

# teachers' handbook

Version 3 April 2010

## GCSE

### Design and Technology: Electronics and Control Systems

J301 – Full Course  
J041 – Short Course

This handbook is designed to accompany the OCR GCSE Design and Technology: Electronics and Control Systems 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/electronicsandcontrolsystems/newgcse](http://www.ocr.org.uk/electronicsandcontrolsystems/newgcse)  
[www.ocr.org.uk/electronicsandcontrolsystems/newgcse/sc](http://www.ocr.org.uk/electronicsandcontrolsystems/newgcse/sc)  
[www.ocr.org.uk/innovatorsuite/newgcse](http://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 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 and Technology: Electronics and Control Systems 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 designed to support delivery of GCSE Design and Technology: Electronic and Control Systems (J301) and GCSE (Short course) Design and Technology: Electronic and Control Systems (J041). We hope you will find it useful in planning your delivery and assessment opportunities.

There are four units available for Design and Technology: Electronic and Control Systems. They are:

- Unit A511: Introduction to designing and making
- Unit A512: Sustainable design
- Unit A513: Making quality products
- Unit A514: Technical aspects of designing and making

GCSE candidates must take all four units (in any order) whilst short course candidates can only take units A511 and A512 (in any order).

These documents do not seek to prescribe how the subject should be delivered. They merely seek to show the breadth and range of learning opportunities within this subject area. We hope centres will use these as a starting point for developing inspiring and innovative courses that meet the needs of their students.

## Unit A512: Sustainable design

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This unit aims to develop a candidate's knowledge and understanding of sustainability, environmental concerns, cultural, moral and social issues. Candidates will look at how Design and Technology has evolved through examination of the products from the past and present. Candidates need to consider how future designs will impact on the world in which we live. They will need to study examples of both old and new products in order that they gain awareness and understanding of recent trends and innovations in design and production, labelling, packaging and the impact that the design of such products is having on the environment, society and the economy.

Candidates will need to consider how future designs/ products will impact on the world in which we live. By looking at old and new products candidates 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 candidates 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 session.
- 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.

# Unit A514: Technical aspects of designing and making

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## Introduction to the Unit A514 assessment

The unit A514 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 Electronic and Control Systems.

## Section A

Section A consists of three questions based on aspects of working with tools and equipment.

## Section B

Section B has two questions on design with particular emphasis on sustainability and how products meet the needs of people. One of these questions will be design based.

The questions are each worth 12 marks, giving a total of 60 marks.

Each question starts with easy parts and they get progressively more difficult. Two of the questions will be marked with asterisk (\*). It will be marked on the quality of written communication called banded marking.

## 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 section 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.

Candidates will need a knowledge and understanding of:

- Designing and making quality manufactured products
- Planning production with consideration of the use of time and resources
- Performance characteristics of different materials including 'Smart' and modern
- Tools and equipment, including new technologies, used to make quality manufactured products

- Processes and techniques used to make quality manufactured products, both decorative and functional
- The impact that the use of graphic products has on the environment, including the need to consider sustainability
- Health and Safety issues.

# Resources

## Unit A511: Introduction to designing and making

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### For inspiration:

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*Design Secrets: Products* Rockport publications ISBN 1-56496-476-0

*Classics of design* Brown Ref Group ISBN 1 84044 101 1

*Designs of the times* Rolo Vision ISBN 12 88046 816 7

*The Dream catalog* Cassell ISBN 0 304 35903 3

*Century Makers* Weidenfield & Nicolson ISBN 0 297 82435 X

Alessi *The Dream Factory* Konemann ISBN 3 8290 1377 9

[http://en.wikipedia.org/wiki/Famous\\_industrial\\_designers](http://en.wikipedia.org/wiki/Famous_industrial_designers)

<http://directory.designer.am/>

### For technical knowledge and understanding:

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*Model making. Materials and Methods.* Crowood press ISBN 878 1 84787 0176

*Product Modelling* Oxford University Press ISBN 13 978 0198327615

*Materials* Roto Vision ISBN 978 2 940361 50 2

See also Unit 3 A513

## Unit A512: Sustainable design

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### Books

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*Electronics and Control Systems Technology for GCSE* Hodder Education ISBN 978 0340 98196 2  
This book has been specifically written to match this specification by principal examiners for GCSE



Design and Technology. Chapter 9 contains information relevant to this unit and is very highly recommended for all students.

