RECOGNISING ACHIEVEMENT

GCSE

Design and Technology: Product Design

OCR GCSE (Short Course) in Design and Technology: Product Design J900

OCR GCSE in Design and Technology: Product Design J901

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Throughout the specification the following icons are used to signpost teaching and learning opportunities in:

Citizenship

ICT

Key Skills

CO - Communication

N - Application of Number

IT - Information Technology

WO - Working with Others

LP - Improving own Learning and Performance

PS - Problem Solving

1 About these Qualifications

This booklet contains OCR's GCSE (Short Course) and GCSE specifications in Design and Technology: Product Design for teaching from September 2007.

This GCSE specification involves candidates in activities which 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, modelling, materials for production and media including the use of ICT.

Key features of this specification:

- Exposes candidates to creative, design based activities.
- Encourages candidates to explore and develop, experience and express their design ideas.
- Provides a learning experience which is participatory and experimental in nature.
- Values flair and imagination.
- Uses a number of innovative assessment methods.
- Has a unitised assessment scheme, units can be taken in any order.
- Portfolio evidence can be submitted on paper, on CD or via e-portfolio with video and sound clips.
- No material bias, can be taken by all candidates in a D&T department.
- 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 meets the National Curriculum non-statutory guidelines for England (DfES/QCA 1999 revised 2004) for Design and Technology. It provides opportunities for candidates to develop an awareness of the nature and significant importance of Design and Technology in a rapidly changing society. The specification offers a system of assessment for GCSE based on clear targets and a coherent set of criteria for rewarding positive achievement across grades G-A*. The assessment of candidates is on a unitised basis with short course candidates undertaking 2 units and full course candidates 4 units.

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 (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 2007 the GCSE (Short Course) is made up of **two** mandatory units, one of which is a coursework unit and one of which is externally assessed. The two units form 50% of the corresponding four-unit GCSE.

Both Full and Short Course candidates undertake Units B801 and B802 allowing for co-teachability and flexibility in scheduling and timetabling.

1.2 GCSE (Full Course)

From September 2007 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 coursework unit and one of which is externally assessed.

Unit B801 – *Developing and Applying Design Skills*

Unit B802 – *Designing and Making Innovation Challenge*

Unit B803 – *Making, Testing and Marketing Products*

Unit B804 – *Designing Influences*

Unit code	Unit Title	Entry Option	Entry	Duration	Weighting
B801	Developing and Applying Design Skills	B801	Paper or CD	20 hours	60% Short 30% Full
B802	Designing and Making Innovation Challenge	B802	Paper	6 hours plus 30 minutes reflection time	40% Short 20% Full
B803	Making, Testing and Marketing Products	B803	Paper or CD	20 hours	30% Full only
B804	Designing Influences	B804	Paper	1 hour 30 mins	20% Full only

Reference to the National Curriculum

This specification complies fully with the non-statutory guidance for Design & Technology at KS4.

In order for centres to match this specification content against schemes of work, references are made in bracketed text to the knowledge, skills and understanding outlined in the National Curriculum KS4, non-statutory guidance for Design & Technology.

1.3 Qualification Titles and Levels

These qualifications are shown on a certificate as:

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

This qualification is approved by the regulatory authorities (QCA, ACCAC and CCEA) as part of the National Qualifications Framework.

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

1.4 Aims

The specification requires candidates to demonstrate fully their design and technology capability by combining skills with knowledge and understanding in order to design and make innovative prototype products. The specification allows candidates to acquire and apply knowledge, skills and understanding through:

(i) analysing and evaluating products and processes;

(ii) engaging in focused tasks to develop and demonstrate techniques;

(iii) engaging in strategies for developing ideas, planning and producing products;

(iv) considering how past and present design and technology, relevant to a designing and making context, affects society;

(v) recognising the moral, cultural and environmental issues inherent in design and technology.

The aims of this specification are:

- to provide the opportunity to develop a candidate's design and technology capability and in particular to encourage imagination, innovation and flair;
- to encourage candidates to combine their designing and modelling skills with knowledge and understanding, in order to produce outcomes capable of rigorous testing;
- to promote design and technology capability in candidates through activities which involve a range of contexts, materials, processes and to lead to tangible outcomes;
- to give opportunities to develop design capabilities and the confidence to design, make and modify products for identified purposes, selecting and using resources effectively;
- to promote the use of graphic techniques and ICT including computer-aided design (CAD), to generate, develop, model and communicate design proposals;
- to promote the use of computer-aided manufacture (CAM) in single item production and in batch or volume production;
- to 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;
- to encourage the development of candidates' consideration of function and ergonomics;
- to encourage the development of candidates' understanding of the needs and values of a range of users; including spiritual, moral, social, and cultural considerations;
- to promote the keys skills of communication, application of number, IT, working with others, improving learning and performance and problem solving;
- to encourage the development of candidates' thinking skills, financial capability, enterprise and entrepreneurial skills;
- to encourage the development of candidates' understanding of work-related learning and the principles of sustainable design and production systems;
- to encourage candidates to consider how present and past design and technology, relevant to a designing and making process, affects society;
- to encourage candidates to recognise that the work of past designers can influence the development of design thinking;

- to encourage candidates to consider the uses and effects of new technologies and modern materials on product design and manufacture;
- to provide for activities which 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.

