



Design and Manufacture: Design (National 5)

SCQF: level 5 (9 SCQF credit points)

Unit code: H22T 75

Unit outline

The general aim of this Unit is to develop the learner's skills and creativity in designing a product towards a manufacturing process. Learners will take a given design brief and develop it to a final concept, generating ideas by applying research, graphics and modelling techniques.

Existing products will be examined and evaluated. The Unit is also designed to enable the learner to develop an understanding of the impact of design and manufacturing technologies on our environment and society.

Learners who complete this Unit will be able to:

- 1 Identify factors that influence design and apply these in a design task
- 2 Develop and communicate design concepts for a design task
- 3 Evaluate an existing product

This Unit is a mandatory Unit of the National 5 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 the *National Assessment Resource*.

The *Course Assessment Specification* for the National 5 Design and Manufacture Course gives further information on Course coverage for learners taking this Unit as part of the National 5 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 4 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 in a design task by:

- 1.1 Analysing a design brief, identifying the main design factors that will influence the design of a solution
- 1.2 Researching the main design factors identified, using a range of appropriate techniques
- 1.3 Summarising findings of research into design factors, including justification of relevance of design factors selected to design task
- 1.4 Writing a detailed product specification
- 1.5 Selecting and using idea generation techniques to generate a design proposal
- 1.6 Incorporating relevant findings of research in a design proposal

Outcome 2

The learner will:

2 Develop and communicate design concepts for a design task by:

- 2.1 Using graphic and modelling techniques to develop and communicate design ideas in 2D and 3D
- 2.2 Justifying final design proposal in terms of evolution of design ideas and relevant design factors
- 2.3 Presenting a design concept, including an updated product specification, in a form to permit manufacture
- 2.4 Planning for manufacture

Outcome 3

The learner will:

3 Evaluate an existing product by:

- 3.1 Selecting evaluation factors which are relevant to the product selected
- 3.2 Planning a strategy for evaluation, using appropriate evaluation methods
- 3.3 Evaluating the product and presenting the results, including justification of the evaluation methods used
- 3.4 Drawing relevant conclusions in terms of the evaluation factors selected
- 3.5 Identifying ways in which design and manufacturing technologies impact 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 may be a combination of written, oral, 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 initiating and developing design ideas, and 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, market considerations, economics, aesthetics and ergonomics.

Exemplification of assessment is provided in the *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

5.2 Understanding

5.3 Applying

5.4 Analysing and evaluating

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

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Superclass: VF

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date

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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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