

GCSE Subject Criteria for Manufacturing

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The criteria

Introduction

GCSE subject criteria set out the knowledge, understanding, skills and assessment objectives common to all GCSE specifications in a given subject.

They provide the framework within which the awarding organisation creates the detail of the specification.

Aims and learning outcomes

1. 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.
2. 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

3. The content of GCSE specifications in Manufacturing must reflect the learning outcomes.
4. 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.

5. 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.

6. 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

7. The specification must require learners to demonstrate the assessment objectives in an applied context.
8. All specifications must require learners to demonstrate their ability to:

	Assessment objectives	Weighting
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

9. GCSE specifications in Manufacturing must allocate a weighting of 40 per cent to external assessment and a weighting of 60 per cent to controlled assessment in the overall scheme of assessment.
10. Question papers must be targeted at the full range of GCSE grades.

Grade descriptions

11. 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.

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.

Grade	Description
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. 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</p>

	<p>their approach in the light of progress.</p> <p>They review their evidence and draw basic conclusions.</p>
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