Candidates entering this course should have achieved a general educational level equivalent to National Curriculum Level 3, or a distinction at Entry Level within the National Qualifications Framework.

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 fully 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 to life in the technological world in which we live.

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 coursework 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 utilise 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 portfolio Units B801 and B803 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 successfully complete their work 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 B802 is a 6 hour 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 B804 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.

The specification provides a framework which can be accessed by all candidates with the potential of gaining a GCSE grade G-A*. OCR has taken great care in the preparation of this specification and assessment material to avoid bias of any kind.

During the key stage, candidates should be taught the knowledge, skills and understanding through:

- product analysis (6a)
- focused practical tasks that develop a range of techniques, skills, processes and knowledge (6b)
- design and make assignments, which include activities related to industrial practices and the application of systems and control (6c)

Design and Technology, by its very nature, is continually developing. Teachers should be aware of new developments when preparing candidates for this examination.

2.1 GCSE (Short Course) Units

Unit B801: *Developing and Applying Design Skills*

- Developing and writing a design brief
- Drawing up a specification
- Generating design proposals

Unit B802: *Designing and Making Innovation Challenge*

- Design and Making practical examination that encourages flair, innovation and working with materials.

2.2 GCSE Units

Unit B803: *Making, Testing and Marketing*

- Prototype Manufacture
- Testing, Evaluating and Marketing

Unit B804: *Designing Influences*

- Examination testing knowledge and understanding of the factors that influence designing, iconic products, trend setters, design eras and design movements

3 Content

3.1 Unit B801: *Developing and Applying Design Skills*

Developing and writing a design brief CO, WO

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 (1b);
- develop a design brief for a marketable product which is innovative and might involve some degree of risk taking (1a).

Drawing up a specification CO, IT, WO

Candidates should be able to:

- examine the intended purpose of the product;
- identify and collect data relevant to the product(s) and its users; (3a,3c);
- identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products; (3c,3d);
- understand the issues and expand the design brief; (1a);
- understand the detailed requirements of the product;
- demonstrate an ability to express the results of research and analysis in the form of a suitably detailed specification (1a).

Generating Design Proposals CO, IT, WO

Candidates should be able to:

- generate and record the development of design proposals that are innovative, show flair and imagination;
- consider user needs and issues when developing ideas (1b);
- appraise design ideas for suitability, value and consequence;
- consider aesthetics, ergonomics and function;
- use suitable communication techniques including graphics and ICT to develop and model design proposals and production systems (1c,1g,5a);
- use modelling to check on the feasibility of design ideas;
- identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture;
- check that the design proposal meets legislative standards. Consider patents and copyrights;
- have control over developing the product for manufacture, identify within the design proposals the resources needed for the prototype to be realised;
- produce a final product specification (1a).

3.2 Unit B802: *Designing and Making Innovation Challenge* LP, PS

Working 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 & 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 (6a);
- record thinking, innovation and flair;
- demonstrate the ability to focus thoughts and be decisive within a set, limited time frame (1a);
- seek opinions of others and react accordingly (1b,3c);
- 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 (1f,3a,3b);
- use modelling materials adeptly (1e,1g);
- plan the use of materials and equipment (1d,1e);
- make a product (2a,2b,4a,4b,4c,4d,4e);
- record progress using sketches and photographs;
- sum up progress and identify possible further design development.

3.3 Unit B803: *Making, Testing and Marketing*

Prototype Manufacture  N, IT, PS

Candidates should be able to:

- make a 3D prototype in appropriate media. The prototype should have working features to demonstrate how the product will function;
- select and use the appropriate tools, equipment and processes effectively and safely to make products that match the specification (2a);
- use CAM where appropriate (2d);
- economically prepare materials;
- select and use appropriate pre-manufactured components;
- be prepared to adapt working procedures in response to changing circumstances;
- purposefully deploy a range of skills and techniques appropriate to the task, including those necessary to ensure realism of the prototype product.

