Manufacturing

GCSE 2012
Manufacturing

Specification

J510 – Double Award

J505 – Single Award

Version 1

April 2012

OCR

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OCR GCSE in Manufacturing J510/J505Contents

1.1 Overview of GCSE Manufacturing

GCSE Manufacturing	
Unit B231 **A: Study of a Manufactured Product** 6 hours/30 marks **B: Manufacturing a Product** 14 hours/60 marks	**Controlled Assessment** 60% of the single award 30% of the double award Mandatory
+	
Unit B232 **Manufacturing Processes** 1 hour/60 marks	**Examined unit** 40% of the single award 20% of the double award Mandatory

GCSE Manufacturing Double Award = GCSE Manufacturing and:	
Unit B233 **A: Real World Manufacturing** 6 hours/30 marks **B: Making a Manufactured Product** 14 hours/60 marks	**Controlled Assessment** 30% of the double award Mandatory
+	
Unit B234 **Impact of Modern Technologies on Manufacturing** 1 hour/60 marks	**Examined unit** 20% of the double award Mandatory

1.2 Guided learning hours

GCSE Manufacturing requires 120–140 guided learning hours in total.

GCSE Manufacturing Double Award requires 240–280 guided learning hours in total.

1.3 Aims and Learning Outcomes

GCSE specifications in manufacturing should encourage candidates to be inspired, motivated and challenged by following a broad, coherent, satisfying and worthwhile course of study and gain an insight into related sectors, such as engineering. They should prepare candidates to make informed decisions about further learning opportunities and career choices.

- All specifications in manufacturing must enable candidates to:
- Actively engage in the processes of manufacturing to develop as effective and independent individuals
- 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 individuals
- 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.

1.4 Prior Learning/Attainment

Candidates entering this course should have achieved a general educational level equivalent to National Curriculum Level 3, or an Entry 3 at Entry Level within the National Qualifications Framework.

Prior learning, skills and aptitudes particularly relevant include:

Basic craft skills

Some aptitude for ICT

Basic drawing skills

Some motivation to work independently.

There is however no prior knowledge required for these specifications.

2.1 Unit B231: *Study of a Manufactured Product* (1a) and *Manufacturing a Product* (1b)

This controlled assessment unit is divided into two sections (A and B) and both sections must be completed and entered for moderation at the same time.

Section 1A: *Study of a Manufactured Product*

Candidates will investigate a variety of products that have developed through the use of modern technology (see Appendix B for a range of appropriate products).

Candidates will then focus on one particular product selected from a list (see Appendix B) together with two more modern equivalents of the same product. They will evidence their research for inclusion within a portfolio, which may be completed electronically or in printed format.

Impact of modern technologies

Candidates should be able to give a detailed description of:

- the impact of modern technologies, smart materials and components on their development;
- the advantages and disadvantages that the use of modern technology has brought to society.

Production details of materials and components and available technology

Candidates should be able to give a detailed and justified explanation of the use of materials and components and their:

- properties
- characteristics
- performance
- cost

Manufacturing processes

Candidates should be able to give a detailed and justified explanation of the manufacturing processes used.

Modify design solutions

Candidates should be able to suggest and explain in detail:

- modifications to improve the design of the product
- sustainability issues

Section 1B: *Manufacturing a Product*

Candidates are required to select and then analyse a customer design brief (see Appendix B), and then design, manufacture and evaluate the prototype solution.

Portfolio evidence can be submitted on paper or electronically. All electronic evidence must be presented in a format that matches the requirements outlined in Appendix A: Guidance for the Production of electronic controlled assessment.

Candidates must select a customer design brief from the list contained in Appendix B. These briefs are linked with the following manufacturing sectors.

Manufacturing Sectors

Chemical and pharmaceutical:

- Hairspray
- Biofuels
- Car polish.

Clothing and textiles:

- Corporate wear (e.g. office workers, uniforms)
- Protective clothing (e.g. for motorcyclists, fire service)
- Hot air balloons.

Electrical:

- Control panels
- Lighting
- Motors.

Food and drink:

- Pizza
- Sports drink
- Vegetarian ready-meal.

Furniture:

- Work bench
- Bathroom cabinet
- Mirror.

Machinery and equipment:

- Lawnmower
- Electrical drill
- Feed hopper.

Packaging:

- Burger packaging
- Sunscreen packaging
- Carrier bags.

Electronic and communications:

- TVs
- Phones
- Computers.

Motor manufacturing:

- Cars
- Caravans
- Lorries.

Paper and print:

- Paper and card
- Newspapers
- Point of sale displays.

Section 1B: *Manufacturing a Product* **(continued)**

Analyse client design briefs for manufactured products

Candidates should be able to:

- provide a detailed and justified analysis of the client brief
- produce and apply a justified design specification.

Develop design ideas and present a design solution for manufactured products

Candidates should be able to:

- develop a wide range of annotated design ideas, considering materials and material constraints
- present and justify their selection of design solution for the manufactured product.

Make a prototype from a design solution

Candidates should be able to:

- make a complete, high-quality prototype of the design solution
- select and safely use a wide range of appropriate materials, parts and components, processes, tools and equipment.

Modify design solutions

Candidates should be able to:

- suggest detailed and justified modifications to the design solution and original specification, giving consideration to the use of modern materials, processes and technologies
- give a detailed and justified explanation of how the product could be batch produced.

2.2 Unit B232: *Manufacturing Processes*

2 *Manufacturing Processes*

This unit will be externally assessed by written examination. Questions will be a mix of short answer and free response styles, and will require candidates to demonstrate practical application of knowledge related to **products and manufacturing environments** that they have studied.

Where possible, links should be made with a manufacturing company to allow candidates access and exposure to 'real-life' manufacturing practice. Candidates should concentrate on one of the manufacturing sectors listed below and should study a range of products within that sector.

Some examples of products are given for each sector below:

Manufacturing Sectors

Chemical and pharmaceutical:
- Asthma medication
- Saccharin tablets
- Soap.

Clothing and textiles:
- Denim jeans
- High heel shoes
- Nurse's uniform.

Electrical:
- Torch
- Electric kettle
- Alarm clock.

Food and drink:
- Tea bags
- Christmas cake
- Freeze-dried vegetables.

Furniture:
- Armchair
- Kitchen cabinet
- Dining table.

Machinery and equipment:
- Power drill
- Wheelbarrow
- Washing machine.

Packaging:
- Perfume bottle
- Lemonade bottle
- Household cleaners.

Electronic and communications:
- Computer mouse
- LCD television
- MP3 player.

Motor manufacturing:
- Caravan body
- Car door
- Wheels.

Paper and print:
- Magazine
- Pop-up book
- Gift card.

Candidates should be aware of the following manufacturing sectors and typical products they produce

- chemical and pharmaceutical
- clothing and textiles
- electrical
- food and drink
- furniture
- machinery and equipment
- packaging
- electronic and communications
- motor manufacturing
- paper and print.

Production methods in common use

Candidates will demonstrate knowledge and understanding of the following:

- materials and components – material selection appropriate to process
- available technology – consider cost and timing
- labour – requirements (skills, training and experience)
- health, safety and hygiene
- quality standards
- market needs.

Materials, components and/or ingredients including modern and smart materials

Candidates will demonstrate knowledge and understanding of the following:

- selection and reason for use
- their availability, form and supply
- their properties, characteristics and performance
- their cost
- health, safety and hygiene requirements
- handling and storage
- impact and uses of modern and smart materials and components.

Modern technologies used in manufacture

Candidates will demonstrate knowledge and understanding of the following:

- impact and use of modern materials upon design, production and manufacture
- impact and use of information, communication and digital technology
- impact and use of systems and control technology to organise, monitor and control production – basic control systems and technology in terms of input/output (io) and feedback.

2 *Manufacturing Processes* (continued)

The stages in the design of a product: analysing client design briefs for manufactured products

Candidates will demonstrate knowledge and understanding of the following:

- producing, using and modifying design specifications for manufactured products
- considering material details and constraints
- considering production details and constraints
- applying quality standards
- developing design ideas
- presenting a design solution for manufactured products
- modifying design solutions.

The stages in the manufacture of a product: the process of making a prototype from a design solution

Candidates will demonstrate knowledge and understanding of the following:

- selecting and using:
    - a range of appropriate materials, parts and components
    - appropriate processes
    - appropriate tools and equipment
- applying health and safety procedures and quality control techniques
- producing a batch of a product from a design solution as a member of a team
- analysing and evaluating the product in terms of the equipment, tools and processes, which have been used, and detailing how these would be modified in real-world manufacturing.

