GCSE

Design and Technology: Product Design

OCR GCSE in Design and Technology: Product Design J305

OCR GCSE (Short Course) in Design and Technology: Product Design J045

July 2009

Contents

Vertical black lines indicate a significant change to the previous printed version. Changes can be found on page 34.

1 About these Qualifications

This booklet contains OCR's GCSE and GCSE (Short Course) specifications in Design and Technology: Product Design for teaching from September 2009.

This GCSE specification involves candidates in activities that develop innovation and flair when designing products. The specification does not have a material bias. It anticipates that candidates will develop their skills through work in a range of designing media, modelling and production materials and the use of ICT.

Key features of this specification are:

- Exposing candidates to creative, design-based activities

- Encouraging candidates to explore and develop, experience and express their design ideas

- Providing a learning experience which is participatory and experimental in nature

- Valuing flair and imagination

- A number of innovative assessment methods

- A unitised assessment scheme; units can be taken in any order

- Portfolio evidence, which can be submitted on paper, CD in PowerPoint format, or via e-portfolio with video and sound clips

- No material bias; it can be taken by all candidates in a D&T department

- It encourages the use of new technology and new materials.

This specification provides a coherent, satisfying and worthwhile course of study for candidates, whether they wish to pursue the study of Design and Technology in the future or whether it will be their last experience of studying the subject.

This specification is fundamentally designed to assess a candidate's capability at the end of KS4; however, units will be offered in January and June thereby allowing some flexibility.

1.1 GCSE (Full Course)

From September 2009 the GCSE is made up of **four** mandatory units, **two** of which are the corresponding GCSE (Short Course) and **two** further units, one of which is a Controlled Assessment unit and one of which is externally assessed.

Unit A551 – *Developing and Applying Design Skills*

Unit A552 – *Designing and Making Innovation Challenge*

Unit A553 – *Making, Testing and Marketing Products*

Unit A554 – *Designing Influences*

Unit code	Unit Title	Duration	Weighting
A551	Developing and Applying Design Skills	20 hours	60% Short 30% Full
A552	Designing and Making Innovation Challenge	6 hours plus 30 minutes reflection time	40% Short 20% Full
A553	Making, Testing and Marketing Products	20 hours	30% Full only
A554	Designing Influences	1 hour 30 minutes	20% Full only

1.2 GCSE (Short Course)

The GCSE (Short Course) is both a 'stand-alone' qualification and also the first half of the corresponding GCSE. The GCSE (Short Course) is assessed at the same standard as the corresponding two-year GCSE course.

From September 2009 the GCSE (Short Course) is made up of **two** mandatory units, one of which is internally assessed and forms 60% of the overall assessment and the other is externally assessed and forms 40% of the overall assessment. These units correspond to **two** units of the GCSE (Full Course) and thus allow for co-teaching and flexibility in scheduling and timetabling.

1.3   Qualification Titles and Levels

These qualifications are shown on a certificate as:

- OCR GCSE in Design and Technology: Product Design

- OCR GCSE (Short Course) in Design and Technology: Product Design.

These qualifications are approved by the regulatory authorities (QCA, DCELLS and CCEA) as part of the National Qualifications Framework.

Candidates who gain Grades D to G will have achieved an award at Foundation Level 1 (Level 1 of the National Qualifications Framework).
Candidates who gain Grades A* to C will have achieved an award at Intermediate Level 2 (Level 2 of the National Qualifications Framework).

1.4   Aims and Learning Outcomes

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

GCSE specifications in design and technology must enable learners to:

- Engage actively in the processes of design and technology in order to develop as effective and independent learners

- Make decisions, consider sustainability and combine skills with knowledge and understanding in order to design and make quality products

- Explore ways in which aesthetic, technical, economic, environmental, ethical and social dimensions interact to shape designing and making

- Analyse existing products and produce practical solutions to needs, wants and opportunities, recognising their impact on quality of life

- Develop decision-making skills through individual and collaborative working

- Understand that designing and making reflect and influence cultures and societies, and that products have an impact on lifestyle

- Develop skills of creativity and critical analysis through making links between the principles of good design, existing solutions and technological knowledge.

The aims of this specification are to:

- Provide the opportunity to develop candidates' design and technology capabilities and, in particular, to encourage imagination, innovation and flair

- Encourage candidates to combine their designing and modelling skills with knowledge and understanding, in order to produce outcomes capable of being rigorously tested

- Promote design and technology capability in candidates through activities which involve a range of contexts, materials and processes and lead to tangible outcomes

- Give candidates the confidence to design, make and modify products for identified purposes, selecting and using resources effectively

- Promote the use of graphic techniques and ICT, including computer-aided design (CAD), in order to generate, develop, model and communicate design proposals

- Promote the use of computer-aided manufacture (CAM) in single-item production and in batch or volume production

- Encourage the development of candidates' critical and aesthetic abilities, enabling them to evaluate design and technology activity, including their own, in the context of an identified need

- Encourage the development of candidates' consideration of function and ergonomics

- Encourage the development of candidates' understanding of the needs and values of a range of users, including spiritual, moral, social, and cultural considerations

- Promote the Keys Skills of Communication, Application of Number, IT, Working with Others, Improving Learning and Performance, and Problem Solving

- Encourage the development of candidates' thinking skills, financial capabilities, enterprise and entrepreneurial skills

- Encourage the development of candidates' understanding of work-related learning and the principles of sustainable design and production systems

- Encourage candidates to consider how present and past design and technology, relevant to a designing and making process, affect society

- Encourage candidates to recognise that the work of past designers can influence the development of design thinking

- Encourage candidates to consider the uses and effects of new technologies and modern materials on product design and manufacture

- Provide for activities that give candidates opportunities to work both individually and as a member of a team.

Most of these aims are reflected in the assessment objectives; others, due to their very nature, cannot be readily assessed.

1.5   Prior Learning/Attainment

Candidates who are taking courses leading to this qualification at Key Stage 4 should have followed the corresponding Key Stage 3 programme of study within the National Curriculum.

2 Summary of Content

The fundamental aim of this specification is to provide the opportunity to assess a candidate's design and technology capability and to reward imagination, innovation and flair. It puts the candidate at the heart of the process – initiating design solutions, developing working models and prototypes, testing and trialling. It encourages individuals to work together for some aspects of their work. It recognises the need to reward careful and considered use of ICT. It ensures candidates consider their ideas and responsibilities in relation to life in our technological world.

The specification seeks to help candidates become discriminating and informed users and creators of products. It encourages candidates to think and intervene imaginatively to improve the quality of life for society. The assessment scheme provides the opportunity to reward innovation and flair whilst recognising the need to credit thoughtful and rigorous activity over that which is predictable and dull.

This GCSE specification is very different to all other Design and Technology specifications in the OCR suite. The emphasis is on developing a candidate's designing and making capabilities through the use of modern media and materials and ICT. The balance of the Controlled Assessment is heavily weighted towards those skills associated with designing, creativity, originality, flair and imagination.

In all units, candidates will need to use those skills necessary to communicate and develop ideas, as well as a desire to use ICT within many aspects of their work.

Candidates joining this course should have an aptitude for designing and working with materials and media, and using control systems.

Work in Controlled Assessment Units A551 and A553 can focus on the use of any of the following: card, clay, food, foam board, paper, plaster, plastics, metal, textiles, wood, 'smart' and other modern materials, electronic and other control systems. It is anticipated, however, that candidates will need to combine materials in order to complete their work successfully in these units. Portfolio evidence for these two units can be presented in electronic format in line with the guidance given in the accompanying teacher guide to this specification.

Unit A552 is a 6-hour (2 x 3 hours) Innovation Challenge focusing on a candidate's imagination, innovation and flair for designing and making. It will require candidates to make swift decisions, take risks, be adventurous and take advice from others through controlled and structured peer evaluation. It requires a basic working knowledge of modelling materials and, depending upon the chosen focus, other more specific materials and systems.

Unit A554 will require candidates to answer questions on a broad range of design influences.

It is anticipated that this specification will be taught in a suitably equipped design studio and workshop environment. Candidates must have access to appropriate ICT.

