

teacher's handbook

Version 3 March 2010

GCSE

Design and Technology: Industrial Technology

J304 – Full Course
J044 – Short Course

This handbook is designed to accompany the OCR GCSE Design and Technology: Industrial Technology specification for teaching from September 2009. This booklet contains the following support materials:

- Subject specific guidance
- Resource list
- Publisher partner resources
- Frequently asked questions
- Other forms of support.

OCR GCSE
**DESIGN AND
TECHNOLOGY**

www.ocr.org.uk/industrialtechnology/newgcse
www.ocr.org.uk/industrialtechnology/newgcse/sc
www.ocr.org.uk/innovatorsuite/newgcse

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Introduction

OCR is offering new GCSEs for first teaching in September 2009.

We've taken this opportunity to improve the quality of our GCSEs for teachers and students alike.

We've made improvements in three key areas: updated and relevant content, a focus on developing students personal, learning and thinking skills, and flexible assessment, so you can choose the best learning approach for the job.

We want to make the introduction of these new GCSEs as easy for you to manage as possible.

The main changes are :

- Controlled assessment will be introduced for most subjects
- The opportunity will be taken to bring course content up to date
- Examinations should provide opportunity for extended writing and more varied question types
- All GCSEs will meet the requirements of the Disability Discrimination Act.

Our approach is to provide consistency across all our GCSEs by offering the flexibility that unitised qualifications bring, allowing teaching and assessment to be of either a linear or unitised fashion.

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 new 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 Design & Technology: Industrial Technology 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

This document is to support delivery of GCSE Design Technology: Industrial Technology - J304 and GCSE (Short course) Design and Technology: Industrial Technology - J044.

It is hoped it will be useful in planning the delivery, teaching, learning and assessment opportunities.

There are four units available for Design and Technology: Industrial Technology. They are:

- Unit A541: Introduction to designing and making
- Unit A542: Sustainable design
- Unit A543: Making quality products
- Unit A544: Technical aspects of designing and making

For full course GCSE, candidates must follow all four units.

For short course candidates only take units A541 and A542.

These are suggestions to show how the subject might be delivered. They are a snap shot of the breadth and range of learning opportunities that could be developed in this subject area. They could be used as a starting point for developing inspiring and innovative courses that meet the needs of students.

Unit A542: Sustainable design

This unit of the GCSE course aims to develop your knowledge and understanding of sustainability, environmental concerns, cultural, moral and social issues. You will work through this unit in your chosen subject/material area of

- Industrial Technology

You will look at how design and technology has evolved through product analysis of products from the past and the present within your specialist subject area.

You will need to consider how future designs/ products will impact on the world in which we live. By looking at old and new products you will gain awareness and understanding of trends and innovations in design and manufacture, labeling, packaging and the impact that the design of such products is having on the environment, society and the economy.

Moral, cultural, economic, environmental and sustainability issues are inherent in design and technology.

Through this unit you will be able to answer some of the following questions:

- What is meant by a 'product life cycle'?
- Why were certain materials chosen and used?
- What is meant by planned obsolescence?
- What do we mean by the 6 R's?
- What can we do to ensure eventual disposal of products/ materials is as eco friendly as possible?

These are just some of the key questions that you should be able to answer.

The assessment of this unit is through an externally set and marked test:

- This assessment unit can be taken in either January or June examination series.
- It represents 20% of a full GCSE qualification or 40% of a short course qualification.
- The maximum mark for the unit is 60.
- The duration of the examination is 1 hour and the paper is divided into two sections.
- **Section A** consists of fifteen questions covering generic issues associated with sustainability, society, the economy and the environment.
- **Section B** consists of three questions which will require you to relate your knowledge and understanding of the '6R's', materials, processes and the design of products.
- Each part of a question has its mark value in brackets and as a general guide 1 mark would represent 1 correct statement, explanation, sketched feature or annotation.

Banded Mark Scheme

It is to be expected that in Section B of the paper two questions will require detailed written responses and will be answered through a banded mark scheme. Banded mark schemes do require a more detailed and technical answer that uses the correct subject specialist terminology and also takes into account the use of spelling, punctuation and grammar.

For example:

Level 1 (0-2 marks)

A basic analysis, showing some understanding. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive.

Level 2 (3-4 marks)

Adequate analysis, showing understanding. Candidates can provide a description using some specialist terminology 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, grammar and punctuation.

Level 3 (5-6 marks)

Thorough analysis, showing clear understanding. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate will demonstrate the accurate use of spelling, punctuation and grammar.