2.3   Unit B233: *Real world Manufacturing* **(3a) and** *Making a Manufactured Product* **(3b)**

This controlled assessment unit is divided into two sections (3A and 3B) and both sections must be completed and entered for moderation at the same time.

Section 3A: *Real World Manufacturing*

Candidates must study the manufacture of a product of their choice from a list provided by OCR (see Appendix B). The manufacture of the product could be observed through real-life experiences such as industrial visits or work experience. Alternatively, the product could be researched using commercially or centre-produced resource materials.

Candidates will evidence their findings and conclusions for inclusion within a portfolio, which may be completed electronically or in printed format.

Indicate the stages in manufacturing a product

Candidates should be able to:

•   identify and explain all the stages in manufacturing the product.

Consider production details and constraints

Candidates should be able to:

•   consider the identified product giving details and justification of all materials, components and/or ingredients and their constraints through their availability, form and supply.

Consider systems and control technology to organise, monitor and control production

Candidates should be able to:

•   identify and explain systems and control technology, to organise, monitor and control production of the product.

Identify and discuss the impact of modern technologies

Candidates should be able to:

•   identify and explain the impact of modern technologies when manufacturing the product.

Section 3B: *Making a Manufactured Product*

Working as part of a team (or virtual team) candidates must select a product to batch produce from a list issued by OCR (see Appendix B).

Portfolio evidence can be submitted on paper or electronically. All electronic evidence must be presented in a format that matches the requirements outlined in Appendix A: Guidance for the Production of electronic controlled assessment.

Work must be individually produced and reflect only the tasks undertaken by the candidate and the contribution made by the candidate working within the team. Work carried out by other team members will not gain credit.

Select and use a range of appropriate materials, parts and components, processes, tools and equipment

As a member of a team (or virtual team) candidates should be able to contribute and detail, the selection and use of a range of appropriate:

- materials
- parts and components
- processes
- tools and equipment.

Apply health, safety and hygiene and quality standards

As a member of a team (or virtual team) candidates should be able to contribute and detail the team's application of:

- health and safety procedures
- quality control techniques.

Consider production details and constraints

Individually candidates should be able to consider and detail:

- production details and constraints
- application of quality standards.

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

Individually candidates should be able to analyse and evaluate the product in terms of:

- equipment
- tools and processes that have been used
- how these would be modified in real-world manufacturing.

4: *Impact of Modern technologies on manufacturing*

This unit will be externally assessed by written examination.

Questions will be a mix of short answer and free response styles, and will require candidates to demonstrate practical application of knowledge related to products and manufacturing environments they have studied. In particular they should focus on *designing products for manufacture and sustainability*.

Where possible, links should be made with a manufacturing company to allow candidates access to real-life manufacturing practice. They should study a range of products from at least two manufacturing sectors.

Manufacturing Sectors

Chemical and pharmaceutical:
- Petroleum jelly
- Lipstick
- Penetrating oil.

Clothing and textiles:
- Soft furnishings
- Outdoor sportswear
- Sails (e.g. marine, hang gliding).

Electrical:
- Wind turbine
- Vacuum cleaner
- Electric fire.

Food and drink:
- Celebration cake
- Pro-biotic yogurt
- Gluten-free ready meal.

Furniture:
- Outdoor dining (e.g. pavement café)
- Home entertainment unit (e.g. gaming, DVD)
- Child's cot.

Machinery and equipment:
- Pressure washer
- Lift (e.g. dumb waiter)
- Conveyor belt.

Packaging:
- Glassware
- Perishable goods (e.g. sandwiches, baby food)
- Drinks.

Electronic and communication:
- Touch screen
- Domestic Wifi
- Navigation systems (e.g. GPS).

Motor manufacturing:
- Seat belts
- Trailers
- Glazing.

Paper and print:
- Newspapers
- Promotional material
- Wallpaper.

4: *Impact of Modern technologies on manufacturing* (continued)

Candidates should be aware of the following manufacturing sectors and typical products they produce

- chemical and pharmaceutical
- clothing and textiles
- electrical
- food and drink
- furniture
- machinery and equipment
- packaging
- electronic and communications
- motor manufacturing
- paper and print.

Sustainability – lean manufacture – reduce waste in the manufacturing system

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:

- over-processing
- scrap
- waiting
- inventory
- movement (people)
- transport (materials and products)
- over-production.

Sustainability – environmental considerations

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:

- waste management
- safe disposal
- concepts of reduce, reuse, recycle
- end of life disposal

Design for manufacturing assembly (DFMA)

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:

- common fixing strategy
- standardised components
- complexity reduction
- make versus buy
- handling.

Production methods and constraints

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:
- materials and components – material selection appropriate to process
- available technology – consider monetary cost, environmental impact and production timing
- labour – requirements (skills, training and experience, availability)
- health, safety and hygiene
- quality standards – sampling, comparing action.

Materials, components and/or ingredients available and their constraints

Candidates will demonstrate broad knowledge and understanding of manufacturing related to
- their availability, form and supply
- ethical and fair-trade issues
- material properties, characteristics and performance
- their cost, both monetary and environmental
- health, safety and hygiene requirements
- handling, storage, disposal.

Modern technology used in and by the manufacturing industries

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:
- environmental impact of the use of modern technology
- information, communications and digital technologies
  - impact of these technologies on manufacture and design of products, such as global trading, remote manufacture
- 'green' energy supplies.

The impact that the use of modern technology has brought to society

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:
- company
- changes to working practices:
  - changes to shift patterns
  - continuous production
  - health and safety
  - lifestyle
  - redundancy
  - training
  - working conditions.
- local environment
- product cost
- product availability
- impact on the environment
- transportation of goods
- variety of manufactured products to end user
- variety of manufacturing industries.

4: *Impact of Modern technologies on manufacturing* (continued)

Research and analyse existing products, the use of materials, manufacturing processes used and market needs, considering issues of sustainability and the needs of manufacturers and the manufacturing sectors

Candidates will demonstrate broad knowledge and understanding of manufacturing related to:

Product design:

- analysing client design briefs for manufactured products
- producing, using and modifying design specifications for manufactured products
- considering material details, sustainability, environmental impact and constraints
- considering production details and constraints
- applying quality standards
- developing sustainable design ideas
- presenting a design solution for sustainable manufactured products
- modifying design solutions.

Product manufacture:

- making a prototype from a design solution
- selecting and using:
  - a range of appropriate materials, parts and components
  - appropriate processes
  - appropriate tools and equipment
  - applying health and safety procedures and quality control techniques
  - producing a batch of a product from a design solution as a member of a team.
- analysing and evaluating the product in terms of the manufacturing processes used and detailing how these would be modified in real-world manufacturing.
- the environmental impact of the product and any issues of sustainability linked to its manufacture.

3 Assessment of GCSE Manufacturing

3.1 Overview of the assessment in GCSE Manufacturing

For GCSE in Manufacturing candidates must take:

GCSE Manufacturing (J505)

Unit B231: 1A *Study of a Manufactured Product* and 1B *Manufacturing a Product.*

60% of the total GCSE marks.	**Section 1A:** *Study of a Manufactured Product*
Controlled Assessment.	Candidates are required to undertake a product analysis of a product (selected from a list provided by OCR) and its modern equivalents. The candidate should identify **two** products, similar to the initial selected product that has developed through the influence of modern technologies. Once the range of products has been identified, a thorough product analysis should be carried out.
Section 1A: 20% of the total GCSE marks.	
30 Marks.	
Section 1B: 40% of the total GCSE marks.	**Section 1B:** *Manufacturing a Product* Candidates are required to work from a given client brief selected from a list of tasks provided by OCR.
60 Marks.	They will analyse the client brief, produce and design a specification and produce a range of design ideas.
	They will then manufacture a quality prototype and finally carry out a full evaluation of the finished product.

The time limit available to complete each assessment task is approximately 20 hours.

For guidance on the suggested time allocation for controlled assessment see section 4.

This unit is internally assessed and externally moderated.

Unit B232: *Manufacturing Processes*

40% of the total GCSE marks.	This unit will be assessed by a one hour written examination.
1 hour written examination.	Questions will be a mix of short answer and free response styles, and will require candidates to demonstrate practical application of knowledge related to products and manufacturing environments they have studied.
60 marks	

This unit is externally assessed.

