



National Unit specification: general information

Unit title: Sustainable Design (SCQF level 6)

Unit code: FT8N 12

Superclass: VF

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Summary

This is a mandatory Unit within the National Certificate in Computer Aided Design and Technology at SCQF level 6 but can also be taken as a freestanding Unit. This Unit is suitable for candidates who aim to pursue a career in Computer Aided Design (CAD) and related industries.

The purpose of this Unit is to create a broad based awareness of the environmental costs of a product. The importance of environmental issues are introduced and explored in a project based approach which allows candidates to implement a sustainable design strategy to design or improve upon an existing design.

Outcomes

- 1 Investigate the need for sustainability within the design process.
- 2 Describe a sustainable design strategy.
- 3 Apply and evaluate a sustainable design strategy to a given brief.

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:

- ◆ Relevant Units from the appropriate National Certificate award in Computer Aided Design and Technology at SCQF level 6.
- ◆ Relevant industrial experience of Computer Aided Draughting and Design.

National Unit specification: general information (cont)

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Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6*)

**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

Achievement of this Unit gives automatic certification of the following Core Skills component:

- ◆ Critical Thinking at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

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 SQA.

Outcome 1

Investigate the need for sustainability within the design process.

Performance Criteria

- (a) Explore the issues relating to the need for a sustainable approach within the design process.
- (b) Discuss the need for a sustainable approach within the design process.

Outcome 2

Describe a sustainable design strategy.

Performance Criteria

- (a) Identify a sustainable design strategy.
- (b) Explain the key criteria of the identified sustainable design strategy.

Outcome 3

Apply and evaluate a sustainable design strategy to a given brief.

Performance Criteria

- (a) Select from a range, a product which can be developed using a sustainable design strategy.
- (b) Use a sustainable design strategy to design a new or improve upon an existing design.
- (c) Produce a series of drawings communicating the new or improved design.
- (d) Evaluate the new or improved design in relation to the criteria within the design strategy.

National Unit specification: statement of standards (cont)

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Evidence Requirements for this Unit

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

The evidence for this Outcome must be obtained under controlled, supervised conditions. The assessment will be based on an assignment and delivered holistically.

Candidates must:

Outcome 1:

- ◆ Conduct appropriate research into the issues relating to a sustainable approach to the design process.
- ◆ Provide results of research and identify key issues in support of the sustainable approach, this can be included in a report and/or presentation as part of the holistic assignment.

Outcome 2:

- ◆ Identify an appropriate sustainable design strategy in accordance with the assignment brief.
- ◆ Provide adequate explanation of the key criteria of the identified sustainable design strategy, this can be included in a report and/or presentation as part of the holistic assignment.

Outcome 3:

- ◆ Select 1 new or existing product suitable for the application of a sustainable design strategy.
- ◆ Apply a sustainable design strategy.

Within all of the Outcomes the candidate must consistently:

- ◆ Communicate the need for a sustainable approach to design.
- ◆ Identify and explain the key criteria of a specific sustainable design strategy in an evaluative manner.

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 an optional Unit of the National Certificate in Computer Aided Design and Technology at SCQF level 6. It can also be taken as a free-standing Unit.

The purpose of the Unit is to develop candidates' skills and understanding of sustainability through design. The importance of environmental issues are introduced and explored in a project based approach which encourages candidates to implement a sustainable design strategy to design or improve upon an existing design. They will learn about the need to reduce water and fossil fuel use as well as considering and specifying an appropriate end of life strategy to reduce waste. They will be introduced to sustainable design strategies such as Life Cycle Assessment, and investigate and use specific criteria to design or improve upon an existing design. Criteria investigated may relate to but are not limited to; reduction in non recyclable material, hazardous materials, end of life recommendations, energy, impact on the wider environment and impact on the local environment.

Guidance on learning and teaching approaches for this Unit

The centre could keep a record of investigation/research undertaken by the candidate as the design develops.

Centres can introduce exemplar material of designs produced by professional designers, and discuss how these ideas may have been developed with or without the influence of a sustainable design strategy.

Visits to design practices and exhibitions are recommended as well as guided research through the Internet. Centres can advise candidates on the choice of suitable source materials that best fulfil the criteria of the Unit.

Tutors can indicate the standard of drawing that is expected, and show relevant exemplar material. Tutors may demonstrate the various techniques and working methods available to candidates, and provide examples and guidance on working techniques and practices.

Candidates could work individually with guidance from teachers/lecturers on the design and report/presentation aspects of the Unit, however candidates may benefit from working in small groups for the research activities.

National Unit specification: support notes (cont)

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Guidance on approaches to assessment for this Unit

A suitable instrument for assessment for this Unit would be the candidate's folio containing evidence of the work undertaken.

Possible ideas could be communicated through a series of annotated sketches or CAD drawings, with a written or oral communication of the final concept idea and clearly demonstrating how it meets criteria set in the sustainable design strategy.

Candidates should be aware of all assessment requirements and arrangements. Continuous assessment in the form of candidate/teacher/lecturer reviews may be used to assist candidates in the progression of their work.

Although assessment may be ongoing teachers/lecturers could assist candidates to prepare for the final submission by advising and guiding them in the selection and production of the final artwork to be assessed. The folio could be assessed to ensure that the candidate has demonstrated an individual and proficient approach to the work and has applied all the necessary knowledge and required skills.

Tutors must be satisfied that the evidence submitted is the work of individual candidates. Although group work may be used as a learning and teaching approach, any work that contributes to candidate assessment evidence must be carried out on an individual basis to ensure authenticity.

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 Communication 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)*.

Opportunities for developing Core Skills

Candidates may have opportunities to develop aspects of the Core Skill of *Communication* through teacher/lecturer led group discussions and through the use of annotated commentary when developing ideas for the finished design.

Candidates may have opportunities to develop aspects of the Core Skill of *Problem Solving* during the Unit in the development of their chosen design.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website

www.sqa.org.uk/assessmentarrangements

History of changes to Unit

Version	Description of change	Date
02	Core Skills Component Critical Thinking at SCQF level 6 embedded.	29/09/2011

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