

Design and Manufacture: Materials and Manufacturing

SCQF: level 6 (9 SCQF credit points)

Unit code: J28R 76

Unit outline

The general aim of this Unit is to develop the learner's knowledge and understanding of commercial manufacture. Learners will analyse and plan the production of a commercial product.

Learners will gain knowledge of commercial manufacture by analysing existing products.

Learners will develop skills in manufacturing a prototype and using information gathered from it to plan the production of a commercial product. They will also gain skills in selecting and justifying suitable materials, manufacturing assembly and assembly processes.

Learners who complete this Unit will be able to:

- 1 Analyse the production of a commercial product
- 2 Plan the production of a commercial product

This Unit is 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*.

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 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 Analyse the production of a commercial product by:

- 1.1 Exploring the suitability of the materials used
- 1.2 Exploring the suitability of the manufacturing and assembly processes used
- 1.3 Exploring the product's sustainability and its impact on the environment

Outcome 2

The learner will:

2 Plan the production of a commercial product by:

- 2.1 Manufacturing an accurate and detailed prototype/scale model
- 2.2 Using information gathered from the prototype/scale model
- 2.3 Selecting and justifying suitable materials
- 2.4 Selecting and justifying suitable manufacturing and assembly processes

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.

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:

- ◆ knowledge and understanding of a range of manufacturing processes and materials
- ◆ skills in planning and making models/prototypes
- ◆ a critical understanding of the factors that impact on the design and manufacture of products
- ◆ an understanding of the impact of design and manufacturing technologies on sustainability and the environment

Exemplification of assessment is provided in *Unit Assessment Support*.

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

Assessment standard thresholds

If a candidate successfully meets the requirements of the specified number of Assessment Standards they will be judged to have passed the Unit overall and no further re-assessment will be required.

The specific requirements for this Unit is as follows:

- ◆ 5 out of 7 Assessment Standards must be achieved

It should be noted that there will still be the requirement for candidates to be given the opportunity to meet all Assessment Standards. The above threshold has been put in place to reduce the volume of re-assessment where that is required.

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: July 2019 (version 5.0)

Superclass: WB

History of changes to National Unit Specification

Version	Description of change	Authorised by	Date
2.0	<p>Changes made to Outcome 3 Assessment Standards to support materials and manufacturing context only, rather than linking to the Design Unit (H22T 76), allowing for the Materials and Manufacturing Unit to be taken as a single Unit, or part of the Course.</p> <p>Changes have been made to ensure consistency with the evidence required by the Outcomes:</p> <p>Previous AS 1.1 'Investigate appropriate materials...' has been removed.</p> <p>Previous AS 2.1 'Investigate appropriate processes...' has been removed.</p> <p>New AS 2.1 (previously AS 2.2) 'Evaluating' replaced with 'selecting and justifying'.</p> <p>New AS 2.2 (previously AS 2.2) 'investigating' replaced with 'selecting and justifying'.</p>	Qualifications Development Manager	April 2014
3.0	<p>The Unit outline has been revised and practical skills have been clarified.</p> <p>Outcome 3 has been removed and Assessment Standards consolidated/updated to enhance articulation with other levels.</p> <p>Changes have been made to the Evidence Requirements for the Unit to reflect the above.</p>	Qualifications Manager	April 2016
4.0	<p>Level changed from Higher to SCQF level 6. Assessment standard threshold added.</p>	Qualifications Manager	September 2018
5.0	<p>Unit code updated</p>	Qualifications Manager	July 2019

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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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