



Manufacturing

GCSE 2012

Manufacturing

Teachers' Handbook

J505/J510

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Introduction

OCR's GCSE in Engineering entered first teaching in September 2009.

We have improved the quality of our GCSEs for teachers and students alike. We've made improvements in two key areas: updated and relevant content and a focus on developing students' personal, learning and thinking skills.

In addition and in response to reforms announced by the Government and in response to Ofqual mandated changes to GCSEs, unitised assessment of this qualification is being replaced by linear assessment from September 2012. This means that candidates commencing a two year course from September 2012 will take all of their GCSE units at the end of the course in June 2014.

The main changes are:

- Controlled assessment and examinations will be summative
- Examinations provide opportunity for extended writing and more varied question types
- All GCSEs will meet the requirements of the Equality Act.

OCR offers a range of support materials, developed following extensive research and consultation with teachers. We've designed them to save you time when preparing for the specification and to support you while teaching them.

It is important to make the point that this Teacher Handbook plays a secondary role to the specifications themselves. The GCSE Manufacturing specification is the document on which assessment is based: it specifies what content and skills need to be covered. At all times therefore, the Teacher Handbook should be read in conjunction with the Specification. If clarification on a particular point is sought, then that clarification must be found in the Specification itself.

Subject specific guidance

Unit B232: Manufacturing Processes

1 hour written examination.

The examination will include a range of different styles of questions and will be designed for students of all abilities. It will require candidates to demonstrate an understanding of the practical application of knowledge related to products and manufacturing environments they have studied. An example of typical question styles that will be employed is listed below.

Example 1

Questions where the candidate is asked to match things together:

For each product listed below select the correct sector.

Sectors:

Chemical and Pharmaceutical

Clothing and Textiles

Motor manufacturing

Food and Drink

Furniture

Machinery and Equipment

Packaging

Electronic and Communications

Product:

Mobile phone

Biofuel

Egg box

Corporate wear

Lawnmower

Mirror

Pizza

Example 2

Questions where the candidate is asked to provide short, open ended answers to questions relating to areas they have studied.

Describe **two** ways to protect production workers from injury when manufacturing products.

Example 3

Questions that require candidates to place things in the correct order:

Complete the box below ('Manufacturing stages in correct order') by selecting the stages of manufacture in the correct order from the bulleted list.

Stages of Manufacture:

- Packaging
- Material supply and control
- Despatch
- Processing and production

Manufacturing stages in correct order:

Production planning

.....

.....

Assembly

Finishing

.....

.....

Example 4

Longer, open-ended questions that require the candidate to discuss and/or compare, giving reasons and justification:

Discuss how ICT can be used for communication when designing a manufactured product.

Describe **one** way you could research existing products to find out about manufacturing processes used in their production.

Example 5

Questions relating to specific products from an area the candidate has studied:

Tick **one** of the following products which you will use to answer the following questions.

- Mobile phone casing
- Biofuel
- Burger packaging
- Corporate wear shirt or blouse
- Rotary lawnmower body
- Mirror surface
- Sports drink
- Electric kettle body
- Birthday card
- Car door

For the selected product name one **material** from which it is made:

For the material chosen, name the **form** in which it is supplied.

Describe why using materials in their standard market form is important to manufacturers

Unit B234: Impact of modern technologies on Manufacturing

1 hour written examination.

The examination will include a range of different styles of questions and will be designed for students of all abilities. It will require candidates to demonstrate an understanding of the 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. An example of typical question styles that will be employed is listed below.

Example 1

Questions where the candidate is asked to match things together:

For each products listed below select the correct sector they are manufactured in.

Sectors:

Chemical and Pharmaceutical

Clothing and Textiles

Motor manufacturing

Food and Drink

Furniture

Machinery and Equipment

Packaging

Electronic and

Communications

Products:

Gluten free ready meal

Lipstick

Outdoor sportswear

Touch screen

Vacuum cleaner

Sandwich carton

Child's cot

Example 2

Questions where the candidate is asked to provide short, open ended answers to questions relating to areas they have studied.

Describe **two** features of a product you have studied that show it has been designed for manufacturing assembly.