3.2   Overview of the assessment in GCSE (Double Award) Manufacturing

For GCSE (Double Award) in Manufacturing candidates must take:

GCSE (Double Award) Manufacturing (J510)

GCSE Manufacturing units as above, Unit B231 being 30% and Unit B232 being 20% of the GCSE (Double Award) marks.

Unit B233: *3A Real World Manufacturing and 3B Making a Manufactured Product (controlled assessment)*

30% of the total GCSE (Double Award) marks. Controlled assessment.	**Section 3A:** *Real World Manufacturing* Candidates are required to undertake the study of a manufactured product from the first stage of production through all the associated stages up to the completed item being delivered to the client.
Section 3A: 10% of the total GCSE (Double Award) 30 marks	**Section 3B:** *Making a Manufactured Product* Candidates are required to work from a given product provided by OCR. They will work as a member of a team and produce a batch of items.
Section 3B: 20% of the total GCSE (Double Award). 60 marks	The candidate will be expected to present production details about the product and carry out individual tasks, as a member of the team, leading to the production of an assembled quality product. Care will be taken to follow health and safety requirements and quality assurance procedures will be fundamental during the production process. A final evaluation will reflect on processes, tools and machinery used as well as how the product could be produced in the real world.

The time limit available to complete each assessment task is approximately 20 hours.

For guidance on the suggested time allocation for controlled assessment see section 4.

This unit is internally assessed and externally moderated.

Unit B234: *Impact of Modern Technologies on Manufacturing* (Examined unit)

20% of the total GCSE marks	This unit will be assessed by a written examination.
1 hr written examination. 60 marks	Questions will be a mix of short answer and free response styles, and will require candidates to demonstrate practical application of knowledge related to products and manufacturing environments they have studied. In particular, they should focus on designing products for manufacture and sustainability.

This unit is externally assessed.

3

3.3 Assessment Objectives (AOs)

In the context of the content described, candidates are expected to demonstrate their ability to:

AO1	recall, select and communicate their knowledge and understanding of a range of contexts
AO2	apply skills, knowledge and understanding, including quality standards, in a variety of contexts and to plan and carry out investigations and tasks, involving a range of tools, equipment, materials and components;
AO3	analyse and evaluate evidence, make reasoned judgements and present conclusions.

3.3.1 AO weightings – GCSE Manufacturing

Unit	% of GCSE			Total
	AO1	AO2	AO3	
Unit B231: *1A Study of a Manufactured Product & 1B Manufacturing a Product*	10%	40%	10%	60%
Unit B232: *Manufacturing Processes*	16%	14%	10%	40%
Total:	26%	54%	20%	100%

3.3.2 AO weightings – GCSE (Double Award) Manufacturing

Manufacturing The relationship between the units and the assessment objectives of the scheme of assessment is shown in the following grid:

Unit	% of GCSE			Total
	AO1	AO2	AO3	
Unit B231: *1A Study of a Manufactured Product & 1B Manufacturing a Product*	5%	20%	5%	30%
Unit B232: *Manufacturing Processes*	8%	7%	5%	20%
Unit B233: *3A Real World Manufacturing & 3B Making a Manufactured Product*	5%	20%	5%	30%
Unit B234: *Impact of Modern Technologies on Manufacturing*	8%	7%	5%	20%
Total:	26%	54%	20%	100%

3.4 Grading and awarding grades

Both GCSE and GCSE (Double Award) results are awarded on the scale A* to G (A*A* to GG). Units are awarded a* to g. Grades are indicated on certificates. However, results for candidates who fail to achieve the minimum grade (G, GG or g) will be recorded as unclassified (U, UU or u) and this is not certificated.

Most GCSEs are unitised schemes. When working out candidates' overall grades OCR needs to be able to compare performance on the same unit in different series when different grade boundaries may have been set, and between different units. OCR uses a Uniform Mark Scale to enable this to be done.

A candidate's uniform mark for each unit is calculated from the candidate's raw mark on that unit. The raw mark boundary marks are converted to the equivalent uniform mark boundary. Marks between grade boundaries are converted on a pro rata basis.

When unit results are issued, the candidate's unit grade and uniform mark are given. The uniform mark is shown out of the maximum uniform mark for the unit, e.g. 41/90.

The specification is graded on a Uniform Mark Scale. The uniform mark thresholds for each of the assessments are shown below:

(GCSE) Unit Weighting	Maximum Unit Uniform Mark	Unit Grade								
		a*	a	b	c	d	e	f	g	u
60/30%	90	81	72	63	54	45	36	27	18	0
40/20%	60	54	48	42	36	30	24	18	12	0

A candidate's uniform marks for each unit are aggregated and grades for the specification are generated on the following scale:

Qualification	Max Uniform Mark	Qualification Grade								
		A*	A	B	C	D	E	F	G	U
GCSE (Single award)	150	135	120	105	90	75	60	45	30	0

Qualification	Max Uniform Mark	Qualification Grade														
		A*A*	A*A	AA	AB	BB	BC	CC	CD	DD	DE	EE	EF	FF	FG	GG	UU
GCSE (Double award)	300	270	255	240	225	210	195	180	165	150	135	120	105	90	75	60	0

the single award the written papers will have a total weighting of 40% and controlled assessment a weighting of 60%. For the double award the written papers will have a total weighting of 20% and controlled assessment a weighting of 30%.

A candidate's uniform mark(s) for each paper will be combined with the uniform mark for the controlled assessment(s) to give a total uniform mark for the specification. The candidate's grade will be determined by the total uniform mark.

3.5 Grade descriptions

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 the assessment may be balanced by better performance in others.

The grade descriptors have been produced by the regulatory authorities in collaboration with the awarding bodies.

3.5.1 Grade F

Candidates recall, select and communicate knowledge and understanding of basic aspects of manufacturing.

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 of progress.

They review their evidence and draw basic conclusions.

3.5.2 Grade C

Candidates recall, select and communicate sound knowledge and understanding of manufacturing.

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.

They review the evidence available, analysing and evaluating some information clearly and with some accuracy. They make judgements and draw appropriate conclusions.

3.5.3 Grade A

Candidates recall, select and communicate detailed knowledge and thorough understanding of manufacturing.

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.

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.

3.6 Quality of written communication

Quality of written communication is assessed in B232 and B234 and is integrated in the marking criteria.

Candidates are expected to:
- ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear;
- present information in a form that suits its purpose;
- use an appropriate style of writing and, where applicable, specialist terminology

This section provides general guidance on controlled assessment: what controlled assessment tasks are, when and how they are available; how to plan and manage controlled assessment and what controls must be applied throughout the process. More support can be found on the OCR website: Guide to controlled assessment in Manufacturing.

Teaching and Learning

Controlled assessment is designed to be an integral part of teaching and learning. Unit B231 parts 1A and 1B, and B233 parts 3A and 3B have been designed to be internally assessed, applying the principles of controlled assessment.

When all necessary teaching and learning has taken place and teachers feel that candidates are ready for assessment, candidates can be given the controlled assessment task.

4.1   Controlled assessment tasks

All controlled assessment tasks are set by OCR.

Centres can choose one task from the lists provided by OCR (See Appendix B) which can be used with a minimum amount of adaptation. Alternatively, these tasks can be adapted so that they allow the usage of local resources available to any centre. These tasks may also be set within overarching scenarios and briefs more relevant to centres' own environment and targeted at their particular cohorts of candidates.

Controlled assessment tasks may be adapted by centres in ways that will not put at risk the opportunity for candidates to meet the assessment criteria, including the chance to gain marks at the highest level. For some units this may allow for little to be adapted other than cosmetic details, e.g. the description and nature of the product on which a task is based.

The same OCR controlled assessment task must NOT be used as the practice material and then as the actual live assessment material. Centres should devise their own practice material using the OCR specimen Controlled assessment task as guidance.

Controlled assessment tasks are available on Interchange from 1 June for the following examination series for certification in the following academic year.

Assessment tasks are reviewed every two years and amended where necessary. Guidance on how to access controlled assessment tasks from Interchange is available on the OCR website.

Centres must ensure that candidates undertake a task applicable to the correct year of the examination by checking carefully the examination dates of the tasks on Interchange.

4.2 Planning and managing controlled assessment

Controlled assessment tasks are available at an early stage to allow planning time. It is anticipated that candidates will spend about 20 hours of assessment for each unit B231 and B233. Candidates should be allowed sufficient time to complete all tasks.