Testing, Evaluating and Marketing  IT, PS

Candidates should be able to:

- test and evaluate design prototypes against the design criteria (3a);
- give details of any review processes and necessary modifications to improve the product prototype (3a);
- consider how the design prototype could be manufactured in quantity by either batch, repetitive flow, continual flow or other production system;
- produce a marketing presentation (see below) for either a prospective manufacturer, supplier, company buyer (not end user/consumer), or retailer of the product.

The marketing presentation must include the following:

1. A design concept page (3g);
2. Digital images/photographs of the prototype product providing evidence of important stages of manufacture and the candidate's making skills (2a,b,c,e,4a,b,c,d,e,5a);
3. User evaluation including evidence of testing the product prototype (6a);
4. Details of any necessary modifications to improve the product prototype (3a);
5. Opportunities for quantity manufacture (1c,2c,2d);
6. Opportunities for packaging, and presentation of the prototype product to the customer.

3.4 Unit B804: *Designing Influences*

Designing Influences Section A (3a, c, d, 5a)	
Candidates should understand the influence upon designing of:	
Social, moral and cultural issues 	Ethical designs, sustainable technologies, the impact of different cultures on modern products, the globalisation of design, life style changes e.g. the development of readymeals.
Environmental factors	Consideration of weather, wind, light, sound, heat and cold, pollution and recycling.
Ergonomics & Anthropometrics  **N**	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.
Patent and copyright 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.
Consumer law 	Understanding that legislation exists to provide consumers with protection e.g. labelling, product literature.
Marketing and economics	Understand that products needs to be economically viable and marketed if they are to be commercially successful.
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  N, IT	Natural and mechanical structures, simple mechanical and electrical systems.
Energy  N, IT	Sources of energy including natural sources and food; energy generated by burning fuel, batteries; impact of energy use.
Scientific principles  N, IT	Properties of heat including transfer of heat and insulation; the importance of scientific principles for example strength, friction, compression and elasticity.
Health and Safety 	Personal safety, recognising care over the use of flammable and toxic substances together with recognition and understanding of safety symbols (UK and European); safety in terms of function and product maintenance, correct selection of components, materials and finishes.

Designing Influences Section B WO, LP, CO

Candidates should recognise the influences on design of iconic products, trends and trend setters and significant technological developments, from the following range of eras and movements. Victorian (1840-1900), Art Nouveau (1890–1914), Art Deco (1920's–1930's), War & Post War years (1940's-50's), the 1960's, 70-80s and the 1990's - 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 as specified above. This published list will be current for three examination series (June, 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 5 focus areas listed in the table below. Teachers therefore need ONLY prepare their candidates to answer questions from the perspective of the focus material linked to candidate's experiences during the course.

For examination in June 2007 Centres should prepare their candidates to answer questions on the following:

	Eras and movements	*Trend setter*	*Iconic product*
1	30s and 40s	Bakelite	Radio, TV or other domestic product made predominately in Bakelite
2	30s	Harry Beck	London Underground map
3	90s	Microchips	Mobile phone
4	90s	Goretex	Sports clothing
5	40s	British Government	War time rationing

For examination in January and June 2008 Centres should prepare their candidates to answer questions on the following:

	Eras and movements	*Trend setter*	*Iconic product*
1	Art Nouveau	Charles Rennie Mackintosh	Mackintosh Chair
2	30s-60s	Raymond Loewy	The Shell logo
3	50s	Transistors	Bush TR82 Transistor radio
4	60s	Mary Quant	The Mini Skirt
5	70s & 80s	Processed Food	Pot Noodle

For examination in January and June 2009 Centres should prepare their candidates to answer questions on the following:

	Eras and movements	*Trend setter*	*Iconic product*
1	Victorian	Isambard Kingdom Brunel	SS Great Britain
2	60s - present	Wally Olins	Orange brand
3	90s	LCD display	Laptop computer
4	70s – 80s	Vivienne Westwood	PVC clothing
5	2000 - Present	Jamie Oliver	Healthy School Meals

Further details are contained in the accompanying teacher guide.

4 Schemes of Assessment

4.1 GCSE (Short Course) Scheme of Assessment

GCSE (Short Course) Design and Technology Product Design (J900)	
Unit B801: *Developing and Applying Design Skills*	
60% of the total GCSE short course marks 20 hours coursework 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. (1a, 1b, 3a)
	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. (3g)
	Portfolio evidence can be submitted on paper or CD. All electronic evidence must be presented in a format which matches that published in the teacher guide which supports this specification. The whole activity must not exceed 20 hours of work.
	This unit is internally marked and externally moderated.
	Maximum mark for this unit is 90 (120 UMS). Assessment will be against the Internal Assessment Objectives 1, 2 and 3. See Section 4.6.
Unit B802: *Designing and Making Innovation Challenge*	
40% of the total GCSE short course marks 6 hours plus 30 minutes reflection time 60 marks	**Outline:** A 6 hour un-tiered 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.

