SCOTTISH QUALIFICATIONS AUTHORITY

National Unit Specification: general information

UNIT Electronics (Intermediate 1)

NUMBER D378 10

COURSE Physics (Intermediate 1)

SUMMARY

The unit seeks to develop the candidate's knowledge and understanding of simple concepts and facts related to electronics. 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 electronics.
2 Solve problems related to electronics.
3 Use a systems approach to produce a practical solution to a simple, real-life problem.

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

National Unit Specification: general information (cont)

UNIT Electronics (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 Electronics (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 electronics.

Performance criteria

(a) Methods are described correctly in relation to electronics.
(b) Facts are used correctly in relation to electronics.
(c) Symbols are described correctly in relation to electronics.

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:

- Input, process and output
- Digital logic gates.

OUTCOME 2
Solve problems related to electronics.

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.

- Input, process and output
- Digital logic gates.

National Unit Specification: statement of standards (cont)

UNIT Electronics (Intermediate 1)

OUTCOME 3

Use a systems approach to produce a practical solution to a simple, real-life problem.

Performance criteria

(a) Selected sub-systems are appropriate for a specific function.
(b) Justification for choice of each sub-system is correctly made.
(c) Sub-systems are correctly assembled.
(d) System provides a solution to the problem.

Evidence requirements

One report, based on a given structure, of a practical solution to a real-life problem related to electronics and covering the above performance criteria is required. The teacher/lecturer responsible must attest that the report is the individual work of the candidate derived from active participation in problem solving activities involving the candidate in planning the activities; deciding how the activities are to be managed; identifying and obtaining the necessary resources; carrying out the activities. The report must contain a block diagram of the system and a written justification of the choice of sub-systems. An explanation of how the system functions in terms of the sub-systems selected must also be included.

National Unit Specification: support notes

UNIT Electronics (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 THE CONTENT AND CONTEXT FOR THIS UNIT

The content and 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 practical activities chosen for Outcome 3 must relate to the content of the unit 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 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 activities undertaken in connection with the assessment of Outcome 3 present a practical real-life problem. The activities must relate to the unit content and be at an appropriate level of demand. Candidates should be provided with an outline structure of a report.

In relation to PC (c) the teacher/lecturer should check by observation that the system is assembled correctly.

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

National Unit Specification: support notes (cont)

UNIT Electronics (Intermediate 1)

PC (a)
Comments should be provided on the selected sub-systems with:

- a description of the problem to be solved
- a statement of the name of the input device
- a statement of the name of the output device
- a statement of the name of the processor.

PC (b)
The choice of each sub-system should be justified by:

- a clear sentence indicating why the input device was chosen
- a clear sentence indicating why the output device was chosen
- a clear sentence indicating why the processor was chosen.

PC (d)
A few concise sentences describing how the system works should be provided.

The references under each performance criterion give an indication of what should be provided as evidence in order to achieve the criterion. 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 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.

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).