Suggested steps are included below, with guidance on regulatory controls at each step of the process. Teachers must ensure that the control requirements indicated below are met throughout the process.

4.2.1 Preparation and research time

Preparation (informal supervision)

Informal supervision ensures that the work of the individual candidates is recorded accurately and that plagiarism does not take place. Assessable outcomes may be informed by group work, but must be an individual response.

Introduction to the task (teacher led)

Teachers should apply appropriate time to explore choice of tasks, possible approaches and sources of evidence, time allocations, programmes of work and deadlines, methods of working, control requirements.

Research (limited supervision)

Limited supervision means that candidates can undertake this part of the process without direct teacher supervision and outside the centre as required. Candidates are also able to work in collaboration during this stage. However, when producing their final piece of work, candidates must complete and/or evidence all work individually.

Research/collection of evidence

During the research phase candidates can be given support and guidance.

- Teachers **can**
  - explain the task
  - advise on how the task could be approached
  - advise on resources
  - alert the candidate to key things that must be included in the final piece of work.

- Teachers **must not**
  - comment on or correct the work
  - practise the task with the candidates
  - provide templates, model answers or feedback on drafts

Research material can include fieldwork, internet- or paper-based research, questionnaires, audio and video files etc. Candidates must be guided on the use of information from other sources to ensure that confidentiality and intellectual property rights are maintained at all times. It is essential that any material directly used from a source is appropriately and rigorously referenced.

4.2.2 Producing the final piece of work

Producing final piece of work (formal supervision)

Formal supervision means under direct teacher supervision: teachers must be able to authenticate the work and there must be acknowledgement and referencing of any sources used. If writing up is carried out over several sessions, work must be collected in between sessions.

- The final piece of work should be indexed and include headings that identify materials presented by the candidate. Footnotes, figures, tables, diagrams, charts and appendices should be included where appropriate.

- When supervising tasks, teachers are expected to:

    - exercise continuing supervision of work in order to monitor progress and to prevent plagiarism;

    - exercise continuing supervision of practical work to ensure essential compliance with Health and Safety requirements;

    - ensure that the work is completed in accordance with the specification requirements and can be assessed in accordance with the specified marking criteria and procedures.

Candidates must work independently to produce their own final piece of work.

4.2.3 Presentation of the final piece of work

Candidates must observe the following procedures when producing their final piece of work for the controlled assessment tasks:

- Tables, graphs and spreadsheets may be produced using appropriate ICT. These should be inserted into the report at the appropriate place

- Any copied material must be suitably acknowledged

- Quotations must be clearly marked and a reference provided wherever possible

- Work submitted for moderation or marking must be marked with the:

    - centre number

    - centre name

    - candidate name

    - candidate number

    - unit code and title

    - assignment title

Work submitted in digital format (CD or online) for moderation or marking must be in a suitable file structure as detailed in Appendix A at the end of these specifications. Work submitted on paper must be secured by treasury tags.

4.3 Marking and moderating controlled assessment

All controlled assessment units are marked by the centre assessor(s) using OCR marking criteria and guidance and are moderated by the OCR-appointed moderator. External moderation is either e-moderation where evidence in a digital format is supplied or postal moderation.

4.3.1 Applying the marking criteria

The starting point for marking the tasks is the marking criteria (see section 4.3.4 *Marking criteria for controlled assessment tasks* below). The criteria identify levels of performance for the skills, knowledge and understanding that the candidate is required to demonstrate. Before the start of the course, and for use at INSET training events, OCR will provide exemplification through real or simulated candidate work which will help to clarify the level of achievement the assessors should be looking for when awarding marks.

4.3.2 Use of 'best fit' approach to marking criteria

The assessment task(s) for each unit should be marked by teachers according to the given marking criteria within the relevant unit using a 'best fit' approach. For each of the assessment criteria, teachers select the most appropriate band descriptors provided in the marking grid that describes the quality of the work being marked.

Marking should be positive, rewarding achievement rather than penalising failure or omissions. The award of marks **must be** directly related to the marking criteria.

Teachers use their professional judgement in selecting the band descriptor that best describes the work of the candidate.

To select the most appropriate mark within the band descriptor, teachers should use the following guidance:

• where the candidate's work *convincingly* meets the statement, the highest mark should be awarded;

• where the candidate's work *adequately* meets the statement, the most appropriate mark in the middle range should be awarded;

• where the candidate's work *just* meets the statement, the lowest mark should be awarded.

Teachers should use the full range of marks available to them and award *full* marks in any band for work which meets that descriptor. This is work which is 'the best one could expect from candidates working at that level'. Where there are only two marks within a band the choice will be between work which, in most respects, meets the statement and work which just meets the statement. For wider mark bands the marks on either side of the middle mark(s) for 'adequately met' should be used where the standard is lower or higher than 'adequate' but not the highest or lowest mark in the band.

The final mark for the candidate for the controlled assessment unit is out of a total of 90 and is found by totalling the marks for each of the marking objective/criteria strands.

There should be sufficient evidence that work has been attempted and some work produced. If a candidate submits **no** work for the internally assessed units, then the candidate should be indicated as being absent from that unit. If a candidate completes **any** work for an internally assessed unit, then the work should be assessed according to the marking criteria and the appropriate mark, including zero marks, awarded.

4.3.3 Annotation of candidates' work

Each piece of internally assessed work should show how the marks have been awarded in relation to the marking criteria.

The writing of comments on candidates' work and cover sheet provides a means of communication between teachers during the internal standardisation and with the moderator if the work forms part of the moderation sample.

4.3.4 Marking criteria for controlled assessment tasks

Unit B231 1A Study of a Manufactured Product

0 marks = no response or no response worthy of credit

Has basic ability	Demonstrates an ability	Works competently
For the manufactured products studied the candidate:		
gives a basic description of: • the impact of modern technologies, smart materials and components on their development • the advantages and disadvantages that the use of modern technology has brought to society. **[1 2 3]**	gives a description of: • the impact of modern technologies, smart materials and components on their development • the advantages and disadvantages that the use of modern technology has brought to society. **[4 5 6]**	gives a detailed description of: • the impact of modern technologies, smart materials and components on their development • the advantages and disadvantages that the use of modern technology has brought to society. **[7 8 9]**
gives a basic explanation of the use of materials and components and some of their: • properties • characteristics • performance • cost; there will be little or no use of specialist terms, answers may be ambiguous or disorganised. errors of spelling, punctuation and grammar may be intrusive. **[1 2 3]**	gives a detailed explanation of the use of materials and components and their: • properties • characteristics • performance • cost; there will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, punctuation and grammar. **[4 5 6]**	gives a detailed and justified explanation of the use of materials and components and their: • properties • characteristics • performance • cost; specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar. **[7 8 9]**
gives a basic explanation of the: • manufacturing processes used. **[1 2]**	gives a detailed explanation of the: • manufacturing processes used. **[3 4]**	gives a detailed and justified explanation of the: • manufacturing processes used. **[5 6]**
suggests, with some limited explanation: • modifications to design solutions • sustainability issues. **[1 2]**	suggests and explains: • modifications to design solutions • sustainability issues. **[3 4]**	suggests and explains in detail: • modifications to design solutions • sustainability issues. **[5 6]**

Unit B231 1B Manufacturing a Product

0 marks = no response or no response worthy of credit

Has basic ability	Demonstrates an ability	Works competently
Using the client design brief for a manufactured product the candidate:		
provides a basic analysis of the client brief produces and partially applies a design specification. **[1 2 3]**	provides an analysis of the client brief produces and applies a design specification. **[4 5 6]**	provides a detailed and justified analysis of the client brief produces and applies a justified design specification. **[7 8 9]**
develops a range of basic annotated design ideas giving some consideration of: • materials • material constraints. presents, with limited explanation, the selection of design solution for the manufactured product. **[1 2 3 4]**	develops a range of annotated design ideas considering: • materials • material constraints. presents and explains the selection of design solution for the manufactured product. **[5 6 7 8]**	develops a wide range of annotated design ideas considering: • materials • material constraints. presents and justifies the selection of a design solution for the manufactured product. **[9 10 11 12]**
makes a prototype of the design solution that may be incomplete in part, with limited opportunity for testing. **[1 2 3 4 5 6]**	makes an adequate prototype of the design solution that provides opportunity for some testing. **[7 8 9 10 11 12]**	makes a complete, quality prototype of the design solution that allows for detailed testing. **[13 14 15 16 17 18]**
Safely uses a limited range of materials, parts and components, processes, tools and equipment. **[1 2 3]**	Selects and safely uses an appropriate range of materials, parts and components, processes, tools and equipment. **[4 5 6]**	Selects and safely uses a wide range of appropriate materials, parts and components, processes, tools and equipment. **[7 8 9]**
suggests basic modifications to the design solution and original specification giving consideration to the use of modern materials, processes and technologies. gives a basic explanation of how the product could be batch produced. **[1 2 3 4]**	suggests detailed modifications to the design solution and original specification giving consideration to the use of modern materials, processes and technologies. gives an explanation of how the product could be batch produced. **[5 6 7 8]**	suggests detailed and justified modifications to the design solution and original specification giving consideration to the use of modern materials, processes and technologies. gives a detailed and justified explanation of how the product could be batch produced. **[9 10 11 12]**