2.1   GCSE Units

Unit A551: *Developing and Applying Design Skills*

- Developing and writing a design brief

- Drawing up a specification

- Generating design proposals

Unit A552: *Designing and Making Innovation Challenge*

- A designing and making practical examination that encourages flair, innovation and working with a range of modelling materials

Unit A553: *Making, Testing and Marketing Products*

- Prototype manufacture

- Testing, evaluating and marketing

Unit A554: *Designing Influences*

- Examination testing knowledge and understanding of designing influences, iconic products, trend setters, design eras and design movements

2.2   GCSE (Short Course) Units

Unit A551: *Developing and Applying Design Skills*

- Developing and writing a design brief

- Drawing up a specification

- Generating design proposals

Unit A552: *Designing and Making Innovation Challenge*

- A designing and making practical examination that encourages flair, innovation and working with a range of modelling materials

3 Content

3.1 Unit A551: *Developing and Applying Design Skills*

3.1.1 Developing and writing a design brief

Candidates should be able to:

- Provide a detailed description of the design need using various means of communication
- Extract from verbal, visual and statistical information the essential problems to be solved
- Identify the range of users and the market for which the product is intended
- Develop a design brief for a marketable product which is innovative and might involve some degree of risk taking.

3.1.2 Drawing up a specification

Candidates should be able to:

- Identify and collect relevant data about the user(s)
- Examine the intended purpose of the intended product
- Identify and collect other data relevant to the product and its users
- Examine the intended purpose of existing products
- Identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products
- Understand the issues that expand the design brief
- Detail the requirements of the product
- Demonstrate an ability to express the results of research and analysis in the form of a suitably detailed specification.

3.1.3 Generating design proposals

Candidates should be able to:

- Generate and record the development of design proposals that are innovative and show flair and imagination
- Consider user needs and issues when developing ideas
- Consider aesthetics, ergonomics, function and the other design influences
- Appraise design ideas for suitability, value and consequence
- Identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture
- Use suitable communication techniques, including ICT, to develop and model design proposals and production systems
- Use modelling to check on the feasibility of design ideas
- Check that the design proposal meets legislative standards, and consider patents and copyrights
- Control the development of the product for manufacture, and identify within the design proposals the resources needed for the prototype to be realised
- Consider, using examples, those aspects of the design which could most easily be manufactured in quantity
- Produce a final product specification.

3.2   Unit A552: *Designing and Making Innovation Challenge*

In this unit, candidates work within examination conditions, over a limited time slot of 6 hours (two 3-hour sessions normally on consecutive days) and without the intervention of a teacher (except for administrative instructions and for reasons of health and safety).

Candidates should be able to:

- Think, with an 'open' mind about a design situation

- Respond in ways which might appear at first 'unrealistic' yet, after consideration, provide a unique, valuable contribution to designing

- Use collections of existing products as a stimulus for innovative design

- Record thinking, innovation and flair

- Demonstrate the ability to focus thoughts and be decisive within a set, limited time frame

- Seek opinions of others and react accordingly

- Reflect and record ideas as they develop

- Present to a group and acknowledge feedback

- Identify good design ideas worthy of further development and reject those of less value

- Use modelling materials adeptly

- Plan the use of materials and equipment

- Make a product

- Record progress using sketches and photographs

- Sum up progress and identify possible further design development.

Theme (this will be changed each year)
School Sports Day
On a school sports day, not all students participate in the sporting events.
The opportunities for these students still to be involved and support the event and the arrangements for the event are numerous.

Synopsis

The Innovation Challenge is a teacher-led activity that stimulates and supports the candidate through a thought-provoking creative exercise. Much of the innovative designing is integrated into the trialling and testing of materials and systems.

The activity is designed to take place in a design room, studio or workshop (not the centre's examination hall). The candidates are encouraged to take risks, be innovative, take advice from others through controlled and structured peer evaluation, and use resources effectively and efficiently. OCR will publish a theme for each year (January and June series), which will outline a design context. On the day of the examination, candidates will have a choice of four different challenges to choose from, all of which are directly related to the theme.

Full instructions concerning the conduct for running this unit in a centre are provided in the teacher script.

The centre is asked to provide a 'handling collection', which may consist of existing products or pictures, video, etc relating to the theme, and an 'inspirational table' which shows examples of products with interesting features or capabilities. Further details are provided in the accompanying support material.

Throughout the challenge, candidates are asked to record and communicate their thinking on a pre-printed, A4-size answer booklet supplied by OCR. Candidates respond to the prompts in pre-numbered boxes.

Midway through session 1, candidates have the opportunity to present their ideas to a group of between three and four other candidates. Candidates are encouraged to take advice from others through this controlled and structured peer evaluation.

Candidates model their most creative and exciting idea using a range of easy-to-handle materials. Depending upon the activity, they can choose from paper, card, thin plastics, fabric, wire, foil, thin metal sheet, clay, polymorph, foam board, food ingredients, components, gaffer tape and other joining methods and devices. Marks are awarded for the design concept and the way in which the candidate has resourcefully used materials and construction techniques.

Four digital or 'Polaroid' photographs must be taken at specified times by the teacher or teaching and learning assistant to record individual progress. These must be able to be processed and attached to each candidate's answer booklet during the challenge.

Although prototype models are not required to be sent with the candidate answer booklets to the examiner, they should be retained as they may be required for monitoring purposes.

At the end of session 2, candidates have the opportunity to reflect on the challenge by completing a section in the answer booklet. Further details are given in the accompanying Teachers' Guide.

The timetable must be followed except in certain circumstances, see Sections 6.11 and 6.12.

The OCR-appointed examiner assesses the evidence contained in the candidate answer booklets on completion of the activity.

Resources

Provided by OCR	Provided by centre (see the accompanying Teachers' Guide for more information)
Printed A4 answer booklets	Handling collection – products / video (linked to the context)
Teacher script	Inspirational products (linked to the context)
	Communicating media Modelling/making materials
	Digital camera / printer or Polaroid camera

Reference to OCR pre-printed answer booklet	Innovation Challenge Session 1 - Timetable	
	Activity	**Time allocation (mins)**
	Introduction to the challenge	5
	The handling collection or background information – teacher-led starter session	15
	The inspiration collection. Products with interesting features or capabilities	
1	Initial thoughts	6
2	Possible ideas	8
3 & 4	Decision time	15
	Brief	
	Specification	
5 & 6	Initial ideas	30
7	Reflect and Record	5
8	Group presentation planning (3/4 candidates per group)	20
	Introduction by teacher	
	Break (15 minutes approx)	
9	Developing your idea	25
10	Question time	5
	Introduction to modelling kit	10
11	Your model	10
12	Action plan for session 2	6

Innovation Challenge Session 2 – Timetable		
Reference to OCR pre-printed answer booklet	**Activity**	**Time allocation (mins)**
13	Further thoughts	5
	Go make!	40
14	Progress report 1 (photo)	5
	Go make!	40
15 & 16	Progress report 2 (photo)	5
	Plan for last 40 minutes	
	Go make!	45
	Break (10 minutes approx)	
17	Final evaluation (photo)	6
18	Summing up	7
19	Specification check	15
	FINISH	
Page 2	Time to reflect	30

3.3   Unit A553: *Making, Testing and Marketing Products*

Prototype manufacture

Candidates should be able to:

- Make a 3D prototype using appropriate media – the prototype is to have working features to demonstrate how the product will function
- Complete a production log of the stages of making the product
- Select and use the appropriate tools, equipment and processes effectively and safely to make products that match the specification
- Use tools and techniques to achieve precision
- Use CAM where appropriate
- Deploy a range of skills and techniques appropriate to the task, **(CAD/CAM is a single skill**), including those necessary to ensure realism of the prototype product
- Prepare and use materials economically
- Select and use appropriate pre-manufactured components
- Be prepared to adapt working procedures in response to changing circumstances
- Demonstrate clear understanding of safe working practices.

Testing, evaluating and marketing

Candidates should be able to produce:

- A design concept page that includes details of the prototype product to be made and a related detailed specification
- Evidence of testing and evaluation of the prototype product by a user / user group against the design criteria
- Evidence of user / user-group feedback of the prototype product
- Details of any review processes and necessary modifications to improve the final prototype product
- Details of how the design prototype could be manufactured in quantity by either batch, repetitive flow, continual flow or other production system in the 'real world'
- Marketing presentation – 'sales pitch' – in an interesting way to bring the product to the attention of one of the following:
  - A prospective manufacturer
  - A supplier
  - A company buyer
  - A retailer
  - An end user / user group
  - A consumer.

