



National Unit Specification: general information

UNIT Science and Technology in Society (SCQF level 4)

CODE F3TA 10

SUMMARY

This Unit enables candidates to develop the ability to appraise scientific and technological issues which affect society. It can be used within a programme of science or technology Units or may be used in its own right. The Unit acts as an introduction to the Unit *Science and Technology in Society* (SCQF level 5).

OUTCOMES

- 1 Demonstrate knowledge and understanding of an issue of science and technology in society.
- 2 Analyse the issue and its effects on society.
- 3 Evaluate the issue.

RECOMMENDED ENTRY

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

- ◆ Standard Grade Biology, Chemistry, Physics or Science at Foundation level
- ◆ Access 3 Units in Biology, Chemistry, Physics

Administrative Information

Superclass: RA

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National Unit Specification: general information (cont)

UNIT Science and Technology in Society (SCQF level 4)

CREDIT VALUE

1 credit(s) at Intermediate 1 (6 SCQF credit points at SCQF level 4*).

**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.*

CORE SKILLS

This Unit contains automatic certification of the Core Skills *Critical Thinking* at SCQF level 4. There are also opportunities to develop the Core Skill of *Information Technology* at the SCQF level 5 in this Unit.

National Unit Specification: statement of standards

UNIT Science and Technology in Society (SCQF level 4)

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 SQA.

OUTCOME 1

Demonstrate knowledge and understanding of an issue of science and technology in society.

Performance Criteria

- (a) Describe the scientific and technological facts relevant to the issue.
- (b) Identify and describe the effect of this issue on society.

OUTCOME 2

Analyse the issue and its effects on society.

Performance Criteria

- (a) Describe the advantages to society of the science and technology involved.
- (b) Describe the disadvantages to society of the science and technology involved.

OUTCOME 3

Evaluate the issue.

Performance Criteria

- (a) Explain own conclusions on the issue.
- (b) Justify own conclusions with reasons based on the analysis.

National Unit Specification: statement of standards (cont)

UNIT Science and Technology in Society (SCQF level 4)

EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that candidates have achieved all Outcomes and Performance Criteria.

Candidates must produce written and/or oral evidence on their own at appropriate points throughout the Unit.

Candidates will be provided with a list of web sites and source materials for study of the chosen science and technology issue.

Candidates should be given a clear brief explaining that the required evidence must cover:

- ◆ a description of the scientific and technological facts relating to the issue and the effect on society
- ◆ a description of at least **two** advantages for society of the science and technology reviewed
- ◆ a description of at least **two** disadvantages to society of the science and technology reviewed
- ◆ a statement of their own point of view on the topic that has been investigated giving reasons for their conclusions based on the analysis that has been undergone

The evidence provided must be in the candidate's own words.

The Assessment Support Pack for this Unit provides sample assessment material. Centres wishing to develop their own assessments should refer to the Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes

UNIT Science and Technology in Society (SCQF level 4)

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 a mandatory Unit in the National Certificate in Applied Sciences at SCQF level 5 but it can also be taken as a free-standing Unit.

In this Unit, it is anticipated that candidates will be accessing information from the Internet and in texts to address the Performance Criteria with reference to a given case study. The list of source material will be provided by the teacher/lecturer. It is important that the topic selected for study has appropriate and accessible resources available for the individual candidate. This should include access to various websites on the Internet and in the library for texts. The availability of suitable IT packages will considerably enhance the candidate's ability to produce the required evidence.

Topics for study could include: global warming , destruction of the tropical rain forest, energy production eg wind farms, nuclear power renewable energy, environmental issues, pollution, recycling, effects of climate change, carbon footprint left by manufacturing industry, genetic engineering, human DNA profile data base, stem cell research, cloning, GM foods or any other topic deemed appropriate by teacher/lecturer.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

This Unit is candidate-centred however there should be an opportunity for:

- ◆ group discussion and presentation of ideas about the information
- ◆ discussing different approaches to any ideas about information with teacher/lecturer and peers
- ◆ exploring the insights and judgements of others

However, the evidence produced for assessment purposes must be the work of each individual candidate and not the work of a group.

A list of sources of information for the case study should be provided for the candidates. This list should include both website and library based information such as text books, journals, magazines and newspapers.

It is important that candidates are briefed clearly as to what is required for assessment purposes. A template could be used to indicate the content which must be covered in order to produce sufficient evidence. Care should be taken to ensure candidates produce the evidence in their own words.

Support should be given to ensure that candidates have the skills required to access the information using the internet as well as the library resources. The use of ICT in the production of the report should be encouraged.

National Unit Specification: support notes (cont)

UNIT Science and Technology in Society (SCQF level 4)

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

This Unit contains automatic Certification of the Core Skill *Critical Thinking* at SCQF level 5. There are opportunities within this Unit for candidates to develop core IT skills in relation to internet website searches and in developing their knowledge of suitable IT packages to assist them in their research.

Further opportunities exist for candidates to develop written communication skills in report writing which show their understanding of a science and technological issue like environmental issues, the effects of climate change, carbon footprint and any other relevant issue.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

A list of information sources concerning the science and technological issue under study should be provided for the candidates. It is suggested that at least five different sources are provided — for example two web sites, two text books and a newspaper/magazine article.

Candidates should be briefed at the start of the case study to ensure that requirements for assessment are clearly understood.

A suitable Instrument of Assessment would be a report submitted in the candidates own words to show understanding of the information that they have accessed. Within such a report the candidate should consider the key scientific and technological information on an issue and the implications for society. A template in the form of headings may be provided for candidates to ensure that all four areas are covered in the report. It would be appropriate for this report to be between 300–500 words long.

A check-listing approach can be used to ascertain whether the candidate has achieved all the Performance Criteria. Where a candidate is unsuccessful in achieving an Outcome due to insufficiency or quality of content, provision should be made for remediation and reassessment.

CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

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. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs (www.sqa.org.uk)*.