National Unit Specification: general information

UNIT Electronics: An Introduction (Access 2)

CODE DV30 08

SUMMARY

This Unit gives candidates the opportunity to participate in activities that will help to increase their awareness of the impact that electronics has on individuals and on society and to develop an understanding of the basic elements of electronics. This Unit forms part of the Skillstart Group Award, but may also be taken as a free-standing Unit.

OUTCOMES

1 Describe the impact of electronics on the individual and on society.
2 Apply a systems approach to a simple microelectronic application.
3 Produce a practical solution to a simple, real-life problem.

RECOMMENDED ENTRY

Entry to this Unit is at the discretion of the centre. There is no preferred entry level for this Unit.

CREDIT VALUE

1 credit at Access 2 level (6 SCQF credit points at SCQF level 2*)

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates*

Administrative Information

Superclass: HC

Publication date: August 2005

Source: Scottish Qualifications Authority

Version: 01

National Unit Specification: general information (cont)

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CORE SKILLS

There are no Core Skills for this Unit.

National Unit Specification: statement of standards

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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

Describe the impact of electronics on the individual and on society

Performance Criteria

(a) Describe an electronic system that has an impact on society.
(b) Describe an electronic system that has an impact on an individual.
(c) Describe one advantage of an electronic system.
(d) Describe one disadvantage of an electronic system.

Evidence Requirements

Written and/or oral evidence to show that the candidate can describe the impact an electronic system has on an individual and on society and can provide one example of an advantage and one example of a disadvantage of an electronic system.

OUTCOME 2

Apply a systems approach to a simple microelectronic application

Performance Criteria

(a) Select the electronic system.
(b) Identify the input, process and output subsystems for the electronic system.
(c) Assemble the electronic system.

Evidence Requirements

Performance evidence to show that the candidate can select the electronic system, identify the input, process and output subsystems and assemble the electronic system correctly.

National Unit Specification: statement of standards

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OUTCOME 3

Produce a practical solution to a simple, real-life problem

Performance Criteria

(a) Identify the appropriate system to solve a simple, real-life problem.
(b) Design the system to solve a simple, real-life problem.
(c) Assemble the system to solve a simple real-life problem.

Evidence Requirements

Written and/or oral and/or performance evidence and/or diagrammatic evidence to show that the candidate can identify the appropriate system, design the system and assemble the system to solve a simple, real life problem.

National Unit Specification: support notes

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This part of the Unit Specification is offered as 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 THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit is designed to help candidates to develop an understanding of the impact electronics may have on individuals and on society and to understand the basic elements of electronics.

Throughout the Unit, the candidate should be encouraged to develop communication skills and personal/interpersonal skills and form working relationships with colleagues and tutors. Tutors/lecturers should use their expertise to provide detailed guidance to the candidate while undertaking of activities in this Unit.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The main object of the Unit is to generate an interest in electronics and to encourage candidates to produce a simple solution to a simple, real-life situation. It is important that the candidate understands the relevance of the chosen application of the assembled system. A variety of approaches could be used in order to allow candidates to understand the different effects of electronics and their application. Candidates could participate in a range of activities illustrating various aspects of electronics and they should be given the opportunity to work individually, in pairs or in groups depending on the activity.

The learning and teaching approaches should be appropriate to the needs of the particular candidate. The approaches, however, should be highly practical with the emphasis on candidate-centred activity. The learning and teaching approaches used should encourage candidates to be aware of their attainment and help them to transfer skills into other contexts.

Candidates could be asked to suggest an idea or ideas and design brief highlighting the beneficial use of electronics. Examples of suitable electronic devices could be

- a cup for someone with a visual impairment
- device for reversing a car
- rain sensor
- PIR sensor
- light sensor

Short videos could be used to give candidates the opportunity to discuss the impact of electronics on individuals and on society and to also to discuss the advantages (a device to assist a person with a specific disability) and disadvantages (the loss of traditional industries and occupations) and to begin to understand the commercial impact of electronics, on individuals and on society.

National Unit Specification: support notes (cont)

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The Unit could be presented as a series of practical tasks based on the use of pre-assembled kits. A top-down systems approach should be adopted throughout the Unit. It is important that the candidate appreciates the relevance of the application of the system assembled. The application chosen throughout the Unit should therefore relate to everyday life eg in the home or in leisure activities and to its commercial implications.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Centres may use the Instruments of Assessment that are considered by tutors/trainers to be most appropriate. Examples of Instruments of Assessment which could be used are practical exercises, personal interviews and short answer questions.

Teachers/lecturers should provide adequate opportunities for informal assessment to take place prior to candidates undertaking the formal assessment that is recorded for certification purposes. Teachers/lecturers may give candidates advice and support during any informal assessment in order to prepare them for the formal assessment.

Practical activities should be used to gather evidence. Where necessary, a video or audio recording may be used as evidence.

Records of all assessment instruments used and evidence produced by each candidate should be retained for moderation purposes. As candidate evidence may be generated by written and/or oral and/or performance evidence for this Unit, records should be kept of candidate performance. These could be in the form of checklists and/or logs completed by a responsible person observing the performance or recording the answers to questions, or they may be in the form of video or audio recordings of candidate performance. All checklists and/or logs must be signed and dated by the teacher/lecturer who assesses the evidence and authenticates the record as an accurate record of the work of the named candidate.

All printed evidence should be signed and dated and video or audio evidence stores for moderation purposes.

Outcome 1

Restricted response questions could be used to gather evidence for this Outcome. The questions should be constructed to cover as wide a range of content as is necessary to enable the candidate to provide evidence of understanding of the impact of electronics on individuals and on society. The questions constructed by the assessor should be in a format that is appropriate to the candidate's normal mode of communication. This could include diagrams and other visual aids. Where further or clearer answers are required to secure full evidence of ability to meet the criteria, supplementary questions which are open in nature (ie do not lead the candidate) should be asked. Supplementary questions would not be appropriate where the candidate's first answer clearly showed an inability to meet the performance criteria.

National Unit Specification: support notes (cont)

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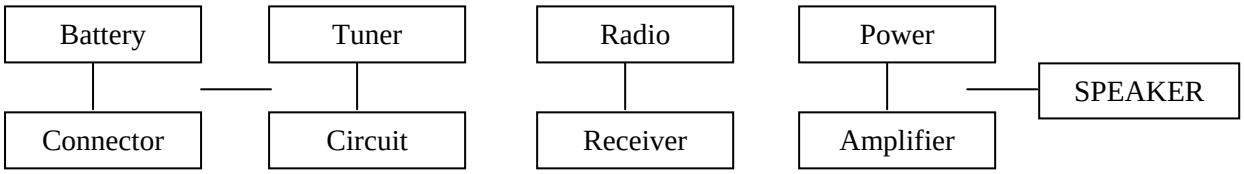
Outcome 2

Practical exercises could be used to gather evidence for all performance criteria. A checklist could be used to record evidence.

INPUT PROCESS OUTPUT

Outcome 3

Practical exercises could be used to gather evidence for all performance criteria. A checklist could be used to record evidence.



CANDIDATES WITH ADDITIONAL SUPPORT NEEDS

This Unit Specification is intended to ensure that there are no artificial barriers to learning or assessment. The additional support 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 document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (SQA, 2004).