Unit A544: Technical Aspects of designing and making

Introduction to the Unit A544 assessment

The unit A544 examination is a 1 hour 15 minutes examination worth 20% of the GCSE full course marks. It is externally marked and is intended to be taken at the end of a two year course.

The paper consists of five questions that focus on the technical aspects of designing and making in Industrial Technology.

Section A

Section A consists of three questions based on the technical aspects of working with materials, tools and equipment.

Section B

Section B has two questions based on the design of products, reflecting the wider aspects of sustainability and human use. **One** of these questions will require a design response.

The maximum mark for this unit is 60.

Each question starts with easy parts and they get progressively more difficult. One of the questions will be marked with an asterisk (*). It will be marked on the quality of written communication using a banded mark scheme.

Assessment of this unit

This unit is assessed by an externally set and marked test that is available in January and June. The test is 75 minutes in length and is divided into sections A and B. Section A consists of three questions based on the technical aspects of working with tools and equipment. Section B consists of two questions on the design of products reflecting the wider aspects of sustainability and human use. One of these questions will require a design response.

Resources

<http://www.designcouncil.info/educationresources/studies/manufacturing.html>

<http://www.bbc.co.uk/schools/gcsebitesize/design/resistantmaterials/processindpracrev1.shtml>

<http://www.design-technology.org>

<http://www.data.org.uk/>

<http://www.designandtech.com/>

www.technologystudent.com

www.design-technology.info

<http://www.secondarydandt.org/>

Understanding Industrial Practices in Design and Technology: Resistant Materials Technology by Jet Mayor (ISBN - 9780748790210) published Nelson Thornes Ltd

GCSE Design and Technology Resistant Materials: Revision Guide (Design & Technology Revision) (Paperback) Richard Parsons ISBN 1841467928 Publisher: Coordination Group Publications Ltd

GCSE Design & Technology Revise Study Guide (Paperback) Rick Davis ISBN 1858059399 Publisher: Letts Educational.

Other forms of Support

In order to help you implement the new GCSE Design & Technology: Industrial Technology 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 Design and Technology: Industrial Technology.



Hodder Education is producing the following resources for OCR GCSE Design and Technology: Industrial Technology for first teaching in September 2009, which is available now.

OCR Industrial Technology for GCSE: Student's Book
David Carlson, Harry King, Steve Pinnock, Editor: Bob White
ISBN: 978 0340 98202 0
Published: 29/05/2009

OCR Design and Technology for GCSE Teachers Research DVD
Barbara Dinicol, Meryl Simpson
ISBN: 978 0340 991 213
Published: 26/06/2009

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.

OCR Training

A full range of training events provide valuable support, for the delivery and assessment of OCR qualifications:

Get Ready...

An overview of new OCR specifications

Get Started...

For teachers preparing to deliver or already delivering OCR specifications

Get Ahead...

For teachers wanting to improve delivery and assessment of a current OCR specification

Lead the way...

To encourage creativity and innovation

View up-to-date event details and make online bookings at www.ocreventbooker.org.uk or view our new training e-books at www.ocr.org.uk/training. If you are unable to find what you are looking for contact us by e-mail training@ocr.org.uk or telephone 02476 496398.

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 <https://community.ocr.org.uk>, 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 free access to candidate information at your convenience. Sign up at <https://interchange.ocr.org.uk>

Frequently Asked Questions

Unit A541: Introduction to designing and making

Is this a compulsory unit?

This unit is compulsory for a GCSE in Design and Technology: Industrial Technology (J304). It is also one of two units that must be studied for a GCSE (Short course) in Design and Technology: Industrial Technology (J044).

What is this unit worth?

This unit is worth 30% of the GCSE in Design and Technology: Industrial Technology (J304) qualification and 60% of the GCSE (Short course) in Design and Technology: Industrial Technology (J044).

What is the entry code for this unit?

The entry code for this unit is A541.

How is this unit assessed?

This unit is internally marked and externally moderated. Teachers should use the published marking criteria for Unit A541.

How should the design folders for unit A541 be presented?

Using a range of presentation skills, including CAD, digital photographs and traditional drawing skills.

Will candidates be able to re-sit the unit?

Yes. Candidates may re-sit this unit once before entering for certification for a GCSE or GCSE (Short course).

What is the difference between A541 and A543?

A541 should be a prototype that is capable of being tested. A543 should be a product manufactured in the intended materials and completed as a finished and operational product.

Is any teacher help or other help allowed?

The work should be that of the student. Teacher and other help should be acknowledged by the student in a bibliography and the teacher assessment should take into account external support for a student's work as appropriate.

Is there a text book for this unit?

