

National Unit Specification: general information

UNIT Radiations (Intermediate 1)

NUMBER D375 10

COURSE Physics (Intermediate 1)

SUMMARY

The unit seeks to develop the candidate's knowledge and understanding of simple concepts and facts related to radiations. It also provides an opportunity for developing the ability to apply this knowledge and understanding in the analysis of simple problems.

OUTCOMES

- 1 Demonstrate knowledge and understanding related to radiations.
- 2 Solve problems related to radiations.
- 3 Report on one practical application of Intermediate 1 Physics.

RECOMMENDED ENTRY

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

- Standard Grade Physics at grade 5, 6 or 7
- or
- Standard Grade Biology, Chemistry or Science at grade 4, 5, 6 or 7
- or
- appropriate Access units

CREDIT VALUE

0.5 credit at Intermediate 1.

Administrative Information

Superclass: RC

Publication date: June 2002

Source: Scottish Qualifications Authority

Version: 04

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National Unit Specification: general information (cont)

UNIT Radiations (Intermediate 1)

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 Radiations (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 radiations.

Performance criteria

- (a) Facts are used correctly in relation to radiations.
- (b) Methods are described correctly in relation to radiations.

Evidence requirements

Evidence of an appropriate level of achievement must be generated from a closed book test with items covering all the above performance criteria. The test must sample the Content Statements, given in the National Course Specification: course details, in each of the following areas:

- Light
- X-rays
- Gamma rays
- Infrared and ultraviolet.

OUTCOME 2

Solve problems related to radiations.

Performance criteria

- (a) Relevant information is selected and presented appropriately.
- (b) Conclusions drawn are valid, and explanations given are supported by evidence.

Evidence requirements

Evidence of an appropriate level of achievement must be generated from a closed book test with items covering all the above performance criteria. The test must sample the areas shown below.

- Light
- X-rays
- Gamma rays
- Infrared and ultraviolet.

National Unit Specification: statement of standards (cont)

UNIT Radiations (Intermediate 1)

OUTCOME 3

Report on one practical application of Intermediate 1 Physics.

Performance criteria

- (a) The sources of information are used appropriately.
- (b) The practical application is described clearly.
- (c) Conclusions drawn are valid.

Evidence requirements

A completed report, based on a given structure, on a practical use of X-rays or gamma rays, or ultraviolet, or infrared or lasers, in a medical or non-medical context and covering the above performance criteria is required. The report must be the individual work of the candidate.

An Outcome 3 report of practical work in the Intermediate 1 Physics unit D373 10 Telecommunications may be used as evidence of achievement of Outcome 3 of this unit. An Outcome 3 report of practical work in this unit may be used as evidence of achievement of Outcome 3 of the Intermediate 1 Physics unit D373 10 Telecommunications.

National Unit Specification: support notes

UNIT Radiations (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 20 hours.

GUIDANCE ON CONTENT AND CONTEXT FOR THIS UNIT

The content and the suggested contexts, applications, illustrations and activities for this unit are given in the National Course Specification: course details. The subheadings in the tables in the course details correspond to the areas mentioned in the evidence requirements for Outcome 1 and Outcome 2. The tasks chosen for Outcome 3 must relate to the content of Intermediate 1 Physics and must allow opportunity for all the performance criteria for this outcome to be achieved within any single report.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The learning and teaching of this unit are most effective when the concepts, principles and theories are set in a relevant context, eg by making reference to applications of physics and to real-world situations. The use of the suggested contexts, applications, illustrations and activities is recommended. It is suggested that emphasis is given to practical activities and that the associated knowledge and understanding are developed during these activities. Practical activities also provide opportunities to develop a wide range of skills associated with scientific enquiry. Suitable approaches to learning and teaching are given in the National Course Specification.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Outcomes 1 and 2

It is recommended that a holistic approach is taken for assessment of Outcomes 1 and 2. These outcomes can be assessed by an end of unit test with questions covering of all of the associated performance criteria. Within one question, assessment of knowledge and understanding and problem solving can occur. Each question can assess achievement of a number of performance criteria from either Outcome 1 or 2. Assessment items are available from the National Assessment Bank.

Outcome 3

The teacher/lecturer should ensure that the task relates to the content of Intermediate 1 Physics, that it is about a current practical application of physics and that it provide an appropriate level of demand. Candidates should be provided with an outline structure of a report.

In relation to PC(a), the teacher/lecturer should ensure that the candidate plays an active part in gathering information for the report. Candidates should have access to a range of suitable resources, eg, CD-ROM, library, internet.

In relation to PCs (b) and (c) the following provides an indication of what may be included in a candidate's report.

National Unit Specification: support notes (cont)

UNIT Radiations (Intermediate 1)

PC (b)

- a statement of name of the radiation
- a few concise sentences describing the practical application

PC (c)

Conclusions should contain, as appropriate, a statement relating to:

- one advantage and one disadvantage of the application
- benefits of the application
- comment on effects of the application on individuals and/or society.

It is appropriate to give limited support to candidates in producing their reports. Re-drafting of reports after necessary supportive criticism is to be encouraged both as part of the learning and teaching process and to produce evidence for assessment. Advice should be given on how to access suitable sources of information, eg CD-ROM, internet, and library.

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).