

National Unit Specification: General Information

UNIT Science Investigation Skills (Intermediate 2)

NUMBER D941 11

COURSE

SUMMARY

This unit will be suitable for candidates who wish to gain experience in carrying out a science investigation. It gives candidates an introduction to devising a strategy to test a particular hypothesis using practical procedures. The results of the investigation are then interpreted and reported. The candidate will also gain experience of working with others.

This unit can be used in conjunction with D940 11 Science in Context 2 and D934 12, D935 12, D936 12 Experimental Procedures. The unit will also complement Intermediate 2 units in Biology, Chemistry and Physics.

OUTCOMES

- 1 Outline a strategy for a science investigation.
- 2 Test a hypothesis using practical procedures.
- 3 Interpret the results of an investigation.
- 4 Produce a report of an investigation.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following:

- 3161121 Introducing Science Investigation Skills
- D942 10 Science Practical Skills or Intermediate 1 units in Biology, Chemistry, Physics.

Administrative Information

Superclass: RA

Publication date: December 1998

Source: Scottish Qualifications Authority

Version: 01

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CREDIT VALUE

0.5 credit at Intermediate 2.

CORE SKILLS

Information on the automatic certification of any core skills in this unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

National unit specification: statement of standards

UNIT Science Investigation Skills (Intermediate 2)

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.

Note on range for the unit

The science investigations may be carried out using practical procedures from biology, chemistry or physics. The investigation will be carried out by the candidate as part of a team of people.

OUTCOME 1

Outline a strategy for a science investigation.

Performance Criteria

- a) The aim of the investigation is correct and agreed with others.
- b) The relevant factors which may affect the investigation are identified.
- c) An appropriate hypothesis is decided by discussion in a group.
- d) A plan is developed to test the hypothesis by the group.

Evidence Requirements

Evidence of this outcome can be provided in written and/or oral format to ensure that all the performance criteria are covered.

The evidence must show that the candidate can work with others to outline a strategy for a science investigation. A checklist should be used to show that the factors involved in the investigation are identified by the candidate, the candidate can assess the relevance of the factors and the candidate can develop a plan to test the hypothesis developed.

OUTCOME 2

Test a hypothesis using practical procedures.

Performance Criteria

- a) Tasks are identified and allocated by group.
- b) Tasks are carried out in accordance with the identified method, safety and good laboratory and/or hygienic practices.
- c) The results obtained are valid and reliable.
- d) The results are recorded in an appropriate format.

Evidence Requirements

Evidence of achievement of this outcome can be provided in written or oral format to ensure that all performance criteria are covered. A checklist should be used to ensure that the candidate has correctly carried out all tasks. Each candidate should produce an assignment to assess his/her ability to test a hypothesis and record results in an appropriate format.

National unit specification: statement of standards (cont)

UNIT Science Investigation Skills (Intermediate 2)

OUTCOME 3

Interpret the results of an investigation.

Performance Criteria

- a) Valid conclusions are drawn from the experimental results.
- b) The hypothesis is confirmed or rejected according to the results obtained.
- c) Suggested improvements to the original strategy are made which are relevant to the investigation.

Evidence Requirements

Evidence of achievement of this outcome can be provided in written format to ensure that all performance criteria are covered. The candidate requires to provide a structured presentation which should include the factors which may have affected the reliability of results, the conclusions, an appraisal of the hypothesis and suggested improvements.

OUTCOME 4

Produce a report of an investigation.

Performance Criteria

- a) A report is produced on the investigation in the agreed format.
- b) The supporting detail is accurate and presented coherently within the report.
- c) The candidate identifies strengths and weaknesses of own contribution to the work of the team.

Evidence Requirements

Evidence of achievement in this outcome should be provided in written format to ensure that all the performance criteria are met. The candidate must produce a structured report of an investigation. The report should include the following sections: aims, procedures, readings and results, conclusions and discussion. The discussion should include the candidate's contribution to working as a member of a team and show evidence of the candidate seeking and providing support within the team.

National unit specification: support notes

UNIT Science Investigation Skills (Intermediate 2)

This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

GUIDANCE ON CONTENT AND CONTEXT

This unit can be offered in biology, chemistry, physics or broad science context.

GUIDANCE ON TEACHING AND LEARNING APPROACHES

Group work is required in this unit. Candidates should work as part of a group when discussing the aims of the investigation and deciding on a hypothesis to be tested. Tasks should be allocated in the group but each candidate should carry out the experimental work on his/her own. Results should then be gathered by the team and conclusions drawn. Each candidate should produce an individual report.

GUIDANCE ON APPROACHES TO ASSESSMENT

During the work of the unit candidates should have several opportunities to practise their skills. It is recommended that the teacher/lecturer assesses the candidate at the stage when they are showing consistent competence in a given task. Where a candidate is unsuccessful in achieving an outcome, provision should be made for remediation and reassessment.

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 and Certification Arrangements* (SQA, 1998).