3.4 Unit A554: *Designing Influences*

Designing Influences Section A	
Candidates should understand the influence upon designing of:	
Social, moral and cultural issues	Ethical designs, socially responsible designs and the impact of different cultures on modern products such as Indian batik work, Islamic patterns and the differing meaning of colours within different cultures; lifestyle changes, eg the development of ready meals and the social and ethical implications of fashion and obsolescence; the responsibility of designers to adopt sustainable designs. Consideration of people with disabilities.
Environmental factors	Consideration of weather, wind, light, sound, heat and cold, pollution and recycling.
Ergonomics and anthropometrics	The interaction between people and the products they use; human size and its influence on designing; the application of anthropometric data to solve practical problems in the made world.
Aesthetics	Shape, form, line, symmetry, proportion, balance, sensory factors, taste, smell and touch.
Consumer law	In so far as laws impact upon the design of products and innovation; basic understanding of the terms 'copyright', 'registered design', 'patents' and 'trademarks' as they apply to the design of products; understanding that legislation exists to provide consumers with protection, eg labelling, product literature.
Globalisation of design and manufacturing	The social, moral and technological impact of the globalisation of design and manufacturing on manufacturers and consumers.
Sustainable technologies	The basic principles of sustainable technology, reuseable, recyclable, carbon reduced and carbon neutral products, eg sustainable forests, rechargeable batteries, renewable energy supplies, natural oils from plants as an alternative to fossil fuels.
Sustainable design imperatives and design tools	Designing products in a way that reduces environmental impact by the use of renewable resources; the use of sustainable design tools such as life-cycle assessment and life-cycle energy analysis to judge the environmental impact or 'greenness' of various design choices.
Economics of manufacturing	Understanding the principle of the different scales of production, eg one-off and batch; recognising the benefits of economies of scale when applied to common manufacturing processes; recognising the importance of sustainable manufacturing and the impact that manufacturing has on the environment.

Marketing and advertising	Understanding how research is used by companies to identify target markets for their products, eg ranking and rating tests, consumer surveys; knowing that advertising is part of a marketing strategy.
Computer-aided design and manufacturing	The advantages of CAD/CAM systems to manufacturers and consumers; understanding of common computer-aided manufacturing devices, eg laser cutters, printers.
Colour theory	A working understanding of the importance of colour; colour in terms of perception and psychology, colour wheel, complementary colours and contrast.
Systems and structures	Natural and mechanical structures; simple mechanical and electrical systems.
Energy	Sources of energy including both renewable and non-renewable sources; energy from food; energy generated by burning fuel; batteries; impact of energy use on the environment; new forms of sustainable energy sources, eg biofuel, hybrid technology.
Scientific principles	The importance of scientific principles in common products such as levers, and mechanisms on bicycles; the reduction of friction through the aerodynamic design of cars; understanding how modern scientific principles and new materials have influenced the design of products.
Health and safety	How products are designed to ensure consumers' health and safety; the role of the British Standards Institute and the Food Standards Agency in quality-assuring products; ways of preventing injury to users on common products, eg the use of lead-free and non-toxic paint on children's toys, the avoidance of finger traps, guards on electrical tools, the lion stamp on eggs.
Design potential and impact of new and emerging technologies	Recognising that new materials and technologies create design opportunities, eg smart materials used in medical procedures, such as nano technology, microencapsulated dressings; the use of new techniques in food, eg ultralow blanching that increases the firmness of canned vegetables and maintains their shelflife; in graphics, the use of biodegradable and recyclable materials, smart pigments and luminescent inks and new materials, eg superelastic spectacles.

Candidates should recognise the influences on design of iconic products, trends and trend setters, and of significant technological developments, from the following range of eras and movements: Victorian (1840-1900), Art Nouveau (1890–1914), Art Deco (1920s–1930s), War and Post War years (1940s-50s), the 1960s, 1970s 1980s and the 1990s – to the present.

For each examination cycle there will be a published list of iconic products, trends and trend setters drawn from the range of eras and movements specified above. This published list will be current for two examination series (January and June) to allow for continuity across at least one full examination cycle. Candidates will be required to 'discuss' the merits, contribution, significance, etc of these influential trends and developments in Design and Technology.

The examination paper is designed to allow candidates to answer questions from the perspective of any of the five focus areas listed in the table below. Teachers therefore need ONLY prepare their candidates to answer questions from the perspective of the focus area linked to candidates' experiences during the course.

For examination in January and June 2010, centres should prepare their candidates to answer questions on the following:

	Eras and movements	Trend setter	Iconic product
1	1960s	Alex Issigonis	Mini Cooper
2	(1970s) Hippies	Yves St Laurent	Kaftan
3	1950s + 1960s	Andy Warhol	Campbell's soup painting
4	1980s	Infra-red light emission	TV remote control
5	1960s	Vegetarianism	Nut loaf

4 Schemes of Assessment

4.1 GCSE Scheme of Assessment

GCSE Design and Technology: Product Design (J305)

Unit A551: *Developing and Applying Design Skills*

30% of the total GCSE full-course marks

60% of the total GCSE short-course marks

20 hrs Controlled Assessment

90 marks

This unit requires the candidate, working within a context set by a client, the candidate or centre, to produce a design portfolio. The context can be linked to a candidate's own interests, current trends, a particular design era or designer, industrial practice or the community. Projects may involve an enterprise activity, where candidates identify an opportunity and design to meet a particular need.

The evidence required to be submitted for this unit must be in the form of a portfolio. The portfolio must demonstrate capabilities in a wide range of design skills and must include the use of ICT. The minimum requirement is for ICT to be used for one aspect within this unit. It is, however, anticipated that significantly more emphasis will be placed on the use of ICT throughout this unit.

Portfolio evidence can be submitted on paper or CD. All electronic evidence must be presented in a format which matches that published in this specification. The whole activity must not exceed 20 hours of work.

Candidates must select a theme from those set by OCR (see Appendix B2). This theme can, however, be contextualised in order to suit centre-specific circumstances.

- Tasks (concise worksheets and modelling) will be conducted under informal teacher supervision within tight guidelines specified by OCR (see Section 5).

- In addition to the 20 hours, there should also be further teaching time to increase depth of knowledge and understanding before starting this task.

This unit is internally marked and externally moderated. Work is submitted through the OCR Repository or postally (paper/CD).

Maximum mark for this unit is 90 (120 UMS). Assessment will be against the Internal Assessment Objectives 1, 2 and 3 (see Appendix B3).

Unit A552: *Designing and Making Innovation Challenge*

20% of the total GCSE full-course marks

40% of the total GCSE short-course marks

6 hrs plus 30 mins reflection time

60 marks

A 6-hour test, set by OCR, undertaken in two 3-hour sessions, normally on consecutive days. This test can be undertaken at a time convenient to the centre during either the January or June examination series. The test will assess the candidate's ability to be innovative, demonstrate flair, work with materials and apply knowledge gained throughout the course.

This unit is externally examined.

Unit A553: *Making, Testing and Marketing Products*

30% of the total GCSE marks 20 hrs Controlled Assessment 90 marks	This unit requires the candidate either to develop further the work undertaken in either Unit A551 or Unit A552, or to develop an existing product or new product of the candidate's choosing.
	Candidates produce: • A 3D artefact in the form of a prototype product that can be evaluated • A production log fully detailing the manufacture of the prototype product • Details of testing by a user / users against the specification • Suggested modifications / improvements to the prototype product • Consideration of quantity production • A marketing presentation.

	The marketing presentation – 'sales pitch' – should be the candidate's explanation and production of an interesting way of bringing the product to the attention of one of the following:
	
	  • A prospective manufacturer
	
	  • A supplier
	
	  • A company buyer
	
	  • A retailer
	
	  • An end user / user group
	
	  • A consumer.

	The marketing presentation can be can be submitted on paper or CD. All electronic evidence must be presented in a format which matches that published in this specification.
	The whole activity must not exceed 20 hours of work.
	This unit is internally marked and externally moderated. Work is submitted through the OCR Repository or postally (paper/CD).
	If candidates work in groups, each candidate must take responsibility for a uniquely definable aspect of the overall 3D model or prototype product. Each candidate must provide unique evidence for assessment against the internal assessment objectives, with additional evidence to indicate the performance of the candidate's design within the context of the performance of the overall project.
	Candidates must select a theme from those set by OCR (see Appendix B2). This theme can, however, be contextualised in order to best suit centre-specific circumstances. • Tasks (concise worksheets and modelling) will be conducted under informal teacher supervision within tight guidelines specified by OCR (see Section 5). • In addition to the 20 hours, there should also be further teaching time to increase depth of knowledge and understanding before starting this task.
	Maximum mark for this unit is 90 (120 UMS). Assessment will be against the Internal Assessment Objectives 4 and 5 (see Appendix B3).