Yes. The recommended text book is GCSE Design and Technology: Industrial Technology published by Hodder. This book covers all four units of the GCSE in Design and Technology: Industrial Technology (J304) qualification and the two units required for a GCSE (Short course) in Design and Technology: Industrial Technology (J044).

Is there training available for this unit?

Yes. OCR provide a full programme of training for Design and Technology: Industrial Technology (J304 and J044). Details are available on the OCR website.

Unit A542: Sustainable design

Is this a compulsory unit?

This unit is compulsory for a GCSE in Design and Technology: Industrial Technology (J304). It is also one of two units that must be studied for a GCSE (Short course) in Design and Technology: Industrial Technology (J044).

What is this unit worth?

This unit is worth 20% of the GCSE in Design and Technology: Industrial Technology (J304) qualification and 40% of the GCSE (Short course) in Design and Technology: Industrial Technology (J044) qualification.

What is the entry code for this unit?

The entry code for this unit is A542.

How is this unit assessed?

This unit is assessed by a 60 minute written test. The test is externally set and marked.

What is the structure of the test?

The test is divided into sections A and B. Section A consists of fifteen short answer questions. Section B consists of three questions requiring answers that may involve sketching, annotation, short sentences or more extended writing. Each of the section B questions is worth 15 marks.

Is the test tiered?

No. All candidates take the same test.

How many times can the test be taken?

This test can be taken twice, with the highest score counting towards the qualification.

Are exemplar test questions available?

Yes. Exemplar questions are available on the OCR website and past test papers will also be made available on the website.

Is there a text book for this unit?

Yes. The recommended text book is GCSE Design and Technology: Industrial Technology published by Hodder. This book covers all four units of the GCSE in Design and Technology: Industrial Technology (J304) qualification and the two units required for a GCSE (Short course) in Design and Technology: Industrial Technology (J044).

Is there training available for this unit?

Yes. OCR provide a full programme of training for Design and Technology: Industrial Technology (J304 and J044). Details are available on the OCR website.

Unit A543: Making quality products

Is this a compulsory unit?

This unit is compulsory for a GCSE in Design and Technology: Industrial Technology (J304). It **cannot** be taken as part of the GCSE (Short course) in Design and Technology: Industrial Technology (J044).

What is this unit worth?

This unit is worth 30% of the GCSE in Design and Technology: Industrial Technology (J304) qualification.

What is the entry code for this unit?

The entry code for this unit is A543.

How is this unit assessed?

This unit is assessed by a 20 hour controlled assessment task.

How should the design folders for unit A543 be presented?

Using a range of presentation skills, including CAD, digital photographs and traditional drawing skills.

Is this unit assessed by a visiting moderator?

No. Candidates are required to take a minimum of two clear photographs of the product, which must be included in the design folder. The moderator will then request a sample of folders. There is no moderation visit.

What is the difference between A541 and A543?

A541 should be a prototype that is capable of being tested. A543 should be a product manufactured in the intended materials and completed as a finished and operational product.

Is any teacher help or other help allowed?

The work should be that of the student. Teacher and other help should be acknowledged by the student in a bibliography and the teacher assessment should take into account external support for a student's work as appropriate.

Unit A544: Technical aspects of designing and making

Is this a compulsory unit?

This unit is compulsory for a GCSE in Design and Technology: Industrial Technology (J304). It **cannot** be taken as part of the GCSE (Short course) in Design and Technology: Industrial Technology (J044).

What is this unit worth?

This unit is worth 20% of the GCSE in Design and Technology: Industrial Technology (J304) qualification.

What is the entry code for this unit?

The entry code for this unit is A544.

How is this unit assessed?

This unit is assessed by a 75 minute test. The test is externally set and marked.

What is the structure of the test?

The test is divided into sections A and B. Section A consists of three questions based on the technical aspects of working with materials, tools and equipment. Section B consists of two questions on the design of products reflecting the wider aspects of sustainability and human use. One of these questions will require a design response. Each of the five questions is worth 12 marks.

Is the test tiered?

No. All candidates take the same test.

How many times can the test be taken?

This test can be taken twice, with the highest score counting towards the qualification.

Are exemplar test questions available?

Yes. Exemplar questions are available on the OCR website and past test papers will also be made available on the website.

Is there a text book for this unit?

Yes. The recommended text book is GCSE Design and Technology: Industrial Technology published by Hodder. This book covers all four units of the GCSE in Design and Technology: Industrial Technology (J304) qualification.

Is there training available for this unit?

Yes. OCR provide a full programme of training for GCSE in Design and Technology: Industrial Technology (J304). Details are available on the OCR website.

www.ocr.org.uk

OCR customer contact centre

General qualifications

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