*OCR design and Technology for A Level* Hodder Education ISBN 978 0340 96634 1

Although this book is aimed at GCE AS and A2 level, P108-139 is a very good section relevant to this unit of work. A very good resource for more able students.

*The Sustainability Handbook for Design & Technology Teachers* Practical Action Publishing  
ISBN 978-1- 85339-670-0  
An excellent teacher resource.

[www.practicalaction.org/?id=resources\\_catalogue](http://www.practicalaction.org/?id=resources_catalogue)

*Experimental Eco Design* Rotovision ISBN 2-88046-817-5

## DVD's and Films

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*Boulton-Hawker Films Ltd.* Combs Tannery, Stowmarket, IP14 2EN

*Design for sustainability* DVD and support notes

*Social and Ethical issues in Design and Technology* Design DVD and support notes

Both these titles include pupil worksheets which can be completed after students have watched the DVD's

## Websites

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[www.recyclezone.org.uk](http://www.recyclezone.org.uk)

[www.recycle-more.co.uk](http://www.recycle-more.co.uk)

[www.wasteonline.org.uk](http://www.wasteonline.org.uk)

[www.triad.org.uk](http://www.triad.org.uk)

[www.carbonfootprint.co.uk](http://www.carbonfootprint.co.uk)

[www.stepin.org.uk](http://www.stepin.org.uk)

[www.sda-uk.org](http://www.sda-uk.org)

[www.pumpkintv.co.uk](http://www.pumpkintv.co.uk)

## Unit A513: Making a quality product

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Education sites                      [www.stepin.org](http://www.stepin.org)  
printed teaching packs              [www.sda-uk.org](http://www.sda-uk.org)  
   [www.practicalaction.org/?id=resources\\_catalogue](http://www.practicalaction.org/?id=resources_catalogue)

Biothinking                              [www.biothinking.com](http://www.biothinking.com)

<http://www.design-technology.info/home.htm>

[www.design-council.org.uk](http://www.design-council.org.uk)

[www.designmuseum.org](http://www.designmuseum.org)

<http://www.24hourmuseum.org.uk/>

<http://tre.ngfl.gov.uk/>

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

[www.nmsi.ac.uk](http://www.nmsi.ac.uk)      national museums of science

<http://www.rapideducation.co.uk/>

<http://cpc.farnell.com/jsp/home/homepage.jsp>

<http://rswww.com>

<http://www.maplin.co.uk/>

<http://kitsrus.com/kits.html>      DIY electronic kits

<http://www.kre8.com/> versatile construction system

[http://www.robotbooks.com/Muscle\\_Wires.htm](http://www.robotbooks.com/Muscle_Wires.htm)

<http://www.nitinol.com/> smart wire manufacturer

<http://www.aeronutz.flyer.co.uk/>

<http://www.doctrionics.co.uk/>

[www.totalrobots.com](http://www.totalrobots.com)

[www.letoy.co.uk](http://www.letoy.co.uk)

[www.tep.org.uk](http://www.tep.org.uk)

[www.mutr.co.uk](http://www.mutr.co.uk)

<http://www.rev-ed.co.uk/>

<http://www.theiet.org/education/>

[www.secondarydandt.org](http://www.secondarydandt.org)

[www.marconiect.org](http://www.marconiect.org)

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

[www.ripmax.com](http://www.ripmax.com)

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## Books

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Electronics & Control Systems, Terry Bream and John Drury, Hodder Education

101 Red Hot D&T Starters, Louise T Davies, Letts ISBN 1 84419 059 5

The Sustainability Handbook for Design and Technology Teachers, Practical Action, ISBN 978 1 85339 670 0

Nuffield Design and Technology Product Design Resource Tasks, Longman, ISBN 0 582 29074 0

Collins Design and Technology Foundation Course – Resistant Materials, Systems & Control ISBN 0 00 327352 0

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## Unit A514: Technical aspects of designing and making

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### Books

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*Electronics and Control Systems for GCSE* Hodder Education ISBN 0 340 96634 1  
This book has been specifically written to match this specification by principal examiners for GCSE Design and Technology. Highly recommended for all students.

*OCR Design and Technology for A Level* Hodder Education ISBN 978 0340 96634 1  
Although this book is aimed at GCE AS and A2 level It does cover much of the content of this unit. A very good resource to use with the most able students.