Name of product 1:

Name of product 1:

Example 3

Questions that require candidates to select issues according to their importance:

Tick the **two** most important issues to consider when deciding whether to buy in pre-processed materials rather than to process them on site.

- Marketing
- Packaging costs
- Space requirements
- Machinery costs
- Material properties
- Assembly methods
- Quality

Example 4

Longer, open-ended questions that require the candidate to discuss and/or compare, giving reasons and justification:

Discuss the importance of Just In Time (JIT) in reducing costs and improving manufacturing efficiency.

Discuss how and why production plans may need to be modified following a new product launch.

Resources

Useful Reference Books

Askin, Ronald D and Standridge, Charles R (1993) *Modeling and Analysis of Manufacturing Systems* John Wiley & Sons 0471514187

Bickerstaffe, Jane (1993) *About Packaging (Finding Out...)* Hobsons Publishing PLC 1853247383

Cushing, Steven (2004) *GCSE Manufacturing* Hodder & Stoughton Ltd 0340814098

Dept. for Education and Skills Great Britain and Centre for Education and Industry University of Warwick (2005) *Manufacturing: Support Materials for Gcses in Vocational Subjects* Department for Education and Skills 1845721098

Cresswell, Lesley (2001) *Textiles at the Cutting Edge* Forbes Publications 1899527176

Godfrey, Neil and Wallis, Steve (2005) *GCSE Manufacturing* Nelson Thomas 0748793747

Griffiths, Brian (2002) *Engineering Drawing for Manufacture* Butterworth-Heinemann 185718033X

Hannam, Roger (1997) *Computer Integrated Manufacturing: From Concepts to Realisation* Addison Wesley 0201175460

Hill, John (2009) *OCR Manufacturing for GCSE (CD Rom)* Hodder Arnold 0340985097

Jones, G. (1990) *Finding Out About Textiles* Nelson Thornes Ltd 0748701796

Knapp, Brian (2002) *World Industry and Making Goods (World Geography)* Atlantic Europe Publishing Co Ltd 1869860632

Lifetime Careers (1997) *Manufacturing and Production (Just the job!)* Hodder Arnold H&S 0340687886

Ridgwell, Jenny and Smith, David (1996) *Food Product Development: Scones* Ridwell Press 190115100X

Timings, Roger (2000) *Basic Manufacturing* Newnes 0750648805

Useful Websites

<http://virtualskies.arc.nasa.gov/research/youDecide/smartMaterials.html>

www.berr.gov.uk/whatwedo/sectors/manufacturing/index.html

www.bola.biz/quality/pfc.html

www.emsstrategies.com/dm090203article2.html

www.advancedmanufacturing.com/

www.dtonline.org (Manufactured Products)

Manufacturing Resources, LSDA,
www.vocationallearning.org.uk/teachers/subjectspecific/KS4/manufacturing.asp

www.ciwem.org.uk/publications/risk.asp (Risk assessment, Chartered Institute of Water and Environmental Management: Risk Assessments for Environmental Professionals)

<http://gcsemanufacturing.com/default.aspx>, (SEMTA)

www.rewardinglearning.org.uk/microsites/manufacturing/index.asp

Useful General Material

OCR Website, www.ocr.org.uk

OCR micro-site, www.gcsechanges.com

Customer Contact Centre (General) Tel: 01223 553998 Fax: 01223 552627

www.gcseinManufacturing.com

www.bbc.co.uk/schools/gcsebitesize/, (Revision Guide)

Other forms of Support

In order to help you implement the new GCSE Manufacturing Specification effectively, OCR offers a comprehensive package of support. This includes:

Professional Development

The 2012-13 OCR Professional Development Programme offers more accessible and more cost effective training, with the same valued content that you expect from us.

At OCR, we are constantly looking for ways in which we can improve the support we offer to teachers. Most recently we have been considering the increasing challenges that schools face in releasing teachers for INSET, and how OCR can make its professional development programme more accessible and convenient for all.

From September 2012, our new improved programme will include:

- FREE online professional development units available when and where you want them
- FREE live web broadcasts of professional development events
- FREE face to face training for GCSE controlled assessment and GCE coursework
- A series of 'not to be missed' premier professional development events.

For more information, please email training@ocr.org.uk or visit www.ocr.org.uk/training.