Themes June 2007

Theme	Most suited to candidates working mainly in these areas
A day on the beach	Resistant Materials, Textiles, Graphic Products, Art & Design
'Take Five'	Food Technology, Home Economics
Rain water	Resistant materials, Systems & Control, Electronics, Systems & Control, Art & Design
Entertainment	Textiles, Food Technology, Home Economics, Graphic Products, Art & Design,

Themes January and June 2008

Theme	Most suited to candidates working mainly in these areas
A day on the beach	Resistant Materials, Textiles, Graphic Products, Art & Design
Travel	Food Technology, Home Economics
Rain water	Resistant materials, Systems & Control, Electronics, Systems & Control, Art & Design
Entertainment	Textiles, Food Technology, Home Economics, Graphic Products, Art & Design,

Synopsis The Innovation Challenge is a teacher-led activity which 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 offer the centre a choice of themes which explain a design context to work within. Further details about the themes and full instructions concerning the conduct for running this unit in a centre are provided in the accompanying Teachers' Guide.

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 show examples of products with interesting features or capabilities. Further details about these support materials are provided in the accompanying Teachers' Guide.

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

Mid-way 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 and joining 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 teacher guide.

The evidence contained in the candidate answer booklets is assessed by the OCR appointed examiner 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

INNOVATION CHALLENGE Session 1 - SUGGESTED TIMETABLE		
Reference to OCR pre-printed answer booklet	**Activity**	**Time allocation (mins)**
5	Introduction to the challenge	5
	The handling collection or background information – Teacher-led starter session (6a)	15
	The inspiration collection. Products with interesting features or capabilities (6a)	
1	Initial thoughts	6
2	Possible Ideas	10
3 & 4	Decision time Brief Specification	15
5 & 6	Initial ideas (3b)	25
7	'Traffic Light Zone'	6
8	Final idea	25
	Break (15 minutes approx)	
	Group presentation planning (3 / 4 candidates per group) Introduction by teacher	2
9	Reflect and record (3d)	5
	Candidate presentation and group feedback	10 - 15 (3-4 minutes per candidate)
10	Green Zone (1f)	6
11	Question time (3c)	5
	Introduction to modelling kit	10
12	Your model (1e,2a,2b,2d,4a,4b,4c,4d,4e)	10
13	Action plan for session 2 (1d)	6

INNOVATION CHALLENGE Session 2 – SUGGESTED TIMETABLE		
Reference to OCR pre-printed answer booklet	**Activity**	**Time allocation (mins)**
14	Evaluation of ideas	5
	Go make! (6c)	40
15	Progress report 1 (photo)	5
	Go make! (6c)	40
16	Progress report 2 (photo)	5
17	Plan for last 40 mins	
	Go make! (6c)	45
	Break (10 minutes approx)	
18	Final Evaluation (photo)	6
19	Summing up	7
20	Specification check (2c)	15
	FINISH	
Page 2	Time to Reflect	30

4.2 GCSE (Full Course) Scheme of Assessment

GCSE Design and Technology Product Design (J901)	
GCSE (Short Course) Units as above, Unit B801 being 30% of the total GCSE marks and Unit B802 being 20% of the GCSE marks.	
Unit B803: *Making, Testing and Marketing Products*	
30% of the total GCSE marks 20 hours coursework 90 marks	This unit requires the candidate to either develop further the work undertaken in either Unit B801 or Unit B802 or develop an existing product or new product of the candidates choosing.
	Candidates produce: • an artefact in the form of a prototype product capable of evaluation (6c); • a marketing presentation (3g).
	The candidate should consider how the prototype product could be manufactured in quantity by identifying an appropriate hypothetical manufacturing system and outlining any changes necessary to the chosen design to allow this form of manufacture to take place. The evidence presented for assessment must be a marketing presentation aimed at either a prospective manufacturer, supplier, company buyer (not end user/consumer), or retailer of the product containing the following: 1. a design concept page (3g); 2. digital images/photographs of the prototype product providing evidence of important stages of manufacture and the candidates making skills (2a,b,c,e, 4a,b,c,d,e, 5a); 3. user evaluation including evidence of testing the product prototype (6a); 4. details of any necessary modifications to improve the product prototype (3a); 5. opportunities for quantity manufacture (1c,2c,2d); 6. opportunities for packaging, and presentation of the prototype product to the customer.
	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 the Teachers' Guide which supports this specification.
	The whole activity must not exceed 20 hours of work.
	This unit is internally marked and externally moderated.
	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 (see Section 6.3) with additional evidence to indicate the performance of the candidates design within the context of the performance of the overall project.
	Maximum mark for this unit is 90 (120 UMS). Assessment will be against the Internal Assessment Objectives 4 and 5. See Section 4.6.

