

National Unit Specification: general information

UNIT Growing Plants (Intermediate 1)

NUMBER D025 10

COURSE Biology (Intermediate 1)

SUMMARY

The unit seeks to develop knowledge and understanding, problem solving and practical abilities related to the propagation and growth of plants.

OUTCOMES

- 1 Demonstrate knowledge and understanding related to plant propagation.
- 2 Carry out practical techniques related to plant propagation.
- 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: SD

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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 Growing Plants (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 plant propagation.

Performance criteria

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

Note on range for the outcome

Plant propagation: growing plants from seed, vegetative propagation, plant production.

Evidence requirements

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

OUTCOME 2

Carry out practical techniques related to plant propagation.

Performance criteria

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

Note on range for the outcome

Techniques: sowing seeds, watering, pricking out, potting on, taking cuttings.

Evidence requirements

A checklist of the individual work of the candidate must be produced for all performance criteria for all of 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

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This part of the unit specification is offered for guidance. The support notes 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 CONTENT AND CONTEXT FOR THIS UNIT

Outcome 1

1 Growing plants from seeds

- i Seed biology.
- ii Germination
 - Conditions for germination.
 - Dormancy and its natural advantage in delaying germination.
- iii Photosynthesis as the process of food production in sunlight.
- iv Growing plants from seeds.
 - Methods of seed sowing.
 - Pelleted seeds.
 - Pre-germinating (chitting) seeds.

2 Vegetative propagation

- i Plant propagation structures.
 - Methods of making use of plant propagation structures.
- ii Artificial propagation.
 - Growing points.
 - Techniques of taking stem and leaf cuttings.
 - Methods of reducing water loss.
 - Layering and its advantages.
 - The advantages and disadvantages of heat during propagation.

3 Plant production

- i Conditions for plant growth.
 - Loam and loamless composts.
 - Properties of granular and liquid fertilisers.
 - Watering.
 - Heating and ventilation.
- ii Plant maintenance.
 - The needs of mature plants.
 - Methods of maintaining plants.
 - Methods of controlling pests and disease.
 - Protected cultivation under glass, plastic and floating fleece.

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

National Unit Specification: support notes (cont)

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Outcome 2

The techniques required for this outcome are:

- sowing seeds
- watering
- pricking out
- potting on
- taking cuttings.

Outcome 3

An investigation related to Intermediate 1 Biology should be carried out and enterprise activities could be built in. Data may be collected by candidates carrying out a practical investigation or it may be provided as case-study material.

Suitable examples in the context of this unit would include:

- investigate the effects of rooting powder on the rooting of cuttings
- investigate the effects of different fertilisers on the growth of seedlings.

National Unit Specification: support notes (cont)

UNIT Growing Plants (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 techniques used 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: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• 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: <ul style="list-style-type: none">• identify strengths and weaknesses of the investigation based on the evidence.

National Unit Specification: support notes (cont)

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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 reports outwith class time provided sufficient 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).