OCR Social

Visit our social media site (<http://www.social.ocr.org.uk>). By registering you will have free access to a dedicated platform where teachers can engage with each other - and OCR - to share best practice, offer guidance and access a range of support materials produced by other teachers; such as lesson plans, presentations, videos and links to other helpful sites.

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 <https://interchange.ocr.org.uk>

Frequently Asked Questions

When can controlled assessment tasks be undertaken by learners?

Controlled assessment tasks may still be undertaken at any point between release of the task by OCR and the examination series for which the task must be submitted. Each controlled assessment task will be valid for submission in a single examination series only. **Centres must ensure that candidates undertake a task that is valid for submission in the year in which the candidate intends to submit it.**

The series in which each task can be submitted will be clearly marked on the front cover of each task. Tasks will not be valid for submission in any examination series other than that indicated.

Tasks for the controlled assessment will be made available on OCR Interchange, ahead of the examination series for which the tasks are to be submitted. These will be removed upon expiry. Guidance on how to access controlled assessment tasks from OCR Interchange is available on the OCR website: www.ocr.org.uk.

Can a candidate carry forwards controlled assessment results if they are retaking the qualification?

Yes they can.

What are the dates in which the controlled assessments can be taken?

Controlled Assessment is a form of internal assessment and as such there isn't a specified date in which controlled assessment has to be taken.

It is up to the centre to decide when controlled assessment will be taken: guidance on this can be found in Section 4: Controlled Assessment of revised GCSE Specifications (first teaching in September 2012).

When can teachers and candidates access the material?

Controlled Assessment tasks is available on OCR Interchange (ocr.org.uk/interchange). Tasks will be reviewed every two years. It is the responsibility of centres to make sure that candidates are submitting tasks from the approved list.

Where can the Mark Schemes be accessed?

Mark Schemes are included in the specifications and can also be accessed from the OCR website:

Do we have to take the controlled assessment under teacher supervision?

Yes, but only for task taking, i.e. the last part of controlled assessment when candidates are producing their final piece of work – note that this can be over more than one supervised session. More guidance on this can be found in Section 4: Controlled Assessment of all revised GCSE Specifications.

B321 1A/B: Study of a Manufactured Product and Manufacturing a Product

Can I make anything I like?

No, you have to respond to one of the given Customer Design Briefs provided by OCR. You select a brief, come up with a solution and then make the solution.

Can I make what someone else has designed?

No. You have to come up with the idea or solution yourself.

Can I make it and then do the folio?

No. you have to do things in the correct order. If you don't then you will not be able to gain all the marks available.

How do I know what I have to do to get good marks?

Your teacher will explain everything as you go along. Also the "Assessment Criteria" is printed in the specification on page 58

Can I submit part 1A of this unit at a different time to part 1B?

No, you have to submit them both at the same time.

Can I link part 1A of this unit to part 1B of this unit?

Yes. But it will depend on the product you look at for part 1A and the customer brief you select in Part 1B.

Can I do work at home for this unit?

Yes and No. All the work you **submit for assessment** has to be undertaken in what is called "Controlled Conditions". This means your teacher should supervise you for all of your work that you submit for assessment. However, there is nothing to stop you practicing at home and improving your skills so that when you do them with your teacher they are the best you can possibly achieve.

Can I take as long as I like making something?

No, there is a time limit to your Controlled Assessment for this unit and it is suggested that you spend about 6 hours on part 1A and 14 on part 1B

Will I have homework to do?

Yes. Homework is a very effective way of helping to learn and remember things.

Can I do homework as part of my folio?

No homework is great but only to support your learning. It cannot be submitted as evidence for your assessment.

Can I work as part of a team and make something jointly with my friend.

Yes and No. You must have your own folio containing your own evidence of designing, making and evaluation for the work you submit for assessment.

But, your teacher may allow you to undertake group work or work in pairs during your course on work which is **not** submitted for assessment.

Will I have every lesson to do the folio work?

No. There is a strict time limit set and you must not exceed this. You might do it bit by bit so that it spans a period of time but your actual working time is limited to 20 hours for this unit and around 14 hours for B1.

Can I get help from my parents?

Yes. You can always ask your parents to explain and show you things **but** the work you submit for assessment must be all your own.

