



Design and Manufacture: Design (Higher) Unit

SCQF: level 6 (9 SCQF credit points)

Unit code: H22T 76

Unit outline

The general aim of this Unit is to develop the learner's skills in developing and communicating design proposals for products. Learners will initiate a design brief and develop it to a final concept.

Learners will gain skills and experience in evaluating their own and others' design proposals in order to refine, improve and resolve them. Learners will develop an understanding of design concepts and the various factors that influence the design and manufacture of products.

Learners who complete this Unit will be able to:

- 1 Identify factors that influence design and apply these to produce a detailed design proposal
- 2 Generate, develop, communicate and evaluate design concepts for a design task and arrive at a resolved proposal
- 3 Evaluate an existing commercial product

This Unit is a mandatory Unit of the Higher Design and Manufacture Course and is also available as a free-standing Unit. The Unit Specification should be read in conjunction with the *Unit Support Notes*, which provide advice and guidance on delivery, assessment approaches and development of skills for learning, skills for life and skills for work. Exemplification of the standards in this Unit is given in *Unit Assessment Support*.

The *Course Assessment Specification* for the Higher Design and Manufacture Course gives further mandatory information on Course coverage for learners taking this Unit as part of the Higher Design and Manufacture Course.

Recommended entry

Entry to this Unit is at the discretion of the centre. However, learners would normally be expected to have attained the skills, knowledge and understanding required by one or more of the following or equivalent qualifications and/or experience:

- ◆ National 5 Design and Manufacture Course or relevant component Units.

Equality and inclusion

This Unit Specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. For further information, please refer to the *Unit Support Notes*.

Standards

Outcomes and assessment standards

Outcome 1

The learner will:

1 Identify factors that influence design and apply these to produce a detailed design proposal by:

- 1.1 Analysing a design brief, identifying and justifying the main design factors
- 1.2 Selecting, using and justifying a range of research techniques
- 1.3 Presenting and analysing research materials
- 1.4 Producing a valid specification based on research into the range of relevant design factors
- 1.5 Incorporating findings of research into a detailed design proposal

Outcome 2

The learner will:

2 Generate, develop, communicate and evaluate design concepts for a design task and arrive at a resolved proposal by:

- 2.1 Selecting and using appropriate graphic techniques to represent ideas and proposals in 2D and 3D
- 2.2 Selecting and using a range of modelling techniques to represent design ideas in 3D and to test potential solutions
- 2.3 Generating a range of ideas
- 2.4 Exploring and refining design concepts
- 2.5 Planning and justifying the proposed manufacturing process
- 2.6 Evaluating the design proposal

Outcome 3

The learner will:

3 Evaluate an existing commercial product by:

- 3.1 Selecting and justifying relevant design factors to be evaluated
- 3.2 Planning an appropriate strategy for carrying out the evaluation and justifying its selection
- 3.3 Carrying out the evaluation of the relevant design factors and presenting results
- 3.4 Arriving at conclusions based on the results of the evaluation
- 3.5 Demonstrating a broad understanding of the impact of a range of design and manufacturing technologies on the environment and society

Evidence Requirements for the Unit

Assessors should use their professional judgement, subject knowledge and experience, and understanding of their learners, to determine the most appropriate ways to generate evidence and the conditions and contexts in which they are used.

In this Unit, Evidence Requirements are as follows.

Evidence will be a combination of written, graphic and practical evidence. Evidence may be presented for individual Outcomes or it may be gathered for the Unit as a whole through combining assessment holistically in one single activity. If the latter approach is used, it must be clear how the evidence covers each Outcome.

For this Unit, learners will be required to provide evidence of:

- ◆ research and evaluation skills
- ◆ design skills, including graphics and modelling skills
- ◆ communication skills

In this Unit, evaluations may include any competent method, including: surveys, questionnaires, user trips and trials, observation, and testing, including test rigs, comparisons, etc.

In this Unit, design factors may include those relating to function, performance, safety, market considerations, economics, aesthetics, ergonomics, materials and manufacturing processes.

In this Unit, communication may be in written, oral, graphic or 3D forms.

Exemplification of assessment is provided in *Unit Assessment Support*. Advice and guidance on possible approaches to assessment is provided in the *Unit Support Notes*.

Development of skills for learning, skills for life and skills for work

It is expected that learners will develop broad, generic skills through this Unit. The skills that learners will be expected to improve on and develop through the Unit are based on SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work* and drawn from the main skills areas listed below. These must be built into the Unit where there are appropriate opportunities.

2 Numeracy

2.2 Money, time and measurement

4 Employability, enterprise and citizenship

4.4 Enterprise

5 Thinking skills

5.3 Applying

5.4 Analysing and evaluating

5.5 Creating

Amplification of these is given in SQA's *Skills Framework: Skills for Learning, Skills for Life and Skills for Work*. The level of these skills should be at the same SCQF level of the Unit and be consistent with the SCQF level descriptor. Further information on building in skills for learning, skills for life and skills for work is given in the *Unit Support Notes*.

Administrative information

Published: April 2014 (version 2.0)

Superclass: VF

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
2.0	Generate' has been added to Outcome 2, to allow the development of design concepts. Reworking of AS within Outcomes 1, 2 and 3 for clarification. Previous AS 1.5 'Selecting and applying a range of idea generation techniques' has been removed as this was overtaken at National 5. AS 2.3 has been included and rewording of AS 2.4 carried out take account of 'generating, exploring and refining' and widen assessment opportunities.	Qualifications Development Manager	April 2014

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Note: readers are advised to check SQA's website: www.sqa.org.uk to ensure they are using the most up-to-date version of the Unit Specification.

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