Unit B804: *Designing Influences*	
20% of the total GCSE marks 1 hr 30 minutes written paper 60 marks	This unit will test candidates' knowledge and understanding of the factors that influence designing listed in sections 3.4, Section A and 3.4, Section B. The questions have no material bias.
	The examination paper contains 5 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 published to 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, simple annotated sketches and diagrams and (in the case of questions aimed at C performance and above) through discussion requiring free response style responses.
	This unit is externally examined.

4.3 Entry Options

GCSE (Short Course) candidates must be entered for Units B801 and B802.

GCSE (Full Course) candidates must be entered for Units B801, B802, B803 and B804.

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

- OCR GCSE (Short Course) in Design and Technology Product Design (J900).
- OCR GCSE in Design and Technology Product Design (J901).

Please note:

For Units B801 and B803, centres do not have to enter all candidates using the same format in any one series across the two units. For example, a centre could enter all candidates using CD for Unit B801 and enter all candidates using paper for Unit B803.

Please refer to the table in section 1.2 for further information.

4.4 Tiers

The scheme of assessment is un-tiered, covering the whole of the ability range grades from G to A*. Candidates achieving less than the minimum mark for grade G will be ungraded.

4.5 Assessment Availability

This qualification will first be certificated in January 2008.

There are two examination series each year, in January and June.

4.6 Assessment Objectives

The assessment objectives are designed to reflect the non-statutory guidelines for Design and Technology.

Within this specification candidates will need to demonstrate their ability to:

- use imagination, innovation and flair when designing products;
- develop, plan and communicate ideas;
- work with tools, equipment, materials to develop working models and prototypes;
- use appropriate ICT;
- evaluate working models and prototypes;
- understand and use, where applicable, systems and control.

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

AO1

- Capability through acquiring and applying knowledge, skills and understanding of materials, components, processes techniques and industrial practice;

AO2

- Capability through acquiring and applying knowledge, skills and understanding when designing and making quality products;

AO3

- Capability through acquiring and applying knowledge, skills and understanding when evaluating processes and products; and examining the wider effects of design and technology on society.

AO weightings

The relationship between the components and the assessment objectives of the scheme of assessment is shown on the following grid.

GCSE Short Course

Unit	% of GCSE			Total
	AO1	AO2	AO3	
Unit B801: *Developing and Applying Design Skills*	12	36	12	60
Unit B802: *Designing and Making Innovation Challenge*	8	24	8	40
	20	60	20	100

GCSE Full Course

Unit	% of GCSE			Total
	AO1	AO2	AO3	
Unit B801: *Developing and Applying Design Skills*	6	18	6	30
Unit B802: *Designing and Making Innovation Challenge*	4	12	4	20
Unit B803: *Making, Testing and Marketing Products*	6	18	6	30
Unit B804: *Designing Influences*	4	12	4	20
	20	60	20	100

4.7 Quality of Written Communication

Quality of written communication is assessed in all units and credit may be restricted if communication is unclear.

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 Technical Information

5.1 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.

See Section 4.3 for unit entry codes.

5.2 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 (Short Course) certification (entry code J900).
- GCSE certification (entry code J901).

A candidate who has completed all the units required for the qualification may enter for certification either in the same examination series (within a specified period after publication of results) or at a later series.

Short Course GCSE certification and GCSE certification is available from January 2008.

5.3 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.

In modular schemes candidates can take units across several different series. 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 uniform marks to enable this to be done.

A candidate's uniform mark is calculated from the candidate's raw marks. 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 e.g. 41/50.

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	120-108	107-96	95-84	83-72	71-60	59-48	47-36	35-24	23-0
20%	80	80-72	71-64	63-56	55-48	47-40	39-32	31-24	23-16	15-0

Qualification	Qualification Grade								
	A*	A	B	C	D	E	F	G	U
Short Course	200-180	179-160	159-140	139-120	119-100	99-80	79-60	59-40	39-0
GCSE	400-360	359-320	319-280	279-240	239-200	199-160	159-120	119-80	79-0

Awarding Grades

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

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

Candidates achieving less than the minimum mark for Grade G will be ungraded.

Differentiation

Differentiation will be achieved by task and outcome in all units. It is important that the internal assessment tasks undertaken by each candidate should reflect their capabilities.