*Design and Technology* Nelson ISBN 0-17-448277-9

### CD's, DVD's and Films

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*Tribal Education and Technology* 1-4 Portland Square, Bristol, BS2 8RR

*Zigzag Education* Unit 3 Greenway Business Centre, Doncaster Rd., Bristol, BS10 5PY

*Focus Educational Software Ltd.* PO Box 52, Truro, Cornwall, TR1 1ZJ

*Birchfield Interactive Ltd.* Room 55, The Media Centre, Freepost SWC 1643, Cardiff, CF5 6ZZ

*Classroom Video Ltd* St. Thomas Court, Thomas Lane, Bristol, BS1 6JG

### Photocopy Masters

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*P&I LTD* P.O. Box 62, Newton-le-willows, WA3 2RF

*Classroom resources Ltd.* PO Box 1489, Bristol, BS99 3Qj

# Other forms of Support

In order to help you implement the new GCSE Design and Technology: Electronics and Control Systems Specification effectively, OCR offers a comprehensive package of support. This includes:

## Published Resources

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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

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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: Electronics and Control Systems.



Hodder Education is producing the following resources for OCR GCSE Design and Technology: Electronics and Control Systems for first teaching in September 2009, which will be available in Spring 2009.

OCR Electronics and Control Systems for GCSE Student's Book  
Terry Bream, John Drury, Editor Bob White  
ISBN: 978 0340 98201 3  
Published: 25/09/2009

OCR Design and Technology for GCSE –Teachers DVD  
Chris Walker  
ISBN: 978 0340 98203 7  
Published: 27/11/2009

## Approved publications

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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

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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

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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](http://www.ocreventbooker.org.uk) or view our new training e-books at [www.ocr.org.uk/training](http://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](mailto:training@ocr.org.uk) or telephone 02476 496398.

## e-Communities

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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

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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 a free access to candidate information at you convenience. Sign up at <https://interchange.ocr.org.uk>



# Frequently Asked Questions

## Unit A511: Introduction to designing and making

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### **Is this a compulsory unit?**

This unit is compulsory for a GCSE in Design and Technology: Electronic and Control Systems (J301). It is also one of two units that must be studied for a GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041).

### **What is this unit worth?**

This unit is worth 30% of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification and 60% of the GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041)

### **What is the entry code for this unit?**

The entry code for this unit is A511.

### **How is this unit assessed?**

This unit is internally marked and externally moderated. Teachers should use the published marking criteria for Unit A511.

### **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).

### **Are the timings conducted by a stop watch?**

No. The timings are recommended. Although OCR cannot monitor application, it is expected that candidates from a range of centres are given the same time exposure and opportunities as other candidates. It does however need to be flexible and accommodate candidate illness etc.

### **Is teaching time included in the 20 hour time allowance?**

No, see OCR sample scheme of work for this unit to see how teaching can run alongside the controlled assessment and not be recorded.

### **Can staff still run after school workshops to make sure practical work is completed?**

Skills can be developed after school however; the work must be completed in lesson time to make the assessment fair and equal.

**Are candidates free to make what they want?**

Candidates must select one of the published themes as a starting point. Once selected, the candidate needs to choose a specific product for design development.

**Can all candidates from one centre work on the same theme?**

Yes, but candidates need to identify their own brief, user group and how the product will be developed and the prototype manufactured

**Can candidates develop the outcome from Unit A511 in Unit A513?**

No. These are two separate units, each of which has its own theme list to select from.

**Will the theme lists change each year?**

No. Every two years the themes will be reviewed. Initially it is anticipated that extra themes will be added. Centres will always have two years notice of any change.

**Can candidates work in teams to produce one product?**

Yes, as long as work from each candidate is clearly identifiable and assessed appropriately.

**Can candidates be entered for a short course in year 10?**

Yes. The GCSE Short Course is both a 'stand alone' qualification and also the first half of the Full GCSE. Candidates would need to be entered for this unit and Unit A512 (Sustainable Design)

**Can students complete the whole portfolio on a power point and not print the design sheets saving on paper and ink?**

Yes. Individual students are free to select the way in which they wish present their portfolio which can be in either be on paper or in a digital form. Hand sketching and design solutions are expected to form part of the range of design skills shown, and must be scanned into an electronic portfolio. It is expected that digital work will be sent to the moderator in an approved format, such as a CD / pen drive, or posted directly into OCR's digital repository. Photos of the finished prototype product (minimum 2 photos) should be included in paper and digital portfolios. A list of acceptable digital file formats is included in the specification.

