

National Unit Specification: general information

UNIT Physics Investigation (Advanced Higher)

NUMBER D388 13

COURSE Physics (Advanced Higher)

SUMMARY

The unit seeks to provide opportunities for the candidate to further develop investigative skills through the completion of a investigation. It also provides the opportunity for self-motivation and organisation.

OUTCOMES

- 1 Develop a plan for a Physics investigation at the level of Advanced Higher Physics.
- 2 Collect and analyse information obtained from the investigation.

RECOMMENDED ENTRY

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

- Higher Physics
- and**
- Higher Mathematics

CREDIT VALUE

0.5 credit at Advanced Higher.

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).

Administrative Information

Superclass: RC

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Additional copies of this unit specification can be purchased from the Scottish Qualifications Authority. The cost for each unit specification is £2.50 (minimum order £5).

National Unit Specification: statement of standards

UNIT Physics Investigation (Advanced Higher)

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

Develop a plan for a Physics investigation at the level of Advanced Higher Physics.

Performance criteria

- (a) A record is maintained in a regular manner.
- (b) Experimental and observational techniques and apparatus are appropriate for the investigation.

Evidence requirements

A completed record giving brief summaries to indicate the planning stage is required. Ideas rejected and important contributions made by the teacher/lecturer or other individuals must be included. The topic chosen must be at a standard commensurate with the demands of Advanced Higher Physics.

OUTCOME 2

Collect and analyse information obtained from the investigation.

Performance criteria

- (a) The collection of the experimental information is carried out with due accuracy.
- (b) Relevant measurements and observations are recorded in an appropriate format.
- (c) Recorded experimental information is analysed and presented in an appropriate format.
- (d) Uncertainties are treated appropriately.

Evidence requirements

A record of the collection and analysis of the information, both of which must be the individual work of the candidate is required. The record must provide evidence in respect of a sample of the Content Statements for uncertainties (see Physics (Advanced Higher), Course Content).

National Unit Specification: support notes

UNIT Physics Investigation (Advanced Higher)

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 20 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

Candidates can select any suitable topic for investigation provided the physics is at an appropriate level of demand. The topic chosen may be outwith the physics covered in the other units of the Advanced Higher Physics course, eg an investigation into a topic in electronics or bulk properties of matter.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The candidate should be allowed to consider a variety of approaches. Independent management of both time and resources should be encouraged. Suitable approaches to learning and teaching are detailed in the National Course Specification.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcome 1

Candidates should provide a completed record with:

- regular entries during the investigation
- notes/comments on ideas rejected
- notes/comments on planning and design
- contributions made by other individuals
- notes/comments on selection of method used.

Outcome 2

In relation to PC (a), the teacher/lecturer should check by observation that the collection of information has been carried out accurately and is the individual work of the candidate.

In relation to PCs (b) to (d) the following provides an indication of what may be included in the candidate's record.

PC (b)

Readings or observations should be recorded in a clear table. The table must include:

- correct headings
- appropriate units
- correctly entered readings/observations.

National Unit Specification: support notes (cont)

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PC (c)

Readings should be analysed/presented using the following, as appropriate:

- a table with suitable headings and units
- a table with ascending or descending independent variable
- a table showing appropriate computations
- a graph with independent and dependent variables plotted
- a graph with suitable scales and axes labelled with quantities and units
- a graph with data correctly plotted with a line or a curve of best fit.

PC (d)

Depending on the activity the following may be included:

- calibration uncertainties, reading uncertainties and random uncertainties
- a combination of individual uncertainties
- an uncertainty in the numerical value of a measured quantity
- uncertainties estimated from a straight line graph.

The references under each performance criterion give an indication of what should be provided as evidence in order to achieve the criterion. The relevance of these will vary according to the investigation. These references are intended to assist the teacher/lecturer in making a judgement of the candidate's achievement against the performance criteria. It is appropriate to give limited support to the candidate in order to facilitate the progress of the investigation. The extent of the support should be documented briefly in the candidate's record.

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 Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs (SQA 2004)*.