Unit A554: *Designing Influences*	
20% of the total GCSE marks 1 hr 30 mins written paper 60 marks	This unit will test candidates' knowledge and understanding of the factors listed in Section 3.4, Section A and Section B that influence designing. The questions have no material bias.
	The examination paper contains five compulsory questions and is divided into two sections: A and B.
	Section A addresses the content contained in Section 3.4 of the specification.
	Section B addresses the content contained in Section 3.4 and will focus upon iconic products, trends and trend setters from a range of eras and design movements.
	In preparation for the June and January examination series, details of iconic products, trend setters and eras/movements will be made available centres.
	The questions in both sections are knowledge- and application-based and require students to demonstrate their understanding through the use of single words, short sentences, annotated sketches and diagrams.
	This unit is externally examined.

4.2   GCSE (Short Course) Scheme of Assessment

Candidates taking the GCSE (Short Course) in Design and Technology: Product Design (J045) will need to be entered for Units A551 and A552. The scheme of assessment for these units is contained within section 4.1.

4.3   Entry Options

GCSE (Full Course) candidates must be entered for Units A551, A552, A553 and A554.

GCSE (Short Course) candidates must be entered for Units A551 and A552.

Candidates must be entered for certification to claim their overall grade. All candidates should be entered under the following certification codes:

- OCR GCSE in Design and Technology: Product Design (J305)

- OCR GCSE (Short Course) in Design and Technology: Product Design (J045).

4.4   Tiers

This scheme of assessment is untiered, covering all of the ability range grades from A* to G. Candidates achieving less than the minimum mark for Grade G will be ungraded.

4.5   Assessment Availability

There are two examination series each year, in January and June. All units will be available for assessment each January and June series from January 2010.

Assessment availability can be summarised as follows:

Unit	January 2010	June 2010	January 2011	June 2011	January 2012 etc
A551	✓	✓	✓	✓	✓
A552	✓	✓	✓	✓	✓
A553	✓	✓	✓	✓	✓
A554	✓	✓	✓	✓	✓

4.6   Assessment Objectives

Candidates are expected to demonstrate the following in the context of the content described:

AO1   Recall, select and communicate

- Recall, select and communicate their knowledge and understanding of design and technology including its wider effects

AO2   Apply knowledge, understanding and skills

- Apply knowledge, understanding and skills in a variety of contexts and in designing and making products

AO3   Analyse and evaluate products

- Analyse and evaluate products, including their design and production.

AO weightings – GCSE

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

Unit	% of GCSE			Total
	AO1	AO2	AO3	
Unit A551: *Developing and Applying Design Skills*	7	18	5	30
Unit A552: *Designing and Making Innovation Challenge*	6	9	5	20
Unit A553: *Making, Testing and Marketing Products*	5	21	4	30
Unit A554: *Designing Influences*	8	6	6	20
	26	54	20	100

AO weightings – GCSE (Short Course)

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

Unit	% of GCSE (Short Course)			Total
	AO1	AO2	AO3	
Unit A551: *Developing and Applying Design Skills*	14	36	10	60
Unit A552: *Designing and Making Innovation Challenge*	12	18	10	40
	26	54	20	100

4.7   Quality of Written Communication

Quality of written communication is assessed in Unit A552 and A554.

Candidates are expected to:

- Ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear

- Present information in a form that suits its purpose

- Use a suitable structure and style of writing.

5 Controlled Assessment

5.1 The Controlled Assessment Units

Units A551 and A553 have been designed to be internally assessed, applying the principles of Controlled Assessment. Controls are set within the assessments so that validity and reliability are ensured and the assessors can confidently authenticate the candidates' work. These controls take a variety of forms in each of the stages of the assessment process: task setting, task taking and task marking. Within each of these three stages there are different levels of control. This section sets out the overall OCR approach, but the Scheme of Assessment sections of the units include more detail and any specific requirements.

5.2 Task Setting

5.2.1 The OCR approach

OCR will assume a high level of control in relation to the setting of tasks. A number of Controlled Assessment tasks will be available from OCR for the Controlled Assessment units. These tasks have been designed to meet the full assessment requirements of the unit. Candidates will need to take part in a planned learning programme that covers the underpinning knowledge and skills of the unit in addition to completing the evidence requirements of the designated assessment tasks.

5.2.2 Using Controlled Assessment tasks

Centres can choose one from a number of theme-based tasks offered by OCR (see Appendix B). These tasks can be used with a minimum amount of adaptation or they can be adapted so that they allow the usage of local resources available to any centre. These tasks may also be set within overarching scenarios and briefs more relevant to centres' own environment and targeted at their particular cohorts of candidates.

Controlled Assessment tasks may be adapted by centres in ways which will not put at risk the opportunity for candidates to meet the Assessment Criteria, including the chance to gain marks at the highest level. For some units this may allow for little to be adapted other than minor cosmetic details, eg the description and nature of the product on which a task is based. For other units the medium in which the candidates are working may be a matter of choice. Each Controlled Assessment task will include a section which briefly specifies the type and degree of adaptation which is appropriate.

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

5.3 Task Taking

5.3.1 The OCR approach

For GCSE in Design and Technology: Product Design, OCR will assume a medium level of control in the undertaking of tasks. The task-taking parameters will be defined for several key controls and the remainder set by centres as outlined below.

5.3.2 Definitions of the controls

(a) **Authenticity control:** Candidates will complete all work for assessment under direct teacher supervision except as outlined below. For GCSE in Product Design, most, but not all, work for assessment would be under direct teacher supervision, for example, it is acceptable for some aspects of exploration to be outside the direct supervision of the teacher but the teacher must be able to authenticate the work and insist on acknowledgement and referencing of any sources used.

(b) **Feedback control:** Feedback to candidates will be encouraged but tightly defined. Within GCSE in Product Design, OCR expects teachers to supervise and guide candidates who are undertaking work which is internally assessed. The degree of teacher guidance in candidates' work will vary according to the kinds of work being undertaken. It should be remembered, however, that candidates are required to reach their own judgements and conclusions. When supervising tasks, teachers are expected to:

- Review candidates' work, and provide advice at a general level. Teachers must not, however, provide detailed and specific advice on how the work may be improved to meet the assessment criteria

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

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

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

(c) **Time control:** The time limit available to candidates to complete the assessment task is 20 hours, as specified within the unit. Tasks will be set within a broader learning programme which will allow the acquisition of subject-specific knowledge and the development of appropriate practical skills.

Controlled assessed work should be completed within the time limit and supervised and marked by the teacher. Some of the work, by its very nature, may be undertaken outside the centre, eg research work, testing, etc. It is likely that using or applying this material will be undertaken under direct teacher supervision. With all internally assessed work, the teacher must be satisfied that the work submitted for assessment is the candidate's own work and be able to authenticate it using the specified procedure.

(d) **Collaboration control:** Candidates must complete and/or evidence all work individually. With reference to collaboration control, all assessment evidence will be provided by the individual candidate. Where group work is undertaken it is vital to be able to identify the unique individual contribution made by each candidate.

(e) **Resource control:** Candidates will need to be provided with the most appropriate materials and equipment to allow them full access to the marking criteria. For units A551 and A553, basic workshop equipment will be adequate, however, the use of specialist equipment and ICT may be required to enable the candidate to produce the desired outcome. Candidates may also need access to resources and processes only available outside the centre environment.

5.3.3 Quality assuring the controls

It is the responsibility of the Head of Centre to ensure that the controls set out in the specification and the individual units are imposed.

5.3.4 Completing the tasks

Candidates should be allowed sufficient time to complete all of the tasks. It is suggested that evidence is produced in several sessions, each focusing on a specific task within the overall task or scenario. These may be interspersed with opportunities to learn knowledge and develop appropriate practical skills.

Each candidate must produce individual and authentic evidence for each of the tasks. It is particularly important that candidates working in groups, where the unit allows this, should still produce individual evidence of their contribution to ongoing group work and any final realisation or outcome.

Centre staff may give support and guidance to candidates. This support and guidance should focus on checking that candidates understand what is expected of them and that they work safely. Candidates will also need support and guidance when accessing materials provided by the centre.

Candidates may use information from any relevant source to help them with producing evidence for the tasks.