5.4 Result Enquiries and Appeals

Under certain circumstances, a centre may wish to query the grade available to one or more candidates or to submit an appeal against an outcome of such an enquiry. Enquiries about unit results must be made immediately following the series in which the relevant unit was taken.

For procedures relating to enquires on results and appeals, centres should consult the OCR *Handbook for Centres* and the document *Enquiries about Results and Appeals – Information and Guidance for Centres* produced by the Joint Council. Copies of the most recent editions of these papers can be obtained from OCR.

5.5 Shelf-Life of Units

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

5.6 Unit and Qualification Re-sits

Candidates may re-sit any unit once only prior to certification. The better score will be used in the aggregation. Individual unit results will have a shelf-life limited only by that of the qualification.

5.7 Guided Learning Hours

Short Course GCSE Design and Technology Product Design requires 60 guided learning hours in total.

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

5.8 Code of Practice/Subject Criteria/Common Criteria Requirements

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

5.9 Arrangements for Candidates with Particular Requirements

For candidates who are unable to complete the full assessment or whose performance may be adversely affected through no fault of their own, teachers should consult the *Access Arrangements and Special Consideration Regulations and Guidance Relating to Candidates who are Eligible for Adjustments in Examinations*. In such cases advice should be sought from OCR as early as possible during the course.

An Entry Level specification is available in Resistant Materials, Graphic Products and Textiles and may be more suitable for some candidates.

5.10 Prohibited Qualifications and Classification Code

Candidates who enter for this GCSE specification may also enter for any other GCSE specification in Design and Technology in the same examination series. Candidates entering for any other Design and Technology specification cannot, however, utilise work completed in Units B801, B802 or B803 of this specification. Conversely, the same is true. Coursework undertaken in any other D&T GCSE cannot be used in Units B801, B802 or B803 of this specification.

Every specification is assigned to 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.

5.11 Regulations for Coursework

Supervision and Authentication of Coursework

OCR expects teachers to supervise and guide candidates who are undertaking coursework. It is important that teachers do not direct candidates in any particular direction. The degree of teacher guidance in candidates' work will vary according to the kinds of work being undertaken. However it should be remembered that candidates are required to reach their own judgements and conclusions.

When supervising coursework tasks, teachers are expected to:

- offer candidates advice about how best to approach such tasks generally;
- exercise continuing supervision of work in order to monitor progress and to prevent plagiarism;
- 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.

Coursework should be completed in the course of normal curriculum time and supervised by the teacher. Some of the work, by its very nature, may be undertaken outside the centre e.g. research, testing etc. As with all coursework, the teacher must be satisfied that the work submitted for assessment is the candidate's own work.

Submitting marks to OCR

Centres must have made an entry for a unit in order for OCR to supply the appropriate forms or moderator details for coursework. Coursework administration documents are sent to centres on the basis of estimated entries. Marks may be submitted to OCR either via Interchange on the computer-printed Coursework Mark Sheets (MS1) provided by OCR (sending the top copy to OCR and the second copy to their allocated moderator) or by EDI (centres using EDI are asked to print a copy of their file and sign it before sending it to their allocated moderator).

Deadlines for the receipt of coursework marks are:
10 January for the January series
15 May for the June series

The awarding body must require centres to obtain from each candidate a signed declaration that authenticates the coursework they produce as their own. For regulations governing coursework, centres should consult the OCR *Handbook for Centres*. Further copies of the coursework administration documents are available on the OCR website (www.ocr.org.uk).

Production and Presentation

Candidates must observe certain procedures in the production of coursework.

- 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 marked with the:

centre number;
centre name;
candidate number;
candidate name;
specification code and title;
assignment title.

Work submitted for moderation or marking must be secured by treasury tags.

5.12 Moderation

All internally assessed work (Units B801 and B803) is marked by the teacher and internally standardised by the centre. Marks are then submitted to OCR by a specified date in January and May, 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 internally assessed 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, selected by the moderator, for moderation must show how the marks have been awarded in relation to the internal assessment objectives defined in Section 4.6.

Candidates can choose to submit evidence on paper or CD.

See the accompanying Teachers' Guide for more information about the nature and format of work required for moderation.

5.13 Minimum Requirements for Coursework

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 may be zero.

6 Other Specification Issues

6.1 Overlap with other Qualifications

The format of this specification is significantly different to all other specifications in the Design and Technology suite. This specification has much unique content that is examined in a variety of innovative ways that seek to make best use of current research and development in the area of D&T and ICT.

6.2 Progression from these Qualifications

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

Many candidates who enter employment with one or more GCSEs would undertake training or further part-time study with the support of their employer.

