the diagnosis and management of asthma.

iii Health risks and effects of smoking.

National Unit Specification: support notes (cont)

UNIT Health and Technology (Intermediate 1)

4 Healthy body

i The importance of diet and energy balance.
The main food groups and their uses.
A healthy diet contains a balance of the three food types.

ii The relationship between body fat and health.
Body fat, its measurement and the normal range of values of body mass.
Implications for health of being overweight or underweight.

iii The relationship between body temperature and health.
Body temperature, its measurement and the normal range of values.
Implications for health of high and low temperatures.

iv Exercise and the health of muscles.
The importance of regular exercise in the maintenance of the size and strength of muscles.
Muscle size and strength decrease if muscles are not exercised regularly.

v Reaction time as an indicator of health.
Reaction time, its measurement.
Factors that can affect reaction time.
Implications for health of long reaction time.

vi Health risks and the effects of alcohol and other drugs.

Further detail is given in the course content section of the course specification.

Outcome 2

The physiological measurements required for this outcome are:

- pulse rate
- body temperature.

Outcome 3

An investigation related to Intermediate 1 Biology should be carried out. Data may be collected by candidates taking measurements directly or it may be provided as case-study material.

Suitable examples in the context of this unit would include:

- investigate fitness in peer group by measuring pulse rate before and after exercise
- investigate handgrip strength and muscle fatigue in peer group
- investigate the dietary habits of peer group
- investigate aspects of lifestyle of peer group
- investigate the incidence and causes of a named disease in Scotland
- investigate preventable and non-preventable factors in a named disease.

National Unit Specification: support notes (cont)

UNIT Health and Technology (Intermediate 1)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Details of suitable approaches are detailed in the course specification.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcome 1 should be assessed by an integrated end of unit test with questions covering both of the performance criteria for knowledge and understanding and all of the range.

A checklist appropriate to the apparatus used to make physiological measurements should be produced to cover the performance criteria for Outcome 2.

Candidates should provide a report for Outcome 3 which should be related to the performance criteria as follows:

Performance criteria	**Suggestions to aid professional judgement**
(a) The aims of the investigation are clearly stated.	Main features to be investigated are identified.
(b) Appropriate data is identified and collected.	The plan should include: • what is to be measured/collected • what (variable) is to be altered • what (variable) is to be kept constant • how many readings/measurements/observations/subjects • equipment/resources required • how data will be recorded. Collected data must be recorded in a clear table with correct headings, appropriate units and results/readings entered correctly.
(c) The collected data is analysed and presented in an appropriate format.	Data should be analysed and presented in tabular or graphical format as appropriate: • for a tabular presentation this may be an extension of the table used for PC (b) above, and must include: suitable headings and units showing averages or other appropriate computations • for a graphical presentation this must include: data presented as a histogram, bar chart, connected points, line of best fit as appropriate, with suitable scales and axes labelled with quantity and units and with data correctly plotted.
(d) Conclusions drawn are valid	Conclusions should make use of the presented evidence and could: • consider the implications for health of the presented evidence and suggest possible courses of action • identify strengths and weaknesses of the investigation based on the evidence.

Re-drafting of a report after necessary supportive criticism is to be encouraged both as part of the learning and teaching process and to produce evidence for assessment. Redrafting and resubmission is only required for the specific performance criterion identified in need of further attention ie the entire report does not need to be rewritten.

Candidates are only required to produce one report for Outcome 3 in relation to the contents and notes specified for Intermediate 1 Biology.

This report can then be used as evidence for Outcome 3 for the other units of the course.

Conditions required to complete the report

Candidates may complete their report outwith class time provided reasonable measures are taken to ensure that the report is the individual work of the candidate.

Teachers and lecturers may wish candidates to write up reports under their direct supervision so that they can provide appropriate advice and support. However, they may feel confident that any redrafting required need not be undertaken under such close supervision as it will be evident in the candidate's response that it is his or her unaided work. Under such circumstances it would be acceptable for such redrafting to take place outwith class time.

Use of IT

Candidates may, if they wish, present their reports in a word-processed format. Candidates may use Excel (or any other suitable data analysis software) when tackling Outcome 3. However, candidates must not be given a spreadsheet with pre-prepared column headings nor formulae, as they are being assessed on their ability to enter quantities and units into a table. The use of clip art or images captured by digital camera may also be used in recording details of experimental methods.

Transfer of evidence

Candidates, who are repeating a course, may carry forward evidence of an appropriate standard, generated in a previous year.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, 2001).