Unit B233 3A Real World Manufacturing

0 marks = no response or no response worthy of credit

Has basic ability	Demonstrates an ability	Works competently
For the manufactured products the candidate:		
gives a basic explanation of most stages in manufacturing the product. **[1 2]**	identifies and explains most stages in manufacturing the product. **[3 4]**	identifies and explains all the stages in manufacturing the product. **[5 6]**
gives a basic outline of the production details that includes some reference to: • labour • available technology • quality standards • handling and storage. **[1 2]**	identifies with some explanation the production details and constraints to include: • labour • available technology • quality standards • handling and storage. **[3 4]**	identifies and comprehensively explains the production details and constraints to include: • labour • available technology • quality standards • handling and storage. **[5 6]**
gives a limited consideration of the identified product with explanation to some materials, components and/or ingredients and their constraints through their availability, form and supply. **[1 2]**	considers the identified product explaining; materials, components and/or ingredients and their constraints through their availability, form and supply. **[3 4]**	considers the identified product giving detail and justifying; all materials, components and/or ingredients and their constraints through their availability, form and supply. **[5 6]**
gives a basic explanation of some of the systems and control technology, to organise, monitor and control production of the product. **[1 2]**	identifies and explains systems and control technology, to organise, monitor and control production of the product. **[3 4]**	identifies and comprehensively explains systems and control technology, to organise, monitor and control production of the product. **[5 6]**
gives a basic explanation of the impact of modern technologies when manufacturing the product. **[1 2]**	identifies and explains the impact of modern technologies when manufacturing the product. **[3 4]**	identifies and comprehensively explains the impact of modern technologies when manufacturing the product. **[5 6]**

Unit B233 3B Making a Manufactured Product

0 marks = no response or no response worthy of credit

Has basic ability	Demonstrates an ability	Works competently
As part of a team, the candidate produces a batch of a product from a design solution.		
a limited contribution and limited detail of the selection and uses a range of appropriate: • materials • parts and components • processes • tools • equipment. **[1 2 3]**	adequately contributes and details the selection and uses a range of appropriate: • materials • parts and components • processes • tools • equipment. **[4 5 6]**	comprehensively contributes and details, the selection and uses a range of appropriate: • materials • parts and components • processes • tools • equipment. **[7 8 9]**
a limited contribution and limited detail of the team's application of: • health and safety procedures • quality control techniques. **[1 2]**	adequately contributes and details the team's application of: • health and safety procedures • quality control techniques. **[3 4]**	comprehensively contributes and details the team's application of: • health and safety procedures • quality control techniques. **[5 6]**
Individually, whilst working as part of a team to produce a batch of a product from a design solution the candidate:		
gives limited consideration and limited detail of: • production details and constraints • application of quality standards. **[1 2 3 4]**	adequately considers and details: • production details and constraints • application of quality standards. **[5 6 7 8]**	comprehensively considers and details: • production details and constraints • application of quality standards. **[9 10 11 12]**
gives a basic analysis and evaluation of the product in terms of the: • equipment • tools • processes which have been used. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of spelling, punctuation and grammar may be intrusive. **[1 2 3 4 5 6]**	analyses and evaluates the product in terms of the: • equipment • tools • processes which have been used. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, punctuation and grammar. **[7 8 9 10 11 12]**	comprehensively analyses and evaluates the product in terms of the: • equipment • tools • processes which have been used. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar. **[13 14 15 16 17 18]**
gives limited detail of how these would be modified in real-world manufacturing. **[1 2 3]**	adequately details how these would be modified in real-world manufacturing. **[4 5 6]**	comprehensively details how these would be modified in real-world manufacturing. **[7 8 9]**
gives limited detail, of their individual application of: • health and safety procedures • quality control techniques. **[1 2]**	adequately details their individual application of: • health and safety procedures • quality control techniques. **[3 4]**	comprehensively details their individual application of: • health and safety procedures • quality control techniques. **[5 6]**

4.3.5 Authentication of work

Teachers must be confident that the work they mark is the candidate's own. This does not mean that a candidate must be supervised throughout the completion of all work but the teacher must exercise sufficient supervision, or introduce sufficient checks, to be in a position to judge the authenticity of the candidate's work.

Wherever possible, the teacher should discuss work-in-progress with candidates. This will not only ensure that work is underway in a planned and timely manner but will also provide opportunities for assessors to check authenticity of the work and provide general feedback.

Candidates must not plagiarise. Plagiarism is the submission of another's work as one's own and/or failure to acknowledge the source correctly. Plagiarism is considered to be malpractice and could lead to the candidate being disqualified. Plagiarism sometimes occurs innocently when candidates are unaware of the need to reference or acknowledge their sources. It is therefore important that centres ensure that candidates understand that the work they submit must be their own and that they understand the meaning of plagiarism and what penalties may be applied. Candidates may refer to research, quotations or evidence but they must list their sources. The rewards from acknowledging sources, and the credit they will gain from doing so, should be emphasised to candidates as well as the potential risks of failing to acknowledge such material. Candidates may be asked to sign a declaration to this effect. Centres should reinforce this message to ensure candidates understand what is expected of them.

Please note: Centres must confirm to OCR that the evidence produced by candidates is authentic. The Centre Authentication Form includes a declaration for assessors to sign and is available from the OCR website and OCR Interchange.

4.3.6 Internal standardisation

It is important that all internal assessors, working in the same subject area, work to common standards. Centres must ensure that the internal standardisation of marks across assessors and teaching groups takes place using an appropriate procedure.

This can be done in a number of ways. In the first year, reference material and OCR training meetings will provide a basis for centres' own standardisation. In subsequent years, this, or centres' own archive material, may be used. Centres are advised to hold preliminary meetings of staff involved to compare standards through cross-marking a small sample of work. After most marking has been completed, a further meeting at which work is exchanged and discussed will enable final adjustments to be made.

4.3.7 Moderation

All work for controlled assessment is marked by the teacher and internally standardised by the centre. Marks are then submitted to OCR, after which moderation takes place in accordance with OCR procedures: refer to the OCR website for submission dates of the marks to. The purpose of moderation is to ensure that the standard of the award of marks for work is the same for each centre and that each teacher has applied the standards appropriately across the range of candidates within the centre.

The sample of work which is presented to the Moderator for moderation must show how the marks have been awarded in relation to the marking criteria defined in Section 4.3.4.

Each candidate's work should have a cover sheet attached to it with a summary of the marks awarded for the task. If the work is to be submitted in digital format, this cover sheet should also be submitted electronically within each candidate's files.

4.4   Submitting the moderation samples via the OCR Repository

The OCR Repository is a secure website for centres to upload candidate work and for assessors to access this work digitally. Centres can use the OCR Repository for uploading marked candidate work for moderation.

Centres can access the OCR Repository via OCR Interchange, find their candidate entries in their area of the Repository, and use the Repository to upload files (singly or in bulk) for access by their moderator.

The OCR Repository allows candidates to send evidence in electronic file types that would normally be difficult to submit through postal moderation; for example multimedia or other interactive unit submissions.

The OCR GCSE Manufacturing unit(s) B231/B233 can be submitted electronically to the OCR Repository via Interchange: please check Section 7.4.1 page 42for unit entry codes for the OCR Repository.

There are three ways to load files to the OCR Repository:

1   Centres can load multiple files against multiple candidates by clicking on 'Upload candidate files' in the Candidates tab of the Candidate Overview screen.

2   Centres can load multiple files against a specific candidate by clicking on 'Upload files' in the Candidate Details screen.

3   Centres can load multiple administration files by clicking on 'Upload admin files' in the Administration tab of the Candidate Overview screen.