Progression to further study from GCSE will depend upon the number and nature of the grades achieved. Broadly, candidates who are awarded mainly grades G to D 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 C to A* 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.

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

These specifications, consistent with current EU agreements, offer opportunities to promote:

- spiritual development, through helping pupils 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 pupils to reflect on how technology affects the environment so they can make informed choices when designing and making and 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.

6.4 Sustainable Development, Health and Safety Considerations and European Developments

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.

6.5 Avoidance of Bias

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

6.6 Language and Status in Wales and Northern Ireland

This specification has been approved by ACCAC for use by Centres in Wales.

Candidates in Wales and Northern Ireland should not be disadvantaged by terms, legislation or aspects of government that are different from those in England. Where such situations might occur, including in the external assessment, the terms used have been selected as neutral, so that candidates may apply whatever is appropriate to their own situation.

These specifications and associated assessment materials are in English only.

Further information on the provision of assessment materials in Welsh and Irish may be obtained from the Information Bureau at OCR (telephone 01223 553998).

6.7 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. A summary document for Key Skills Coordinators showing ways in which opportunities for Key Skills arise within GCSE courses has been published.

6.8 ICT

In order to play a full part in modern society, candidates need to be confident and effective users of ICT. 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, and through the possible use of computer-aided manufacture (CAM).

This section offers guidance on opportunities for using ICT during the course. These opportunities are also indicated within the content of Section C by a *KEY* symbol. Such opportunities may or may not contribute to the provision of evidence for IT Key Skills. Where such opportunities do contribute, they are identified by the use of the symbol.

ICT Application	Opportunities for Using ICT during the Course
Database	Sections 3.1, 3.3, 3.4, Section A, 3.4, Section B
Internet	Sections 3.1, 3.4, Section A, 3.4, Section B
Word Processing	Sections 3.1, 3.4, Section A, 3.4, Section B
Spreadsheet	Sections 3.1
CAD	Sections 3.1, 3.2,3.3
CAM	Sections 3.1, 3.2, 3.3

6.9 Citizenship

From September 2002, the National Curriculum for England at KS4 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. These opportunities are also indicated within the content of Section 3 by a symbol.

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

6.10 Resource List

Please refer to Teachers' Guide.

6.11 Support and In-service Training for Teachers

To support teachers using this specification, OCR will make the following materials and services available:

- a full programme of In-Service training meetings arranged by the Training and Customer Support Division (please refer to the OCR website for up to date information);
- specimen question papers and mark schemes, available from the Publications department (telephone 0870 8706622; fax 0870 8706621);
- past question papers and mark schemes, available from the Publications department
- (telephone 0870 8706622; fax 0870 8706621);
- written advice on coursework proposals;
- access to a portfolio consultant;
- a report on the examination, compiled by senior examining personnel after each examination series;
- individual feedback to each Centre on the moderation of internally assessed work.

Appendix A: Grade Descriptions

Grade descriptions are provided to give a general indication of the standards of achievement likely to have been shown by the candidates awarded particular grades. The descriptions must be interpreted in relation to the content specified in Section 5 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 overall assessment objectives. Shortcomings in some aspects of the assessment may be balanced by better performance in others.

Grade F

When applying their knowledge, skills and understanding to design and make products, candidates:

- draw on and use various sources of information;
- clarify their ideas through discussion, drawing and modelling;
- use their understanding of the characteristics of familiar products when developing and communicating their own ideas;
- work from their own plans, modifying them where appropriate;
- work with a range of tools, materials, equipment, components and processes with some precision;
- check their work as it develops and modify their approach in the light of progress;
- test and evaluate their products, showing that they understand the situations in which their designs will have to function and are aware of resources as a constraint;
- evaluate their use of basic information sources.

Grade C

When applying their knowledge, skills and understanding to design and make products, candidates:

- use a wide range of appropriate sources of information to develop ideas;
- use a range of strategies to develop ideas, responding to information they have identified;
- investigate form, function and production processes and communicate ideas, using appropriate media;
- recognise the needs of users and develop realistic designs;
- produce plans that make use of time and resources to carry out the main stages of making products;
- work with a range of tools, materials, equipment, components and processes, taking account of their characteristics;
- organise their work so that they can carry out processes accurately and consistently, and use tools, equipment, materials and components with precision;
- adapt their methods of manufacture to changing circumstances, providing a sound explanation for any change from the initial specification;
- select appropriate techniques to test and evaluate how their products would perform when used, and modify their products in the light of ongoing evaluation to improve their performance;
- evaluate their use of information sources.