Can my folio be done using ICT?

Yes. There are several ways you can do this and your teacher will explain them all to you.

Can I share work with other people?

A difficult one. Sharing when you are learning is really important and a brilliant thing to do. You can explain things to others and also learn from them **but** you cannot share anything when you are doing your controlled assessment. Your folio that has your designing, evidence of your making and your evaluation in it has to be your very own work.

What if someone copies my work?

You need to be very careful about letting anyone copy your work. It can be difficult to decide who's work is the original work and both of you could be penalised.

Will I have chance to practise things before I do my designing and making?

Yes. The “Controlled Assessment” is only a small part of your Manufacturing course. You will be given lots of new information, shown new skills and be able to practice them before you start your folio.

What is “Controlled Assessment”?

Controlled Assessment used to be called coursework and is really much the same. However there are now tighter “controls” on the work you do and the evidence you submit to OCR for assessment.

Will candidates be able to re-enter units?

Yes. Controlled assessment units can be carried forward with the moderator mark from one session to the next i.e. June 2014 to June 2015. There is a separate ‘carry over’ code to re-enter the unit.

What is coursework?

Coursework has changed its name and the rules are much tighter now. You still do the work “during your course” but the way in which you do it has to be “controlled” more tightly now and so it is called “Controlled Assessment”

I’m doing the Single Award GCSE Manufacturing - can I do B231 and B234?

No. If you are just doing the single award you must do B231 and B232.

I am doing the Double Award in Manufacturing - can I do B234 first?

Yes. You can do the units in any order **but** you must be entered for at least **two** of them at the end of your course.

I am doing Engineering and Manufacturing can I submit the same work for both.

No. Apart from B231A, all the units are so different anyway that the work would not be suitable for assessment for a different qualification. But even if some bits were suitable you are not allowed to submit it for two different qualifications.

If you do the 1st unit A621A and A 621B Engineering and B231 1A and B231 1B Manufacturing you **must** choose different products and customer briefs.

What does “Plagiarism” mean?

Plagiarism is when work is copied from someone else or from another source for example the internet. If you submit work which has been plagiarised you could get disqualified from the Manufacturing examination completely. In serious cases you could be disqualified from **all** of your GCSE examinations.

If I needed some welding done and my school does not have the facilities can I get it done elsewhere?

Yes. This often happens **but** you must declare this very clearly in your portfolio giving full details of what has been done and by whom. You cannot be given credit for the welding (or any other process in similar circumstances) and must not expect it. But it may enable you to get the other parts of your making completed.

I am not very good at finishing things off. Will I fail if my product is not finished?

No. Not necessarily. You will gain some credit but you will obviously not gain as many marks for incomplete work.

What happens if I am ill and cannot complete my folio?

If you are seriously ill and have a doctor's note the examination boards have different procedures to take this into account and you could still get your qualification. But if you just miss time from school or don't turn up to lessons that will not count and you will lose out.

What happens if I change schools during my course?

Your work can be submitted by your new school even if they do not teach OCR Manufacturing. You will need to make sure that your new school knows the details of the specification you have been studying and that they have proof that all the work is your own. Your teacher from your old school would normally send your work to your new school with a covering note.

I started studying for the Double Award but I have fallen behind. Can I be entered for the Single Award instead?

Yes. This is possible providing you have work for B231A and B231B and take the written examination B232. None of the work you have done for B233 or B234 will be of use to you if this happens.

B232/B234: Manufacturing Processes and the Impact of Modern Technologies on Manufacturing

How do I know what I have to do to get good marks?

Your teacher will explain everything as you go along. Good general advice is to always ensure you carefully read the examination question and make sure you answer what is being asked for.

Can I do work at home for this unit?

Yes. In fact you may well do much better in the final examination if you spend some time at home carefully reading through what you have been taught.

How many examinations will I have to do?

You will have to sit one examination for the single Award and two examinations for the Double Award.

How long is the exam

Each examination lasts 1 hour.

Will I have homework to do?

Yes. Homework is a very effective way of helping to learn and remember things.

Can I get help from my parents?

Yes. You can always ask your parents to explain and show you things

Can my folio be done using ICT?

Yes. There are several ways you can do this and your teacher will explain them all to you.