In general, candidates must be guided on the use of information from other sources to ensure that confidentiality and intellectual property rights are maintained at all times. It is essential that any material directly used from a source is appropriately and rigorously referenced. Where a dataset or case material is provided, it is acknowledged that candidates in their responses will refer to situations in the assessment material but as this is fictitious this does not break any rules of confidentiality or copyright.

5.3.5 Presentation of work

Candidates must observe certain procedures in the production of controlled assessments.

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

- Any copied material must be suitably acknowledged.

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

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

    - Centre number
    - Centre name
    - Candidate number
    - Candidate name
    - Unit code and title
    - Task title.

Work submitted on paper for moderation must be secured either in a notebook, portfolio case or by treasury tags. Work submitted in digital format (CD or online) must be in a suitable file structure with each file clearly named with the unit code, centre number and candidate number (as detailed in Appendix C).

5.4 Task Marking

5.4.1 The OCR approach

For GCSE in Design and Technology: Product Design, OCR will assume a medium level of control in relation to the marking of tasks. All controlled assessed units will be marked by the centre assessor(s) using awarding body marking criteria and guidance, and moderated by the OCR appointed moderator. For this GCSE, external moderation will take the form of postal moderation or e-moderation where digital evidence is uploaded to the OCR Repository.

5.4.2 Applying the assessment criteria

The starting point for marking the tasks is the marking criteria within each unit. These contain levels of criteria for the skills, knowledge and understanding that the candidate is required to demonstrate. Before the start of the course, and for use at INSET training events, OCR will provide exemplification through real or simulated candidate work which will help to clarify the level of achievement the assessors will be looking for.

5.4.3 Use of 'best fit' approach to marking criteria

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

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

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

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

- Where the candidate's work *convincingly* meets the statement, the highest mark should be awarded.

- Where the candidate's work *adequately* meets the statement, the most appropriate mark in the middle range should be awarded.

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

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

5.4.4 Authentication

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

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

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

Please note: Centres must confirm to OCR that the evidence produced by candidates is authentic. It is a requirement of the QCA Common Criteria for all Qualifications that proof of authentication is received. Failure to provide centre authentication could result in candidates being penalised.

5.4.5 Internal standardisation

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

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

5.4.6 Moderation

- Teachers mark the tasks using the assessment criteria and guidelines provided by OCR.

- OCR moderators externally moderate the teachers' marking to ensure that the assessment criteria have been applied fairly and consistently to the national standard. On the basis of this moderation, scaled adjustments may be recommended.

Following marking and internal standardisation by the centre, candidate marks are submitted to OCR by 10 January for the January examination or 15 May for the June examination, after which moderation takes place in accordance with OCR procedures. The purpose of moderation is to ensure that the standard of the award of marks for work is the same for each centre and that each teacher has applied the standards appropriately across the range of candidates within the centre.

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

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

5.5 Minimum Requirements for Controlled Assessment

There should be clear evidence that work has been attempted and some work produced.

If a candidate submits no work for an internally assessed component, then the candidate should be indicated as being absent from that component on the mark sheets submitted to OCR. If a candidate completes any work at all for an internally assessed component, then the work should be assessed according to the internal assessment objectives and marking instructions and the appropriate mark awarded, which, for work worthy of no marks will be zero.

6　Technical Information

6.1　Making Unit Entries

Please note that centres must be registered with OCR in order to make any entries, including estimated entries. It is recommended that centres apply to OCR to become a registered centre well in advance of making their first entries. Centres must have made an entry for a unit in order for OCR to supply the appropriate forms and/or moderator details for Controlled Assessments.

It is essential that unit entry codes are quoted in all correspondence with OCR.

Unit entry code	Component code	Submission method	Unit titles
A551	/01	*OCR Repository*	Developing and Applying Design Skills
	/02	*Postal moderation*	
A552	-	-	Designing and Making Innovation Challenge
A553	/01	*OCR Repository*	Making, Testing and Marketing Products
	/02	*Postal moderation*	
A554	-	-	Designing Influences

For Units A551 and A553 candidates must be entered for either component 01 or 02. Centres must enter all of their candidates for ONE of these components. It is not possible for centres to offer both components within the same series.

6.2　Terminal Rules

Candidates must take at least 40% of the assessment in the same series they enter for either the full course or short course qualification certification.

This rule means that candidates entering for GCSE Design and Technology: Product Design (J305) must enter any two units in the same examination series as they enter for certification.

This rule means that candidates entering for GCSE (Short Course) Design and Technology: Product Design (J045) must enter any one of the two units in the same examination series as they enter for certification.

6.3   Unit and Qualification Re-sits

Candidates may re-sit each unit once before entering for certification for a GCSE or GCSE (Short Course).

Candidates may enter for the qualifications an unlimited number of times.

6.4   Making Qualification Entries

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

Candidates may enter for:

- GCSE certification (entry code J305).

- GCSE (Short Course) certification (entry code J045).

A candidate who has completed all the units required for the qualification must enter for certification in the same examination series in which the terminal rules are satisfied.

Short Course GCSE certification is available from June 2010, and each January and June thereafter.
GCSE certification is available for the first time in June 2011 and each January and June thereafter.

6.5   Grading

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

Both GCSE (Short Course) and GCSE are unitised schemes. Candidates can take units across several different series provided the terminal rules are satisfied. They can also re-sit units or choose from optional units available. When working out candidates' overall grades, OCR needs to be able to compare performance on the same unit in different series when different grade boundaries have been set, and between different units. OCR uses a Uniform Mark Scale to enable this to be done.

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

When unit results are issued, the candidate's unit grade and uniform mark are given. The uniform mark is shown out of the maximum uniform mark for the unit, eg 41/80.

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

(GCSE) Unit weighting	Max unit uniform mark	Unit grade								
		a*	a	b	c	d	e	f	g	u
30%	120	108	96	84	72	60	48	36	24	0
20%	80	72	64	56	48	40	32	24	16	0

Candidate's uniform marks for each module are aggregated and grades for the specification are generated on the following Uniform Mark Scale.

Qualification	Max uniform mark	Qualification grade								
		A*	A	B	C	D	E	F	G	U
GCSE	400	360	320	280	240	200	160	120	80	0
Short Course	200	180	160	140	120	100	80	60	40	0

Awarding grades

The written papers will have a total weighting of 40% and controlled assessment a weighting of 60%.

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

6.6 Enquiries about Results

Under certain circumstances, a centre may wish to query the grade available to one or more candidates. Enquiries about results for GCSE units must be made immediately following the series in which the relevant unit was taken (by the Enquiries about Results deadline).

Please refer to the *JQC Post-Results Services* booklet and the *OCR Admin Guide* for further guidance about action on the release of results. Copies of the most recent editions of these papers can be obtained from the OCR website.

6.7   Shelf-Life of Units

Individual unit results, prior to certification of the qualification, have a shelf-life limited only by that of the qualification.

6.8   Guided Learning Hours

GCSE Design and Technology: Product Design requires 120 to 140 guided learning hours in total.

GCSE (Short Course) Design and Technology: Product Design requires 60 to 70 guided learning hours in total.

6.9   Code of Practice/ Common Criteria Requirements/ Subject Criteria

These specifications comply in all respects with the current *GCSE, GCE and AEA Code of Practice* as available on the QCA website, *The Statutory Regulation of External Qualifications 2004* and the subject criteria for GCSE Design and Technology.

6.10 Classification Code

Every specification is assigned a national classification code indicating the subject area to which it belongs. The classification code for this specification is 9080.

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

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

6.11 Disability Discrimination Act Information Relating to this Specification

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

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

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

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

The access arrangements permissible for use in this specification are in line with QCA's GCSE subject criteria equalities review and are as follows:

	Yes/No	Type of assessment
Readers	Y	All written and practical assessments
Scribes	Y	All written and practical assessments
Practical assistants	Y	Practical assessments
Word processors	Y	All written and practical assessments
Transcripts	Y	All written and practical assessments
BSL signers	Y	All written and practical assessments
Live speaker	Y	All written and practical assessments
MQ papers	Y	All written and practical assessments
Extra time	Y	All written and practical assessments

We do not foresee any part of the assessment forming a barrier to any student. There are design and technology endorsements which will pose barriers for some disabled learners.

Learners with a physical disability may be limited in the range of designing and making contexts they can use, but this should not pose a barrier to assessment. For example, candidates may use CAD/CAM for the making process and practical assistants may be used to support students with physical disabilities in this process.

