

Engineering

GCSE 2012

Engineering

Teachers' Handbook

J322/J344

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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 Teachers' Handbook plays a secondary role to the specifications themselves. The GCSE Engineering specification is the document on which assessment is based: it specifies what content and skills need to be covered. At all times therefore, the Teachers' 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 A622: Engineering 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 engineering 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 Processes

Computers, Communication and ICT

Medical and pharmaceutical

Automotive

Product:

Mobile phone

Wheel

Touch Screen TV

Example 2

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

Describe **two** different safety precautions you should take when operating a pillar drill

Precaution 1.....

Precaution 2.....

Example 3

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

Tick two items of personal protective equipment (PPE) to be used when operating a machine tool

- Goggles
- Gloves
- Apron
- Safety Helmet
- Ear plugs
- Hair Net

Example 4

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

Discuss the use of modern technologies on engineered products.

Discuss the importance of client feedback.

Unit A624: Impact of modern technologies on Engineering

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 engineering 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 in which it is made.

Sectors:

Chemical and Processes

Computers, Communication and ICT

Medical and pharmaceutical

Automotive

Product:

Mobile phone

Wheel

Touch Screen TV

Example 2

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

Describe **two** benefits of computer aided design (CAD).

Benefit 1:

Benefit 2:

Example 3

Questions that require candidates to analyse information and answer questions.

The chart shows the amount of waste produced when engineering a product. Tick the correct answer to show whether each of the following statements are true.

More waste comes from design than production

More waste comes from distribution than design


More waste comes from production than from use

Example 4

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

Discuss the use of CAD when designing engineered products.

Discuss the need for effective personal protective equipment (PPE) in an engineering environment.



Resources

Useful Reference Books

Dept. for Education and Skills Great Britain and Centre for Education and Industry University of Warwick (2005) Engineering for Education and Skills 1845721098

Engineering GCSE by Mike Tooley BA; Advanced Technological and Higher National Certificates Kingston University (Paperback - 18 May 2005)

Engineering GCSE Curriculum Support Pack by Mike Tooley BA; Advanced Technological and Higher National Certificates Kingston University (Ring-bound - 23 Dec 2003)

GCSE Engineering by Steve Wallis and Neil Godfrey (Paperback - 27 Sep 2004)

GCSE Engineering by Steve Cushing (Paperback - 29 Oct 2004)

OCR Engineering for GCSE by John Hill (CD-ROM - 26 Jun 2009)

Hodder Education Design & Technology ISBN 978-0-340-96634-1

www.engineering.com/Videos/tabid/4624/Default.aspx

www.mechanicalengineering.tv/

<http://videos.howstuffworks.com/science/engineering-videos.htm>

www.teachers.tv/engineering

Other useful Websites

www.engsc.ac.uk/er/index.asp

www.raeng.org.uk/education/default.htm

www.engineeringtoolbox.com

www.gcseinengineering.com

www.youngeng.org

www.semta.org.uk

www.ccea.org.uk/engineering

Engineering Resources, LSDA,
www.excellencegateway.org.uk/page.aspx?o=131338

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

Other forms of Support

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

Published Resources

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

Publisher partners

OCR works in close collaboration with three Publisher Partners; Hodder Education, Heinemann and Oxford University Press (OUP) to ensure centres have access to:

- Better published support, available when you need it, tailored to OCR specifications
- Quality resources produced in consultation with OCR subject teams, which are linked to OCR's teacher support materials
- More resources for specifications with lower candidate entries
- Materials that are subject to a thorough quality assurance process to achieve endorsement

Hodder Education is the publisher partner for OCR GCSE Engineering.



Approved Publications

OCR still endorses other publisher materials, which undergo a thorough quality assurance process to achieve endorsement. By offering a choice of endorsed materials, centres can be assured of quality support for all OCR qualifications.



Endorsement

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. Any resource lists which are produced by OCR shall include a range of appropriate texts.

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.

e-Communities

Over 70 e-Communities offer you a fast, dynamic communication channel to make contact with other subject specialists. Our online mailing list covers a wide range of subjects and enables you to share knowledge and views via email.

Visit <http://www.ocr.org.uk/ecomunities/>, choose your community and join the discussion!

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>

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.

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.

Are materials sent based on estimated entries or can we download from Interchange?

Tasks will only be available as downloads from Interchange: they will not be sent to centres.

Do we mark them or do OCR?

Controlled assessment tasks for ALL subjects are internally marked by centres and externally moderated by OCR.

Can I make anything I like?

No, you have to respond to one of the given Customer Design Briefs provided by OCR.

Can I make what someone else has designed?

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

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?

All the work you **submit for assessment** has to be under “Controlled Conditions”. This means your teacher should supervise you for all submit work for assessment. There is nothing to stop you practising 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 six hours on part 1A and 14 on part 1B

Can I do work at home as part of my assessment?

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.

You must have your own folio containing your own evidence of designing, making and evaluation for the work you submit for assessment.

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 be under assessment conditions every lesson?

Each task should be completed in approximately 20 hours, although this can be spread over a period of time. Candidates should spend 6 hours on part A and 14 hours on part B for both A621 and A623.

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 assessment 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?

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 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 whose 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 Engineering course. You will be given lots of new information, shown new skills and be able to practise them before you start your folio.

I’m doing the Single Award GCSE Engineering Liner 2012 - can I do A621 and A624?

No. If you are just doing the single award you must do A621 and A622.

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

No. Apart from B231 1A, all the units are different, the work would not be suitable for assessment for a different qualification. You are not allowed to submit it for two different qualifications.

If you do the first unit A621 1A and A621 1B 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 course?

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 Engineering. 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.

Contact us

Keep up to date with the latest news by registering to receive e-alerts at www.ocr.org.uk/updates

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