**Can the candidate handwrite the whole portfolio?**

Yes, but the examination actively encourages the candidate to be confident and effective users of ICT. Where appropriate candidates should be given the opportunity to use ICT to further their experience of CAD CAM, data handling and word processing and digital presentation. These sheets can be printed and included in a paper portfolio.

**Can the centre produce framework sheets for the candidates to complete?**

These need to be limited in their use. They are very helpful for SEN and EAL candidates, but need to be used with caution for high achievers as 'filling in boxes' can limit their thinking and creativity.

**To avoid a lot of writing can candidates use sound bites and video clips?**

Yes, but they need to be focused, precise and relevant. This facility is only available to candidates producing a digital portfolio.

**In this unit, there is not much time to produce a quality outcome capable of testing. What are you expecting from candidates?**

That candidates use a range of skills and processes to work skilfully and safely to shape, form and finish materials and assemble components.

**The specification refers to candidates producing a prototype in A511 and producing a product in A513. What is the difference?**

A prototype might be used to demonstrate an understanding of the manufacture of a product, to test its effectiveness to a limited degree, might be made of materials that are less durable, easier to work, lower in quality of outcome but otherwise similar to the product. Scale models are unlikely to satisfy these criteria.

**Is there a limit to the number of photographs used in a portfolio?**

No. Photographs are a very efficient and effective way of monitoring progress and showing the quality and success of the prototype product. It is recommended that photographs are used within the portfolio to show how the practical progresses throughout the various stages of construction and at the end of the process, to show details of the completed prototype product.

**Do teaching staff still mark the candidates work?**

Yes. It is still the responsibility of the centre to standardise the marks in the cohort and submit the marks to the board. A sample will be requested for moderation.

**How does this sit with the timed activities?**

The evidence must still represent 20 hours work. Certain sections may be replaced with better quality work.

**Is there a text book for this unit?**

Yes. The recommended text book is GCSE Design and Technology: Electronics and Control Systems published by Hodder. This book covers all four units of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification and the two units required for a GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041).

**Is there training available for this unit?**

Yes. OCR provide a full programme of training for Design and Technology: Electronic and Control Systems (J301 and J041). Details are available on the OCR website.

## Unit A512: Sustainable design

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**Is this a compulsory unit?**

This unit is compulsory for a GCSE in Design and Technology: Electronic and Control Systems (J301). It is also one of two units that must be studied for a GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041).

**What is this unit worth?**

This unit is worth 20% of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification and 40% of the GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041) qualification.

### **What is the entry code for this unit?**

The entry code for this unit is A512.

### **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.

### **How is it best to teach the unit A512 content?**

This Unit should be delivered through a number of mini tasks. These tasks would in some cases be ideally linked to unit 1 or 3.

### **Is there a best time to sit unit A512?**

The unit is flexible and can be sat at any time. Some centres may wish to teach this unit as a stand alone unit and enter candidate in year 10 or January of year 11. Other centres may wish to take the linear approach and enter candidates in June of year 11.

### **Is the unit A512 examination common to all specifications within the D&T Innovator suite?**

No, the examination papers have a common structure but each specification has its own examination. Questions are focused on the material specialism of the specification for which the examination is written.

### **What is a banded mark scheme?**

With questions that require a detailed written response and that are marked out of six or more

marks a banded mark scheme is applied. These require a more detailed and technical answer that uses subject specialist terminology and also takes into account the use of spelling, Punctuation and grammar.

### **Will students lose marks for bad spelling, punctuation and grammar?**

On the more detailed response questions where a banded mark scheme is applied, marks can be lost for poorly written and unclear responses.

### **Is there a text book for this unit?**

Yes. The recommended text book is GCSE Design and Technology: Electronic and Control Systems published by Hodder. This book covers all four units of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification and the two units required for a GCSE (Short course) in Design and Technology: Electronics and Control Systems (J041).

### **Is there training available for this unit?**

Yes. OCR provide a full programme of training for Design and Technology: Electronic and Control Systems (J301 and J041). Details are available on the OCR website.

## **Unit A513: Making quality products**

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### **Is this a compulsory unit?**

This unit is compulsory for a GCSE in Design and Technology: Electronic and Control Systems (J301). It **cannot** be taken as part of the GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041).

### **What is this unit worth?**

This unit is worth 30% of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification.

### **What is the entry code for this unit?**

The entry code for this unit is A513.