Candidates with a visual impairment may find elements of the assessment difficult, such as graphics, however there should be no barriers to assessment.

It is important to note that where access arrangements are permitted, they must not be used in a way that undermines the integrity of the assessment. For example, practical assistants can be used to help learners set up but cannot help perform skills which are assessed, such as the physical ability to manipulate equipment.

6.12 Arrangements for Candidates with Particular Requirements

Candidates who are not disabled under the terms of the DDA may be eligible for access arrangements to enable them to demonstrate what they know and can do. Candidates who have been fully prepared for the assessment but who are ill at the time of the examination, or are too ill to take part of the assessment, may be eligible for special consideration. Centres should consult the *Regulations and Guidance Relating to Candidates who are Eligible for Adjustments in Examinations* produced by the Joint Council.

6.13 OCR Repository

The OCR Repository allows centres to submit moderation samples in electronic format.

The OCR GCSE Design and Technology: Product Design units A551 and A553 can be submitted electronically to the OCR Repository via Interchange: please check Section 6.1 for unit entry codes for the OCR Repository.

More information on the OCR Repository can be found in Appendix C: Guidance for the Production of Electronic Controlled Assessment.

7 Other Specification Issues

7.1 Overlap with other Qualifications

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

7.2 Progression from these Qualifications

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

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

Specifically, students who achieve a grade C or above would be well prepared to study AS/Advanced GCE Design and Technology or the Principal Learning in Engineering, Manufacturing or Hospitality.

7.3 Spiritual, Moral, Ethical, Social, Legislative, Economic and Cultural Issues

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

- Spiritual development, through helping candidates recognise their own creativity and the creativity of others in finding solutions to problems, and through recognising the tension between material and non-material needs

- Moral development, through helping candidates reflect on how technology affects the environment so they can make informed choices when designing and making; through discussing the moral dilemmas posed by introducing new technologies within different value systems and the advantages and disadvantages of new technology to local, national and global communities

- Social development, through helping pupils recognise the need to consider the views of others when discussing design ideas

- Cultural development, through exploring the contribution of products to the quality of life within different cultures, and through valuing and reflecting on the responses of people from other cultures to design solutions.

7.4 Sustainable Development, Health and Safety Considerations and European Developments, consistent with International Agreements

These specifications support these issues, consistent with current EU agreements, in the following areas:

- The specification provides opportunities to promote education for sustainable development, through developing knowledge and understanding of the principles of sustainable design and production systems, developing skills in creative problem solving and evaluation, and exploring values and ethics in relation to the application of design and technology.

- Whilst candidates will not be specifically assessed in terms of their knowledge and awareness of issues associated with energy usage, it is anticipated that, whenever possible, candidates will be encouraged to consider the benefits and drawbacks associated with the use of different sources of energy.

- The specification content includes a specific requirement to consider issues associated with health and safety and the environment (see Section 3).

- European examples should be used where appropriate in the delivery of the subject content. Relevant European legislation is identified within the specification where applicable.

7.5   Avoidance of Bias

OCR has taken great care in preparation of these specifications and assessment materials to avoid bias of any kind.

7.6   Language

These specifications and associated assessment materials are in English only.

7.7   Key Skills

Key Skills are central to successful employment and underpin future success in learning independently. Whilst they are certificated separately, the Key Skills guidance for this qualification has been designed to support the teaching and learning of the content. Opportunities for developing the generic Key Skills of Communication, Application of Number and Information Technology are indicated through the use of a 'key symbol' in Section 3. The wider Key Skills of Working with Others, Problem Solving and Improving Own Learning and Performance may also be developed through the teaching programmes associated with the specification.

The following matrix indicates where coverage exists within the specification.

	Communication	Application of Number	IT	Working with Others	Improving Own Learning and Performance	Problem Solving
Level 1	✓	✓	✓	✓	✓	✓
Level 2	✓		✓	✓	✓	✓

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

7.8   ICT

In order to play a full part in modern society, candidates need to be confident and effective users of ICT. Where appropriate, candidates should be given opportunities to use ICT in order to further their study of design and technology.

The assessment of this course requires candidates to use ICT through:

- Preparing, presenting, and reviewing information as they work on their design ideas

- Working with CAD

- Developing models that communicate these ideas

- The possible use of computer-aided manufacture (CAM).

This section offers guidance on opportunities for using ICT during the course. Such opportunities may or may not contribute to the provision of evidence for IT Key Skills.

ICT application	Opportunities for using ICT during the course
Database	Sections 3.1, 3.3, 3.4 Sections A & B
Internet	Sections 3.1, 3.4 Sections A & B
Word processing	Sections 3.1, 3.4 Sections A & B
Spreadsheet	Section 3.1
CAD	Sections 3.1, 3.2, 3.3
CAM	Sections 3.1, 3.2, 3.3

7.9   Citizenship

From September 2002, the National Curriculum for England at Key Stage 4 includes a mandatory programme of study for citizenship. Parts of this Programme of Study may be delivered through an appropriate treatment of other subjects.

This section offers guidance on opportunities for developing knowledge, skills and understanding of citizenship issues during the course.

Citizenship	Opportunities for teaching citizenship issues during the course
Consider the needs of others	Sections 3.1, 3.2, 3.3, 3.4
Consider issues around a particular product and its surroundings	Sections 3.1, 3.4 Section B
Seek opinions of others and be flexible and adaptable in responding to their needs	Sections 3.1, 3.2
Consider the need to work together as a team	Section 3.2
Seek the opinions of others	Sections 3.1, 3.2, 3.3, 3.4
Consider the health and safety of others	Sections 3.1, 3.4 Section A

Appendix A: Grade Descriptions

Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by candidates awarded particular grades. The descriptions must be interpreted in relation to the content in the specification; they are not designed to define that content. The grade awarded will depend in practice upon the extent to which the candidate has met the assessment objectives overall. Shortcomings in some aspects of candidates' performance in the assessment may be balanced by better performances in others.

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

Grade F

Candidates recall, select and communicate knowledge and understanding of basic aspects of design and technology, including its wider effects.

They apply limited knowledge, understanding and skills to plan and carry out simple investigations and tasks, with an awareness of the need for safety and precision. They modify their approach in the light of progress.

They review their evidence and draw basic conclusions.

Grade C

Candidates recall, select and communicate sound knowledge and understanding of design and technology, including its wider effects.

They apply knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks. They test their solutions, working safely and with precision.

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

Grade A

Candidates recall, select and communicate detailed knowledge and thorough understanding of design and technology, including its wider effects.

They apply relevant knowledge, understanding and skills in a range of situations to plan and carry out investigations and tasks effectively. They test their solutions, working safely and with a high degree of precision.

They analyse and evaluate the evidence available, reviewing and adapting their methods when necessary. They present information clearly and accurately, making reasoned judgements and presenting substantiated conclusions.

Appendix B: Marking Criteria for Controlled Assessments Units A551 and A553

Appendix B1   Controlled Assessment project

Whilst the specification does not have a material bias, candidates are advised, as a minimum, to have experiences of working with:

- Designing and modelling materials (paper, card, foam board, rigid foam)

- ICT

- A range of materials to provide for a wider range of prototype and modelling activities

- Light production materials or food ingredients (thin plastics, wood, metal, textiles, fabrics and threads, components, pre-manufactured components; fresh, processed, dried and other ingredients).

Where necessary, other materials should be included in order to allow candidates choice over their Controlled Assessment task in Unit A553. These may include heavier sections of materials from the above list, clay, plaster, electronic and other control systems, 'smart' and other modern materials or more varied food ingredients.

It is envisaged that the Controlled Assessment evidence presented for assessment will represent 20 hours (Unit A551) for the GCSE Short Course and 40 hours (Units A551 and A553) for the Full Course. Some of the work, by its very nature, may be undertaken outside school, for example research work, testing.

OCR expects teachers to supervise and guide candidates who are undertaking work which is internally assessed (i.e. Controlled Assessment project). The degree of teacher guidance in candidates' work will vary according to the work being undertaken. It should be remembered, however, that candidates are required to reach their own judgements and conclusions.

When supervising internally assessed Controlled Assessment projects, teachers are expected to:

- Offer candidates advice about how best to approach their work

- Exercise continuing supervision of work in order to monitor progress, ensure safe working and to prevent plagiarism

- Ensure that the work is completed in accordance with the specification requirements and can be assessed in accordance with the internal assessment objectives and procedures.

