



Qualifications and  
Curriculum Authority



Llywodraeth Cynulliad Cymru  
Welsh Assembly Government



*Rewarding Learning*

# GCSE subject criteria for manufacturing

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## Introduction

1. GCSE subject criteria set out the knowledge, understanding, skills and assessment objectives common to all GCSE specifications in manufacturing. They provide the framework within which an awarding body creates the detail of the specification.
2. Specifications must also meet the regulators' general requirements, including the common and GCSE criteria as defined in *The statutory regulation of external qualifications* (QCA/04/1293).
3. Subject criteria are intended to:
  - help ensure consistent and comparable standards in the same subject across the awarding bodies
  - ensure that the rigour of GCSE is maintained
  - ensure that specifications build on the knowledge, understanding and skills established by the national curricula for England, Northern Ireland and Wales, and facilitate progression to higher level general or vocational qualifications in manufacturing or related sectors of employment and training
  - help higher education institutions, employers and other stakeholders such as learners and parents/guardians know what has been studied and assessed.
4. Any GCSE specification that contains significant elements of manufacturing must be consistent with the relevant parts of these subject criteria.

## Aims and learning outcomes

5. GCSE specifications in manufacturing should encourage learners to be inspired, moved and changed by following a broad, coherent, satisfying and worthwhile course of study and gain an insight into related sectors, such as engineering. They should prepare learners to make informed decisions about further learning opportunities and career choices.
6. All specifications in manufacturing must enable learners to:
  - actively engage in the processes of manufacturing to develop as effective and independent learners

- gain an understanding of the contribution that manufacturing makes to society and the economy
- develop an awareness and appreciation of commercial and industry issues, and of emerging technologies, in the context of manufacturing
- develop and use a range of transferable skills when designing and making manufactured products, to enable them to become effective and independent learners
- develop an awareness and understanding of environmental issues and sustainable development
- develop applied manufacturing skills as a foundation for future learning and progression
- apply their knowledge and understanding of manufacturing by using skills of evaluation and problem-solving.

## **Subject content**

7. The content of GCSE specifications in manufacturing must reflect the learning outcomes.
8. GCSE specifications in manufacturing must require learners to demonstrate knowledge and understanding of the following.

### **Production details and constraints:**

- labour
- materials and components
- available technology
- health, safety and hygiene
- quality standards.

### **Materials, components and/or ingredients and their constraints:**

- their availability, form and supply
- their properties, characteristics and performance
- their cost

- health, safety and hygiene requirements
- handling and storage.

**New technology used in and by the manufacturing industries:**

- information, communications and digital technologies
- modern and smart materials and components
- systems and control technology, to organise, monitor and control production.

**Impact of modern technologies:**

- when manufacturing a product
- on manufactured products
- on manufacturing industries
- stages in manufacturing a product
- advantages and disadvantages that the use of modern technology has brought to society.

**Manufactured products:**

- Investigate a variety of manufactured products that use modern technology.
- Investigate the impact of modern technology on the design and production of a range of manufactured products.

**A range of manufacturing industries:**

- Research and analyse existing products, materials and manufacturing processes and market needs.

9. GCSE specifications must require learners to develop the ability to do the following.

**Design a product:**

- analyse client design briefs for manufactured products
- produce, use and modify design specifications for manufactured products

- consider material details and constraints
- consider production details and constraints
- apply quality standards
- develop design ideas
- present a design solution for manufactured products
- modify design solutions.

10. GCSE specifications must require learners to develop the ability to do the following.

**Manufacture a product:**

- make a prototype from a design solution
- select and use:
  - a range of appropriate materials, parts and components
  - appropriate processes
  - appropriate tools and equipment
- apply health and safety procedures and quality control techniques
- produce a batch of a product from a design solution as a member of a team
- analyse and evaluate the product in terms of the equipment, tools and processes that have been used, and detail how these would be modified in real-world manufacturing.

## Assessment objectives

11. The specification must require candidates to demonstrate the assessment objectives in an applied context.
12. All specifications must require candidates to demonstrate their ability to:

<b>Assessment objectives</b>		<b>% weighting</b>
AO1	Recall, select and communicate their knowledge and understanding of a range of contexts	25–35
AO2	Apply skills, knowledge and understanding, including quality standards in a variety of contexts, and plan and carry out investigations and tasks, involving a range of tools, equipment, materials and components	45–55
AO3	Analyse and evaluate evidence, make reasoned judgements and present conclusions	15–25

## Scheme of assessment

13. GCSE specifications in manufacturing must allocate a weighting of 40% to external assessment and a weighting of 60% to controlled assessment in the overall scheme of assessment.
14. Question papers must be targeted at the full range of GCSE grades.

## Grade descriptions

15. Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The descriptions must be interpreted in relation to the content in the specification; they are not designed to define that content.

16. The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives overall. Shortcomings in some aspects of candidates' performance in the assessment may be balanced by better performances in others.

<b>Grade</b>	<b>Description</b>
A	<p>Candidates recall, select and communicate detailed knowledge and thorough understanding of manufacturing.</p> <p>They apply relevant knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks effectively.</p> <p>They test their solutions, working safely and with a high degree of precision.</p> <p>They analyse and evaluate the evidence available, reviewing and adapting their methods when necessary. They present information clearly and accurately, making reasoned judgements and presenting substantiated conclusions.</p>
C	<p>Candidates recall, select and communicate sound knowledge and understanding of manufacturing.</p> <p>They apply knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks. They test their solutions, working safely and with precision.</p> <p>They review the evidence available, analysing and evaluating some information clearly, and with some accuracy. They make judgements and draw appropriate conclusions.</p>
F	<p>Candidates recall, select and communicate knowledge and understanding of basic aspects of manufacturing.</p> <p>They apply limited knowledge, understanding and skills to plan and carry out simple investigations and tasks, with an awareness of the need for safety and precision. They modify their approach in the light</p>



	<p>of progress.</p> <p>They review their evidence and draw basic conclusions.</p>
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