The OCR Repository is seen as a faster, greener and more convenient means of providing work for assessment. It is part of a wider programme bringing digital technology to the assessment process, the aim of which is to provide simpler and easier administration for centres.

Instructions for how to upload files to OCR using the OCR Repository can be found on OCR Interchange.

5.1 Free resources available from the OCR website

The following materials will be available on the OCR website:

GCSE Manufacturing Specification

Specimen assessment materials for each unit: B232 B234

Guide to controlled assessment

Teachers Handbook

Sample schemes of work and lesson plans: B231A B231B B232 B233A B233B B234

5.2 Other resources

OCR offers centres a wealth of high quality published support with a choice of 'Official Publisher Partner' and 'Approved Publication' resources, all endorsed by OCR for use with OCR specifications.

5.2.1 Endorsed publications

OCR endorses a range of publisher materials to provide quality support for centres delivering its qualifications. You can be confident that materials branded with OCR's 'Official Publishing Partner' or 'Approved publication' logos have undergone a thorough quality assurance process to achieve endorsement. All responsibility for the content of the publisher's materials rests with the publisher.

These endorsements do not mean that the materials are the only suitable resources available or necessary to achieve an OCR qualification.

5.3 Training

OCR will offer a range of support activities for all practitioners throughout the lifetime of the qualification to ensure they have the relevant knowledge and skills to deliver the qualification.

Please see Event Booker for further information.

5.3.1 Active Results

Active Results is available to all centres offering OCR's GCSE Manufacturing specifications.

activeresults

Active Results is a free results analysis service to help teachers review the performance of individual candidates or whole schools.

Devised specifically for the UK market, data can be analysed using filters on several categories such as gender and other demographic information, as well as providing breakdowns of results by question and topic.

Active Results allows you to look in greater detail at your results:

Richer and more granular data will be made available to centres including question level data available from e-marking

You can identify the strengths and weaknesses of individual candidates and your centre's cohort as a whole

Our systems have been developed in close consultation with teachers so that the technology delivers what you need.

Further information on Active Results can be found on the OCR website.

5.3.2 OCR Interchange

OCR Interchange has been developed to help you to carry out day-to-day administration functions online, quickly and easily. The site allows you to register and enter candidates online. In addition, you can gain immediate and free access to candidate information at your convenience. Sign up at OCR Interchange.

6.1 Equality Act information relating to GCSE Manufacturing

GCSEs often require assessment of a broad range of competences. This is because they are general qualifications and, as such, prepare candidates for a wide range of occupations and higher level courses.

The revised GCSE qualification and subject criteria were reviewed by the regulators in order to identify whether any of the competences required by the subject presented a potential barrier to any disabled candidates. If this was the case, the situation was reviewed again to ensure that such competences were included only where essential to the subject. The findings of this process were discussed with disability groups and with disabled people.

Reasonable adjustments are made for disabled candidates in order to enable them to access the assessments and to demonstrate what they know and can do. For this reason, very few candidates will have a complete barrier to the assessment. Information on reasonable adjustments is found in *Access Arrangements, Reasonable Adjustments and Special Consideration* by the Joint Council www. jcq.org.uk.

Candidates who are unable to access part of the assessment, even after exploring all possibilities through reasonable adjustments, may still be able to receive an award based on the parts of the assessment they have taken.

The access arrangements permissible for use in these specifications are in line with Ofqual's GCSE subject criteria equalities review and are as follows:

	Yes/No	Type of Assessment
Readers	Y	All Written Examinations
Scribes	Y	All Written Examinations
Practical assistants	Y	Practical Assessments
Word processors	Y	All Written Examinations
Transcripts	Y	All Written Examinations
BSL signers	Y	All Written Examinations
Modified question papers	Y	All Written Examinations
Extra time	Y	All Written Examinations

6.2 Arrangements for candidates with particular requirements (including Special Consideration)

All candidates with a demonstrable need may be eligible for access arrangements to enable them to show what they know and can do. The criteria for eligibility for access arrangements can be found in the JCQ document *Access Arrangements, Reasonable Adjustments and Special Consideration*.

Candidates who have been prepared for the assessment but who have been affected by adverse circumstances beyond their control at the time of the examination may be eligible for special consideration. As above, centres should consult the JCQ document *Access Arrangements, Reasonable Adjustments and Special Consideration*.

In December 2011 the GCSE qualification criteria were changed by Ofqual. As a result, all GCSE qualifications have been updated to comply with the new regulations.

The most significant change for all GCSE qualifications is that, from 2014, unitised specifications must require that 100% of the assessment is terminal.

Please note that there are no changes to the terminal rule and re-sit rules for the January 2013 and June 2013 examination series:

•   At least 40% of the assessment must be taken in the examination series in which the qualification is certificated.

•   Candidates may re-sit each unit once before certification, i.e. each candidate can have two attempts at a unit before certification.

For full information on the assessment availability and rules that apply in the January 2013 and June 2013 examination series, please refer to the previous version of this specification GCSE Manufacturing and GCSE (Double Award) Manufacturing available on the website.

The sections below explain in more detail the rules that apply from the June 2014 examination series onwards.

7.1   Availability of assessment from 2014

There is one examination series available each year in June (all units are available each year in June).

GCSE Manufacturing certification is available in June 2014 and each June thereafter.

GCSE (Double Award) Manufacturing certification is available in June 2014 and each June thereafter.

	Unit B231	Unit B232	Unit B233	Unit B234	Certification availability
June 2014	✓	✓	✓	✓	✓
June 2015	✓	✓	✓	✓	✓

7.2 Certification rules

For GCSE Manufacturing from June 2014 onwards, a 100% terminal rule applies. Candidates must enter for all their units in the series in which the qualification is certificated.

For GCSE (Double Award) Manufacturing, from June 2014 onwards, where a candidate is taking GCSE (Double Award) for the first time and where they have not previously been awarded GCSE Manufacturing, a 100% terminal rule applies. Candidates must enter for all their units in the series in which the qualification is certificated.

From June 2014, candidates who have already been awarded GCSE Manufacturing, and decide to move on to GCSE (Double Award) Manufacturing have three options available to them for certification of the double award:

- Take just the additional units required for GCSE (Double Award) and carry forward the result for GCSE Manufacturing.

- Re-take all of the GCSE Manufacturing units alongside the additional units required for GCSE (Double Award) Manufacturing. The new results for the units that have been re-taken will then be used in the calculation of the GCSE (Double Award) Manufacturing grade.

- Any results previously achieved will not be re-used.

- Re-take the externally assessed unit B232 alongside the additional units required for GCSE (Double Award) Manufacturing and carry forward the result for the controlled assessment unit B231 that was previously used towards GCSE Manufacturing. The new result for the externally assessed unit B232 will then be used in the calculation of the GCSE (Double Award) Manufacturing grade.

Candidates must choose which of these options they want to follow before entries for the double award are made. All new and re-taken units must be entered in the series in which the double award is certificated.

Where a candidate decides to carry forward a result for the controlled assessment unit B231 they must be entered for this unit in the series in which the double award is certificated, using the entry code for the carry forward option (see section 7.4).

Where a candidate decides to carry forward the complete result for GCSE Manufacturing they must be entered for the carry forward unit code B235 in the series in which the double award is certificated.

GCSE Manufacturing and GCSE (Double Award) Manufacturing can be certificated concurrently if all units are taken in the same series.

7.3 Rules for re-taking a qualification

Candidates may enter for each qualification an unlimited number of times.

Where a candidate re-takes a qualification, **all** units must be re-entered and all externally assessed units must be re-taken in the same series as the qualification is re-certificated. The new results for these units will be used to calculate the new qualification grade, any results previously achieved will not be re-used.

For each of the controlled assessment units, candidates who are re-taking a qualification can choose either to re-take that controlled assessment unit or to carry forward the result for that unit that was used towards the previous certification of the same qualification.

- Where a candidate decides to re-take the controlled assessment, the new result will be the one used to calculate the new qualification grade.

- Any results previously achieved will not be re-used.

- Where a candidate decides to carry forward a result for controlled assessment, they must be entered for the controlled assessment unit in the re-take series using the entry code for the carry forward option (see section 7.4.1).

For any further advice on rules for re-taking a qualification, please contact OCR.

7.4 Making entries

7.4.1 Unit entries

Centres must be approved to offer OCR qualifications before they can make any entries, including estimated entries. It is recommended that centres apply to OCR to become an approved centre well in advance of making their first entries. Centres must have made an entry for a unit in order for OCR to supply the appropriate forms and administrative materials.