What is the “Computer Based Test”?

Instead of sitting a written paper you can do the examination on-line. Your teacher will be able to explain more about this and will be able to tell you if your school has the facilities to allow you to take the exam in this way.

Will candidates be able to re-enter units?

Yes. Controlled assessment units can be carried forward with the moderator mark from one session to the next i.e. June 2014 to June 2015. There is a separate ‘carry over’ code to re-enter the unit.

I'm doing the Single Award GCSE Manufacturing - can I do B231 and B234?

No. If you are just doing the single award you must do B231 and B232.

I am doing the Double Award in Manufacturing - can I do B234 first?

Yes. You can do the units in any order **but** you must be entered for at least **two** of them at the end of your course.

What happens if I am ill and cannot take the exam?

If you are seriously ill and have a doctor's note the examination boards have different procedures to take this into account and you could still get your qualification. But if you just miss time from school or don't turn up to lessons that will not count and you will lose out.

What happens if I change schools during my course?

You can be entered for the exam by your new school even if they do not teach OCR Manufacturing. You will need to make sure that your new school knows the details of the specification you have been studying. Your teacher from your old school would normally send your work to your new school with a covering note.

I started studying for the Double Award but I have fallen behind. Can I be entered for the Single Award instead?

Yes. This is possible providing you have work for B231A and B231B and take the written examination B232. None of the work you have done for B233 or B234 will count if this happens.

How much should I write for each question?

It is not possible to give an exact answer for this. Generally speaking, the amount you write should be based on the marks available. These are shown in [square brackets] at the end of the question.

Will I lose marks for bad spelling?

You must make sure that your spelling, punctuation and grammar is accurate so that the meaning is clear. However, you will not lose marks for small spelling errors that do not affect the meaning of your answer.

Manufacturing J510: Study of a Manufactured Product and Manufacturing a Product B233 A/B

Can I make anything I like?

No, you have to respond to one of the given Products from a list provided by OCR. In a team, you select a product and produce a batch of finished items.

Can I make what someone else has designed?

No. You have to come up with the idea or solution yourself.

Can I make it and then do the folio?

No. you have to do things in the correct order. If you don't then you will not be able to gain all the marks available.

How do I know what I have to do to get good marks?

Your teacher will explain everything as you go along. Also the "Assessment Criteria" is printed in the specification on pages 59 and 60

Can I submit part 1A of this unit at a different time to part 1B?

No, you have to submit them both at the same time.

Can I link part 1A of this unit to part 1B of this unit?

Yes. But it will depend on the product you look at for part 1A and the customer brief you select in Part 1B.

Can I do work at home for this unit?

Yes and No. All the work you **submit for assessment** has to be undertaken in what is called "Controlled Conditions". This means your teacher should supervise you for all of your work that you submit for assessment. However, there is nothing to stop you practicing at home and improving your skills so that when you do them with your teacher they are the best you can possibly achieve.

Can I take as long as I like making something?

No, there is a time limit to your Controlled Assessment for this unit and it is suggested that you spend about 6 hours on part A and 14 on part B

Will I have homework to do?

Yes. Homework is a very effective way of helping to learn and remember things.

Can I do homework as part of my folio?

No homework is great but only to support your learning. It cannot be submitted as evidence for your assessment.

Can I work as part of a team and make something jointly with my friend.

Yes and No. You must have your own folio containing your own evidence of what you did in the team. Further details are on page 60 of the specification. However, 233B requires you to work in a team to produce a batch of items so you must also show how you can work well with others.

Will I have every lesson to do the folio work?

No. There is a strict time limit set and you must not exceed this. You might do it bit by bit so that it spans a period of time but your actual working time is limited to 20 hours for this unit and around 14 hours for B1.

Can I get help from my parents?

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Can I share work with other people?

Sharing when you are learning is really important and a brilliant thing to do. You can explain things to others and also learn from them. Your folio has to be your very own work but you will be expected to share ideas with your team members when planning and monitoring the batch production work.

What if someone copies my work?

You need to be very careful about letting anyone copy your work. It can be difficult to decide who's work is the original work and both of you could be penalised.

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I started studying for the Double Award but I have fallen behind. Can I be entered for the Single Award instead?

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