Internally assessed Controlled Assessment projects should be completed in the course of normal curriculum time and supervised and marked by the teacher. Some of the work, by its very nature, may be undertaken outside the centre, for example research work, testing. As with all internally assessed work, the teacher must be satisfied that the work submitted for assessment is the candidate's own work. Candidate authentication declarations must be completed by candidates prior to certification.

Candidates must observe certain procedures in the production of internally assessed work.

- Any copied material must be appropriately acknowledged.

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

- Work submitted for moderation must be marked with the:

    Centre number
    Centre name
    Candidate number
    Candidate name
    Unit title and code and Task title

Appendix B2   Controlled Assessment themes

Candidates may select one of the following themes as a starting point for the Controlled Assessment projects. Through investigating the theme, candidates can devise their own design brief based on their own interests and ability.

It is not compulsory to select an area for designing from this list of themes. Teachers and/or candidates can devise their own starting point. OCR Controlled Assessment consultants are available for advice if required.

Extra-terrestrial:	Life forms, housing, food / drink, transport, communication, space travel, attack, defence, communication, townships, visits, friendships, exhibits, museums, air conditioning, alarms, moisture control, language, welcoming, dress, sustainability
Space holidays:	Time lapses / ageing, travel, games, sustenance, storage, luggage, boredom / being occupied, alternative sporting activities, weightlessness, comfort, instrumentation, sleeping, recording, uniforms
Extreme sports:	Surfing, diving, bungee jumping, wall climbing, clothing, skydiving, microlighting, communications, meals on the move, publicity, equipment, safety, audiences, seating, recording / records, sustainability
Celebrations:	Birth, religious, personal, national, sporting, retirement, driving, examinations, certificates, trophies, invitations, accommodation, clothing, family, funerals, cards, music, meals / cakes / drinks, gifts, sustainability
Festivals:	Religious, cultural, harvest, music, song, sound, thanksgiving, Ramadan, truck fest, motoring, camping, sustenance, advertising, promotion, safety, steam fairs, gifts, clothing
Sports:	Events, matches, Olympics, Winter Olympics, World games, Commonwealth games, school sports days / matches, tournaments, promotion, refreshments, record keeping, trophies, certificates, footwear, changing rooms, rewards, sports kit, sustainability
Media:	Music, dance, theatre, cinema, seating, props, refreshments, first aid, dress, performance, communication, ticketing, monitoring, sound systems, advertising
Events:	Glastonbury, Chelsea flower show, seating, props, refreshments, first aid, performance, communication, ticketing, monitoring, sound systems, advertising, safety, accommodation, transport, parking, traffic flow, clothing, uniforms, sustainability
Prehistoric times:	Animals, plants, food chain, shelter, man v nature, temperature, H_2O, film / film sets, museums / exhibits, research, excavation, recording, contamination, clothing, promotion,

Health & fitness:	Types, equipment, recording, advertising, lighting, clubs / club rooms, 5 a day, balance, clothing, uniforms, swimming, time keeping, storage, transportation, contact sports, non-contact sports, changing rooms, referees
Crime:	Forensics, investigations, 'Cluedo', murder mystery, board games, participation, mood stimulation, multi-functional, incorporation, clues, red herrings, science, exclusion, winning, clothing, uniforms, contamination, identification, victims, jail, punishments, courthouse, prevention, support
Transportation:	Travel, driving, passengers, conducting, uniforms, maintenance, tool kits, storage, monitoring, ticketing, advertising, waiting, luggage, warmth, space, boredom, environment, seating, safety, entertainment, sustainability
Food on the move:	In-flight catering, at sea, spillage, marathons, space travel, camping, storage, heating, cooking, uniforms, re-use, washing up, transportation, identification, contamination, balance, in-car picnics, rail travel, sustainability
My environment:	Hobbies, home, work, school, swimming pools, keep fit, sustenance, recording, communication, sleeping, music, sport, travel, cycling, reading, lighting, storage, sustainability

Appendix B3   Marking criteria for internally assessed work

This specification requires candidates to demonstrate fully their design and technology capability. They should combine skills with knowledge and understanding in order to design and make quality products.

The GCSE assessment objectives of: materials, components, processes, techniques and industrial practice (AO1) for designing and making quality products (AO2) and for evaluating processes and products and examining the wider effects of design and technology on society (AO3) are assessed through the Internal Assessment Objectives shown below.

Internal Assessment Objectives		Specification Assessment Objectives		
		AO1	AO2	AO3
1	Identification of a need or opportunity leading to a design brief	2	2	2
2	Research into design brief resulting in a specification for the design of a product	5	13	5
3	Generation of design proposals	10	41	10
	Unit A551 total marks (90)	**17**	**56**	**17**
4	Prototype manufacture	7	40	8
5	Testing and marketing	7	20	8
	Unit A553 total marks (90)	**14**	**60**	**16**

Unit A551 is assessed against Internal Assessment Objectives 1, 2 and 3. Unit A553 is assessed against Internal Assessment Objectives 4 and 5. The weighting of the marks provides an indicator of the time that candidates should spend on each part of the project.

Applying the internal assessment objectives to candidates' work:

- Each internal assessment objective has one or more 'level of response' boxes, which in turn contain four hierarchical statements.

- The marks have been broken down into ranges of marks for the hierarchical statements within each level of response box.

For example, when marking Internal Assessment Objective 4: Prototype manufacture

Statements from each of the level of response boxes	Reasons for allotting particular marks
Production log shows a good range of skills; use of materials, tools and equipment explained clarity; modifications and problem solving during making recorded	Mark range 9–12 Evidence almost exceeds statement, therefore mark awarded: 12
Work shows little economic use of materials or consideration of sustainability; no clear understanding of safe working practices; no indication of how to achieve precision	Mark range 0–3 Evidence weak, poorly matches statement, therefore mark awarded: 1
The product will exhibit a good standard of outcome, will be complete and will function as intended.	Mark range 11-17 Evidence matches the statement, therefore mark awarded: 14
Total mark for Objective 4	**27**

Identification of a need or opportunity leading to a design brief	Level of response	Mark range
Candidates will need to: • Provide a detailed description of the design need using various means of communication • Extract from verbal, visual and statistical information the essential problems to be solved • Identify the range of users and the market for which the product is intended • Develop a design brief for a marketable product which is innovative and might involve some degree of risk taking.	A statement of the design need	0–1
	Some details of the design need or the intended user/users leading to a design brief for the product	2
	Evidence of both the design need and the intended user/users leading to a clear design brief for the product	3–4
	Detailed evidence of both the design need and intended user/users leading to a clear and precise design brief for the product	5–6
	Maximum mark	**6**

Research into design brief resulting in a specification for the design of a product	Level of response	Mark range
Candidates will need to: • Identify and collect other data relevant to the product and its users • Examine the intended purpose of existing products • Identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products	Cursory examination of other similar products	0–2
	Examination of other similar products	3–4
	Full examination of other similar products; other relevant research	5–6
	Detailed examination of other similar products; detailed analysis of other relevant research.	7–8
	Limited research of intended user(s)	0–1
	Intended user(s) of product examined with some data identified or collected	2–3
• Identify and collect relevant data about the user(s) • Examine the intended purpose of the intended product	Intended user(s) of product examined with important data identified and collected; other data identified and collected	4–5
	Intended user(s) of product examined with all significant data identified and collected; other key data identified and collected.	6–7
• Understand the issues that expand the design brief	Specification identifying some basic requirements	0–2
	Specification identifying some key features	3–4
• Detail the requirements of the product	Specification identifying most of the key features and considers the user	5–6
• Demonstrate an ability to express the results of research and analysis in the form of a suitably detailed and justified specification.	A detailed and justified specification which fully considers the user.	7–8
	Maximum mark	**23**