It is essential that correct unit entry codes are used when making unit entries.

For the externally assessed units B232 and B234 candidates must be entered for either component 02 (Written paper) using the appropriate unit entry code from the table below. It is not possible for a candidate to take both components for a particular unit within the same series.

For the controlled assessment units, centres can decide whether they want to submit candidates' work for moderation through the OCR Repository or by post. Candidates submitting controlled assessment must be entered for the appropriate unit entry code from the table below. Candidates who are re-taking the qualification and who want to carry forward the controlled assessment should be entered using the unit entry code for the carry forward option.

Centres should note that controlled assessment tasks can still be completed at a time which is appropriate to the centre/candidate. However, where tasks change from year to year, centres would have to ensure that candidates had completed the correct task(s) for the year in which they enter the work for assessment.

Unit Entry code	Component code	Submission/ Examination method	Unit titles
B231A	01	OCR Repository	*1A Study of a Manufactured Product and 1B Manufacturing a Product*
B231B	02	Postal moderation	
B231C	80	Carried Forward	
B232	01	Paper-based test	*Manufacturing Processes*
B233A	01	OCR Repository	*3A Real World Manufacturing and 3B Making an Engineered Product*
B233B	02	Postal moderation	
B233C	80	Carried Forward	
B234	01	Paper-based test	*Impact of Modern Technologies on Manufacturing*
B230	80	Carried Forward	*GCSE Manufacturing (J505) result carried forward*

7.4.2   Certification entries

Candidates must be entered for qualification certification separately from unit assessment(s). If a certification entry is **not** made, no overall grade can be awarded.

Candidates may be entered for one or both of the following:

GCSE Manufacturing certification code J505

GCSE (Double Award) Manufacturing certification code J510.

7.5   Enquiries about results

Under certain circumstances, a centre may wish to query the result issued to one or more candidates. Enquiries about results for GCSE units must be made immediately following the series in which the relevant unit was taken and by the relevant enquiries about results deadline for that series.

Please refer to the JCQ *Post-Results Services* booklet and the OCR *Admin Guide: 14–19 Qualifications* for further guidance on enquiries about results and deadlines. Copies of the latest versions of these documents can be obtained from the OCR website at www.ocr.org.uk.

7.6 Prohibited qualifications and classification code

Every specification is assigned a national classification code indicating the subject area to which it belongs. The classification code for this specification is 0005

Centres should be aware that candidates who enter for more than one GCSE qualification with the same classification code will have only one grade (the highest) counted for the purpose of the School and College Performance Tables.

Centres may wish to advise candidates that, if they take two specifications with the same classification code, colleges are very likely to take the view that they have achieved only one of the two GCSEs. The same view may be taken if candidates take two GCSE specifications that have different classification codes but have significant overlap of content. Candidates who have any doubts about their subject combinations should seek advice, either from their centre or from the institution to which they wish to progress.

Other information about GCSE Manufacturing 8

8.1 Overlap with other qualifications

There is no significant overlap between the content of these specifications and that for other GCSE qualifications.

8.2 Progression from this qualification

GCSE qualifications are general qualifications which enable candidates to progress either directly to employment, or to proceed to further qualifications.

Progression to further study from GCSE will depend upon the number and nature of the grades achieved. Broadly, candidates who are awarded mainly Grades D to G at GCSE could either strengthen their base through further study of qualifications at Level 1 within the National Qualifications Framework or could proceed to Level 2. Candidates who are awarded mainly Grades A* to C at GCSE would be well prepared for study at Level 3 within the National Qualifications Framework.

8.3 Avoidance of bias

OCR has taken great care in preparation of these specifications and assessment materials to avoid bias of any kind. Special focus is given to the 9 strands of the Equality Act with the aim of ensuring both direct and indirect discrimination is avoided.

8.4 Regulatory requirements

These specifications comply in all respects with the current: *General Conditions of Recognition; GCSE, GCE Principal Learning and Project Code of Practice; GCSE Controlled Assessment regulations* and the *GCSE subject criteria for Manufacturing*. All documents are available on the [Ofqual website](#).

8.5 Language

These specifications and associated assessment materials are in English only. Only answers written in English will be assessed.

8.6 Spiritual, moral, ethical, social, legislative, economic and cultural issues

These specifications offer opportunities which can contribute to an understanding of these issues in the following topics.

Issue	Opportunities for developing an understanding of the issue during the course
Spiritual issues	spiritual development, through helping pupils recognise their own creativity and the creativity of others in finding solutions to problems, and through recognising the tension between material and non-material needs;
Moral issues	moral development, through helping pupils to reflect on how technology affects the environment so they can make informed choices when designing and making and through discussing the moral dilemmas posed by introducing new technologies within different values systems and the advantages and disadvantages of new technology to local, national and global communities;
Ethical issues	helping candidates work together productively on complex tasks and helping them see the benefits of collective co-operation.
Social issues	social development, through helping pupils recognise the need to consider the views of others when discussing design ideas;
Legislative issues	European examples should be used where appropriate in the delivery of the subject content. Relevant European legislation is identified within the specification where applicable.
Economic issues	economic development: helping candidates make informed decisions about the management and use of materials
Cultural issues	cultural development, through exploring the contribution of products to the quality of life within different cultures, and through valuing and reflecting on the responses of people from other cultures to design solutions.

8.7 Sustainable development, health and safety considerations and European developments, consistent with international agreements

These specifications support these issues, consistent with current EU agreements, as outlined below.

This specification provides opportunities to promote education for sustainable development, through developing knowledge and understanding of the principles of sustainable design and production systems, developing skills in creative problem solving and evaluation, and exploring values and ethics in relation to the application of design and technology. Whereas candidates will not be specifically assessed in terms of their knowledge and awareness of issues associated with energy usage, it is anticipated that, whenever possible, candidates will be encouraged to consider that benefits and drawbacks associated with the use of different sources of energy.

The specification content includes a specific requirement to consider issues associated with health and safety and the environment.

OCR has taken account Resolutions of the Council of the European Community in preparing this specification and associated specimen assessments. European examples should be used where appropriate in the delivery of the subject content. Relevant European legislation is identified within the specification where applicable.

8.8   Key Skills

These specifications provide opportunities for the development of the Key Skills of *Communication, Application of Number, Information Technology, Working with Others, Improving Own Learning and Performance* and *Problem Solving* at Levels 1 and/or 2. However, the extent to which this evidence fulfils the Key Skills criteria at these levels will be totally dependent on the style of teaching and learning adopted for each unit.

The following table indicates where opportunities may exist for at least some coverage of the various Key Skills criteria at Levels 1 and/or 2 for each unit.

Unit	C		AoN		ICT		WwO		IoLP		PS	
	1	2	1	2	1	2	1	2	1	2	1	2
B231:1A	✓	✓			✓	✓	✓		✓	✓		
B231:1B	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
B232	✓	✓			✓	✓	✓		✓	✓		
B233:3A	✓	✓			✓	✓	✓		✓	✓		
B233:3B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
B234	✓	✓	✓	✓	✓	✓	✓		✓	✓		

Detailed opportunities for generating Key Skills evidence through this specification are posted on the OCR website. A summary document for Key Skills Coordinators showing ways in which opportunities for Key Skills arise within GCSE courses has been published.

8.9   ICT

In order to play a full part in modern society, candidates need to be confident and effective users of ICT. These specifications provide candidates with a wide range of appropriate opportunities to use ICT in order to further their study of Manufacturing.

Opportunities for ICT include:

*   gathering information from the World Wide Web and CD-ROMs

*   gathering data using sensors linked to data-loggers or directly to computers

*   using spreadsheets and other software to process data

*   using animations and simulations to visualise ideas

*   using software to present ideas and information on paper and on screen.

8.10   Citizenship

From September 2002, the National Curriculum for England at Key Stage 4 includes a mandatory programme of study for Citizenship.

GCSE Manufacturing is designed as education for future citizens which not only covers aspects of the Citizenship programme of study but also extends beyond that programme by dealing with important aspects of manufacturing which all people encounter in their everyday lives.