### **How is this unit assessed?**

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

### **The assessment scheme refers to “response to a brief” but OCR provides a set of themes. What is the candidate’s starting point?**

The assessment will start from a simple brief. The teacher may choose to set a single brief or

allow candidates to develop their own brief from the theme. This allows the teacher to adjust the exercise to local conditions, facilities, candidates' capabilities and time. Evolution of the brief is not part of the timed assessment.

### **What about research?**

Local conditions will apply here: candidates may be asked to conduct their own research outside the timed assessment or the centre may provide research materials around a theme. Candidates will be assessed on developing a specification as a result of analysis; this must be his/her own work.

### **How many design ideas would be appropriate?**

There can be no fixed answer to this question – it depends on the type and scale of the design exercise.

### **What is “a range” of appropriate strategies for communication?**

This is an opportunity for candidates to demonstrate competence using various media and candidates will be rewarded for doing so. Discernment should be shown in using strategies that are appropriate and assist communication.

### **Is a written plan required?**

No, a record of the key stages of making will be sufficient. However without some form of planning it is unlikely that a candidate will succeed in making a quality product. This plan can be a working, evolving document.

### **How many materials/processes should a candidate use?**

There is no fixed number of materials or processes, but candidates should be encouraged to demonstrate skill and competence commensurate with the programme of study for this specification.

### **What are the limits of teacher intervention?**

Teachers and support staff have a duty to ensure good Health and Safety practices. Work can be discussed but candidates must reach their own judgements and conclusions; staff cannot provide specific advice on improvements to meet assessment criteria. See Section 5.3.2 Feedback Control. If direct assistance is given this must be clearly recorded and not included within assessment.

### **A candidate needs to test his/her work outside the controlled environment. Is this permissible?**

There will be circumstances where testing is most appropriate outside the controlled environment. In this case the teacher must be satisfied that the work submitted is the candidate's own and be able to authenticate it using the specified procedure.

### **The sample Scheme of Work subdivides the 20 hour time allocation for this assessment. How closely can candidates be guided on use of time?**

As with any controlled assessment, use of time is in the candidate's control. While the sample scheme intersperses assessment sessions with teaching sessions, candidates may choose to extend or contract the time on different sections as they see fit.

## Unit A514: Technical aspects of designing and making

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### **Is this a compulsory unit?**

This unit is compulsory for a GCSE in Design and Technology: Electronic and Control Systems (J301). It **cannot** be taken as part of the GCSE (Short course) in Design and Technology: Electronic and Control Systems (J041).

### **What is this unit worth?**

This unit is worth 20% of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification.

### **What is the entry code for this unit?**

The entry code for this unit is A514.

### **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 any of the work produced by the students for this unit marked as part of the GCSE assessment?**

No this unit is assessed by an externally marked examination only.

**Can any of the work students produce for this unit be taken in to the examination?**

Students can not take any written notes or other information into the examination

**Is there any published pre-release material for the examination?**

There is no pre-release or preparation material for this examination

**Do the students have any choice of questions within the examination?**

No, students must attempt all of the questions.

**How is it best to teach the unit A514 content?**

This Unit should be delivered through:

- Mini-projects of 4-5weeks each
- Focused practical tasks 1-2 hours each
- Design and make challenges

**Is there a best time to sit unit A514?**

The unit is flexible and can be sat at any time but as technical knowledge will be gained throughout the course it is likely that most candidates will be most successful if they take the examination at the end of the course which will usually be in June of year 11.

**Is the unit A514 examination common to all specifications within the D&T Innovator suite?**

No, the examination papers have a common structure but each specification has its own examination. Questions are focused on the material specialism of the specification for which the examination is written.

**What is a banded mark scheme?**

With questions that require a detailed written response and that are marked out of six or more marks a banded mark scheme is applied. These require a more detailed and technical answer that uses subject specialist terminology and also takes into account the use of spelling, Punctuation and grammar.

**Will students lose marks for bad spelling, punctuation and grammar?**

On the more detailed response questions where a banded mark scheme is applied, marks can be lost for poorly written and unclear responses.

**Is there a text book for this unit?**

Yes. The recommended text book is GCSE Design and Technology: Electronic and Control Systems published by Hodder. This book covers all four units of the GCSE in Design and Technology: Electronic and Control Systems (J301) qualification.

**Is there training available for this unit?**

Yes. OCR provide a full programme of training for GCSE in Design and Technology: Electronics and Control Systems (J301). Details are available on the OCR website.



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[www.ocr.org.uk](http://www.ocr.org.uk)

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