Internal Assessment Objective 3

TOTAL MARKS 61

Generation of design proposals	Level of response	Mark range
Candidates will need to: • Generate and record the development of design proposals that are innovative and show flair and imagination • Consider user needs and issues when developing ideas • Consider aesthetics, ergonomics, function and the other design influences • Appraise design ideas for suitability, value and consequence • Identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture • Use suitable communication techniques, including graphics and ICT, to develop and model design proposals and production systems • Use modelling to check on the feasibility of design ideas. (1g)	One or more solutions proposed	0–5
	Several solutions proposed showing some detail but with little innovation or flair	6–13
	A range of detailed ideas leading to the development of a solution showing some innovation and flair	14–19
	A range of detailed ideas leading to the development of a full and thorough solution showing innovation, flair and / or some risk taking	20–25
	Little consideration given to the user, aesthetics, ergonomics, function, sustainability or the other design influences, with noticeable errors in spelling punctuation and grammar	0–2
	Some consideration given to the user, aesthetics, ergonomics, function, sustainability or the other design influences with errors in spelling, punctuation and grammar	3–4
	Consideration given to the user, aesthetics, ergonomics, function, sustainability and / or the other design influences with few errors in spelling, punctuation and grammar	5–6
	Appropriate consideration given to the user, aesthetics, ergonomics, function, sustainability and / or the other design influences with few errors in spelling, punctuation and grammar.	7–8
	Little or no evaluation of designs against specification and product standards	0–3
	Cursory evaluation of designs against specification and product standards	4–5
	Design proposal chosen, supported by clear evaluation against the specification and product standards	6–7
Candidates may also: • Check that the design proposal meets legislative standards; consider patents and copyrights • Control the development of the product for manufacture and identify within the design proposals the resources needed for the prototype to be realised • Consider, using examples, those aspects of the design which could most easily be manufactured in quantity • Produce a final product specification.(1e)	Design proposal chosen as a result of detailed evaluation against the specification and product standards.	8–10
	Work displays a low standard of graphical communication, structure, written communication and modelling techniques	0–2
	Graphical, written and modelling communication will be of a reasonable standard and structure, but using a limited range of techniques	3–4
	Graphical, written and modelling communication will demonstrate clarity, be of a good standard and structure, and employ a number of appropriate techniques	5–6
	Graphical, written and modelling communication will demonstrate clarity and confidence, be of a high standard and structure, and employ a wide range of appropriate techniques	7–8
	ICT limited to word or data processing or simple drawing	0–2
	ICT includes basic CAD or other computer applications	3–5
	ICT includes good use of CAD or other computer applications as part of the designing activity	6–7
	ICT includes work which fully demonstrates the use of appropriate CAD or other computer applications as an integrated part of the designing activity.	8–10
	Maximum mark	**61**

Prototype manufacture	Level of response	Mark range
	Production log will contain images and explanation of the processes undertaken to complete the prototype, plus a range of digital images/photographs showing the quality and functions of the completed product. These must be available for moderation for any marks to be awarded for this objective.	
Candidates will need to: • Make a 3D prototype using appropriate media – the prototype to have working features to demonstrate how the product will function • Complete a production log of the stages of making the product • Select and use the appropriate tools, equipment and processes effectively and safely to make products that match the specification • Use of tools and techniques to achieve precision • Use CAM where appropriate • Deploy a range of skills and techniques appropriate to the task, **(CAD/CAM is a single skill**), including those necessary to ensure realism of the prototype product • Prepare and use materials economically • Select and use appropriate pre-manufactured components • Be prepared to adapt working procedures in response to changing circumstances • Demonstrate clear understanding of safe working practices.	Production log shows a limited range of skills, use of materials, tools and equipment	0–4
	Production log shows a satisfactory range of skills, use of materials, tools and equipment	5–8
	Production log shows a good range of skills; use of materials, tools and equipment explained clearly; modifications and problem solving during making recorded.	9–12
	Production log shows a high degree of skills, use of materials, tools and equipment; images are explained with detail and reasoning; justification of modifications and problem solving during making.	13–18
	Work shows little economic use of materials or consideration of sustainability; no clear understanding of safe working practices; no indication of how to achieve precision	0–3
	Work shows some economic use of materials or some consideration of sustainability; reasonable understanding of safe working practices; indication of how to achieve precision	4–6
	Materials have been used economically, with some consideration of sustainability; good understanding of safe working practices; understanding of how to achieve precision	7–9
	Shows careful selection and economic use of materials and consideration of sustainability; high understanding of safe working practices; clear understanding of how to achieve precision	10–12
	The product will exhibit a low standard of outcome and may not be successfully completed	0–4
	The product will exhibit a reasonable standard of outcome, be mainly complete and will satisfy the specification with a limited degree of success	5–10
	The product will exhibit a good standard of outcome, will be complete and will function as intended	11–17
	The product will be completed to a high standard and will fully meet the requirements of the design specification	18–25
	Maximum mark	**55**

Internal Assessment Objective 5   TOTAL MARKS 35

Testing, evaluating and marketing products	Level of response A marketing presentation must be available for moderation for any marks to be awarded for this objective.	Mark range
Candidates will need to provide: • A design concept page that includes details of the prototype product to be made and a related detailed specification	Superficial evidence of user-group testing and evaluation with no reference to the design specification, using a low standard of written techniques, with noticeable errors in spelling, punctuation and grammar	0–2
	Evidence of evaluation with some reference to the design specification and a user / user group, using written techniques of a reasonable standard and structure, with errors in spelling, punctuation and grammar	3
• Evidence of testing and evaluation of the prototype product by a user / user group against the design criteria	Evidence of testing by a user / user group and evaluation with reference to the design specification, using written techniques of a good standard and structure, with few errors in spelling, punctuation and grammar	4–5
• Evidence of user / user-group feedback of the prototype product	Evidence of thorough testing by a user / user group and full evaluation with reference to the design specification using written techniques of a high standard and structure, with few errors in spelling, punctuation and grammar.	6–7
	Design modifications / improvements of the final product are suggested but lack detail	0–1
• Details of any review processes and necessary modifications to improve the final prototype product	Design modifications / improvements of the final product are suggested with some detail	2–3
	Design modifications / improvements of the final product are suggested with reasonable detail	4
	Design modifications / improvements of the final product are suggested in full detail	5
• Details of how the design prototype could be manufactured in quantity by either batch, repetitive flow, continual flow or other production system in the 'real world'	Consideration of quantity production leading to a statement identifying a suitable quantity manufacturing system for the prototype product	0–1
	Consideration of quantity production leading to limited but clear details of a suitable quantity manufacturing system for the prototype product	2–3
	Consideration of quantity production leading to a detailed description of a suitable quantity manufacturing system for the product prototype	4
	Consideration of quantity production leading to a detailed description of a suitable quantity manufacturing system including details of chosen materials for the main component(s)	5
• Marketing presentation – 'sales pitch' – in an interesting way to bring the product to the attention of one of the following:	Marketing presentation addresses some key points	0–3
• A prospective manufacturer • A supplier	Marketing presentation highlights key points yet is dull and uninspiring	4–7
• A company buyer • A retailer	Marketing presentation is explained, is interesting and uses a persuasive approach	8–12
• An end user / user group • A consumer.	Marketing presentation is thorough, fully explained and uses an innovative and persuasive approach	13–18
	Maximum mark	**35**

Appendix C: Guidance for the Production of Electronic Controlled Assessment

The materials produced for Controlled Assessment in Units A551 and A553 form a Controlled Assessment portfolio, stored electronically.

Structure for evidence

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

There should be a top level folder detailing the candidate's centre number, candidate number, surname and forename, together with the Unit code e.g. A551, so that the portfolio is clearly identified as the work of one candidate.

Each candidate produces evidence for the Controlled Assessment. The evidence for each element of the Controlled Assessment should be contained within a separate folder within the portfolio. Each of these folders is likely to contain separate files.

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

Data formats for evidence

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

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

Electronic Controlled Assessment is designed to give candidates an opportunity to demonstrate what they know, understand and can do using current technology. Candidates do not gain marks for using more sophisticated formats or for using a range of formats.

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

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

Accepted File Formats

Movie formats for digital video evidence

MPEG (*.mpg)

QuickTime movie (*.mov)

Macromedia Shockwave (*.aam)

Macromedia Shockwave (*.dcr)

Flash (*.swf)

Windows Media File (*.wmf)

MPEG Video Layer 4 (*.mp4)

Audio or sound formats

MPEG Audio Layer 3 (*.mp3)

Graphics formats including photographic evidence

JPEG (*.jpg)

Graphics file (*.pcx)

MS bitmap (*.bmp)

GIF images (*.gif)

Animation formats

Macromedia Flash (*.fla)

Structured markup formats

XML (*xml)

Text formats

Comma Separated Values (.csv)

PDF (.pdf)

Rich text format (.rtf)

Text document (.txt)

Microsoft Office suite

PowerPoint (.ppt)

Word (.doc)

Excel (.xls)

Visio (.vsd)

Project (.mpp)