Citizenship	Opportunities for Teaching Citizenship Issues during the Course
Consider the needs of others	B231 1A, B231 1B, B232
Consider issues surrounding a particular product and its surroundings	B232
Seek opinions of others and be flexible and adaptable in responding to their needs	B232
Consider the need to work together as a team	B232, B233
Seek the opinions of others	
Consider the health and safety of others	B231 1B, B232

Structure for evidence

A controlled assessment portfolio is a collection of folders and files containing the candidate's evidence. Folders should be organised in a structured way so that the evidence can be accessed easily by a teacher or moderator. This structure is commonly known as a folder tree. It would be helpful if the location of particular evidence is made clear by naming each file and folder appropriately and by use of an index called 'Home Page'.

There should be a top level folder detailing the candidate's centre number, candidate number, surname and forename, together with the relevant unit code, so that the portfolio is clearly identified as the work of one candidate.

Each candidate produces an assignment for controlled assessment. The evidence should be contained within a separate folder within the portfolio. This folder may contain separate files.

Each candidate's controlled assessment portfolio should be stored in a secure area on the centre's network. Prior to submitting the controlled assessment portfolio to OCR, the centre should add a folder to the folder tree containing controlled assessment and summary forms.

Data formats for evidence

In order to minimise software and hardware compatibility issues it will be necessary to save candidates' work using an appropriate file format.

Candidates must use formats appropriate to the evidence that they are providing and appropriate to viewing for assessment and moderation. Open file formats or proprietary formats for which a downloadable reader or player is available are acceptable. Where this is not available, the file format is not acceptable.

Electronic controlled assessment is designed to give candidates an opportunity to demonstrate what they know, understand and can do using current technology. Candidates do not gain marks for using more sophisticated formats or for using a range of formats. A candidate who chooses to use only word documents will not be disadvantaged by that choice.

Evidence submitted is likely to be in the form of word processed documents, PowerPoint presentations, digital photos and digital video.

To ensure compatibility, all files submitted must be in the formats listed below. Where new formats become available that might be acceptable, OCR will provide further guidance. OCR advises against changing the file format that the document was originally created in. It is the centre's responsibility to ensure that the electronic portfolios submitted for moderation are accessible to the moderator and represent the evidence available for each candidate.

Accepted File Formats

Accepted File Formats
Movie formats for digital video evidence
MPEG (*.mpg)
QuickTime movie (*.mov)
Macromedia Shockwave (*.aam)
Macromedia Shockwave (*.dcr)
Flash (*.swf)
Windows Media File (*.wmf)
MPEG Video Layer 4 (*.mp4)
Audio or sound formats
MPEG Audio Layer 3 (*.mp3)
Graphics formats including photographic evidence
JPEG (*.jpg)
Graphics file (*.pcx)
MS bitmap (*.bmp)
GIF images (*.gif)
Animation formats
Macromedia Flash (*.fla)
Structured markup formats
XML (*xml)
Microsoft Office suite
PowerPoint (.ppt)
Word (.doc)
Excel (.xls)
Visio (.vsd)
Project (.mpp)
Text formats
Comma Separated Values (.csv)
PDF (.pdf)
Rich text format (.rtf)
Text document (.txt)

Unit B231/1A Study of a Manufactured Product

Candidates should select one of the following products as a starting point for the Controlled Assessment project, Unit B231 1A Study of a Manufactured Product. When analysing the product they will need to identify two similar products that have been subsequently developed using modern technology.

1940s Bakelite telephone	1940s Bicycle	1920s Domestic oven
1940s Sewing machine	1940s Hairdryer	1920s Electric cooker
1950s Camera	1950s Milk bottle	1920s Kettle
1950s Electric toaster	1950s Radio	1940s Television
1950s Glass bottle	1990s Personal computers	1950s Washing machine
1960s Austin Mini	1960s Newspaper	1970s Walkman
1950s Footwear	1950s Vacuum cleaner	1980s Games machine
1960s Child's book	1960s Crash helmet	1950s Waterproof clothing
1940s Tent	1940s Rucksack	1950s Foot mixer/processor
1940s Protective clothing for emergency service personnel		

Unit B231/1B Making a Manufactured Product

Candidates must select one of the following client design briefs as a starting point for the Controlled Assessment project, Unit B231 1B Manufacturing a Product. Through investigating the brief candidates can devise their own starting point.

A local company has identified that there is a need for a greater choice in the market on items that are used for storage around the home.

Children are fascinated by hand puppets, and there is a need (in the market) for new ideas to be introduced.

New items are always required for home decoration. A local store would like to enhance its current range of cushions.

Pizzas are a popular food. New varieties with different toppings and bases are always required by local fast food outlets.

The gift shop of a local attraction would like to introduce a range of items that help to advertise the establishment including hats, bags and badges.

New ready meals are required on the market to offer a greater variety of choice and provide nourishment to elderly people.

A new breakfast bar is required to encourage busy people to eat in the morning.

The school canteen would like to develop and introduce a new range of healthy meals at lunchtime.

A school would like a new brochure to help promote it to new students.

A local company required a range of promotional items to improve sales.

A local charity would like to introduce collecting boxes for donations from the general public.

New ways of encouraging visitors to a local restaurant's ice cream factory.

A local establishment would like to introduce confectionery packaging that would appeal to the children and help promote the outlet.

A local hotel would like to use a range of items to promote its image.

A local hotel needs a new range of packaging for toiletry items in the guest rooms.

A new product is to be introduced on to the market and needs to be advertised using a point of sale that can be used on a shop counter and will attract possible customers' attention.

Car security is becoming a great concern and a novel type of car alarm is required.

A local company would like to review their current image and produce a promotional pack to help progress of the review.

Teenagers are always interested in new items of fashion clothing and a local retail outlet is eager to introduce new ideas.

A local retail outlet would like to introduce new items of clothing that will be suitable for young children.

Unit B233/3A Real World Manufacturing

Armchair	Fizzy lemonade	Pop-up greeting cards
Alarm clock	Freeze dried vegetables	Power drill
Aluminium saucepan	Granulated sugar	Quick chill meal
Artificial limb	Greenhouse	Roller blades
Bicycle brake	High heel shoe	Saccharin tablets
Calculators	House brick	Shirt
Carpeting	MP3/4 player	Soap
Child's plastic toy	Kitchen cabinet	Spectacles
Christmas cake	Lamp post	Stainless steel-tea pot
Climbing frame	Leather boots	Tea bags
Computer mouse	Lemonade bottle	Tent
Coffee granules	Mobile phone	Tumble dryer
Custard powder	Motor car	uPVC window
Denim jeans	Motor car engine	Walking frame
Domestic iron	Nurses' uniform	Washing machine
Electric kettle	Overcoat	Wheelbarrow
Electric plug top	Perfume bottle	Wheelie bin
Electric toaster	Plumbing fitting	Wristwatch
Car seat covers	Protective packaging	Dinner plate
Storage units	Curtains	Disposable nappy
Sports footwear	Laminator	Thermal building block

Unit B233/3B Making a Manufactured Product

Candidates must select one of the following products as a starting point for the activity. Through investigating the product, candidates, working in teams, can devise their own particular starting point.

Alloy wheels	Garden storage system	Photograph frame
Apron	Garden tool	Picnic meal
Automatic night light	Glove puppet	Pizza
Bird cage	Greeting card	Point of Sale display
Board-game	Flight meal	Puppet
Card holder	Jewellery storage	Puzzle
Child's toy	Lamp	Rabbit hutch
Festive decoration	Makeup bag	Rabbit hutch alarm
Clock	Makeup storage system	Security-light
Clothes peg storage	Mechanical lock	Shoe-storage
Cushion	Menu holder	Stationery storage
DVD storage	Moisture sensor	Steady hand game
Ear muffs	Night light	Stool
Egg timer	Nightwear case	Telephone table
Electronic display	Novelty hat	Toy
Energy rations for a walker	Oven glove	Wakeup alarm
Fairy cakes	Pencil storage	Jewellery
Games storage system	Solar light	House plant turntable
Greenhouse window operator	Plant watering system	Mobile phone holder
Animal carrying cage	Cupcake holder	Wind turbine

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✔ Book your inset training place online at **www.ocreventbooker.org.uk**

✔ Learn more about active results at **www.ocr.org.uk/activeresults**

✔ Join our manufacturing social network community for teachers at **www.social.ocr.org.uk**

NEED MORE HELP?

Here's how to contact us for specialist advice:

Phone: **01223 553998**

Email: **general.qualifications@ocr.org.uk**

Online: **http://answers.ocr.org.uk**

Fax: **01223 552627**

Post: **Customer Contact Centre, OCR, Progress House, Westwood Business Park, Coventry CV4 8JQ**

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