Grade A

When applying their knowledge, skills and understanding to design and make products, candidates:

- seek out and use information to help their detailed design thinking, and recognise the needs of a variety of client groups;
- are discriminating in their selection and use of information sources to support their work;
- they use a wide range of strategies to develop appropriate ideas, responding to information they have identified;
- investigate form, function and production processes and communicate ideas using a variety of appropriate media;
- recognise the different needs of a range of users when developing fully realistic designs;
- when planning, they make sound decisions on materials and techniques based on their understanding of the physical properties and working characteristics of materials;
- work from formal plans that make the best use of time and resources;
- work with a range of tools, equipment, materials and components to a high degree of precision;
- make products that are reliable and robust and that fully meet the quality requirements given in the design proposal;
- identify conflicting demands on their design, explain how their ideas address these demands and use this analysis to produce proposals;
- identify a broad range of criteria for evaluating and testing their products, clearly relating their findings to the purpose for which the products were designed and the appropriate use of resources;
- fully evaluate their use of information sources.

Appendix B: Coursework (Units B801 and B803)

Appendix B1 Coursework 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;
- Experience working with either of the following categories of materials to provide for a wider range of prototype and modelling activities:
- light production materials or food materials (thin plastics, wood, metal, textiles, fabrics and threads, components);
- food materials.

Where necessary other materials should be included in order to allow candidates choice over their coursework task in Unit B803. 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 coursework evidence presented for assessment will represent 20 hours (Unit B801) for the GCSE Short Course and 40 hours (Units B801 and B803) for the Full Course. Some of the work, by its very nature, may be undertaken outside school e.g. research work, testing.

OCR expects teachers to supervise and guide candidates who are undertaking work which is internally assessed (i.e. coursework 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 judgments and conclusions.

When supervising internally assessed coursework 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 coursework 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 e.g. 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;
  Specification title and code;
  Coursework project title.

Appendix B2 Coursework Themes

Candidates may select one of the following themes as a starting point for the coursework project. 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 coursework consultants are available for advice if required.

Extra-terrestrial

Space holidays

Xtreme sports

Celebrations

Religious and Cultural festivals

Sports events and matches

Media, Music, dance, theatre

Events -Glastonbury, Chelsea flower show

Prehistoric Times

Health & Fitness

Crime, Forensic investigations, 'Cluedo', Murder mystery

Transportation, Travel

Food on the move

Enjoying the Countryside, Picnics

Fast Food

Wildlife

Gap years

Deep Sea - fluorescent lighting, tropical fish, vivid colour

Arachnophobia

Awards – (Oscars, BAFTA)

Para-Olympics

Tourist attractions

'Statement' Jewellery and Cosmetics

Accidents, Emergency Services

Metamorphosis

Conserving energy

Rain, Sunshine, Snow & Ice

Flooding, Extreme weather

Nostalgia – eras

Architectural environments

Shopping Malls

Parcels

Fashion Week - fashion stand, photography, costumes, accessories, make up

Look good, feel good

Canteen food

Litter

Gardening, garden sheds, allotments

Libraries and Museums

Sharks

Military Rations

Medieval Banquets

‘Raw’

Fast Food

Extend and enhance the design or style of a contemporary product

Design in the style of a contemporary designer

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	4
2	Research into design brief resulting in a specification for the design of a product	9	10	4
3	Generation of design proposals	9	42	10
	Unit B801 total marks (90)	**18**	**54**	**18**
4	Prototype manufacture	9	40	6
5	Testing and Marketing	9	14	12
	Unit B803 total marks (90)	**18**	**54**	**18**

Unit B801 is assessed against Internal Assessment Objectives 1, 2 and 3. Unit B803 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 four 'level of response' boxes containing hierarchical statements.

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

This breakdown enables positive marking of a coursework project by allowing the teacher to match statements from any of the level of response boxes against the evidence offered by the candidate. This approach can be applied to each assessment objective using the marks indicated in the 'Mark Range' column.

For example when marking Internal Assessment Objective 4

Statements from the level of response boxes	
Has used a limited range of appropriate materials, tools and equipment	Mark range 0-4 Evidence weak, poorly matches statement therefore mark awarded 2
With some guidance has used a range of skills and techniques appropriate to the task. Reasonable understanding of safe working procedures.	Mark range 5-8 Evidence almost exceeds statement therefore mark awarded 8
The product will exhibit a good standard of outcome, will be complete and will function as intended.	Mark range 12-19 Evidence matches the statement therefore mark awarded 16
Total Mark for Objective 4	**26**

Identification of a Need or Opportunity leading to a Design Brief	Level of Response	Mark Range
• provide a detailed description of the design need using various means of communication;	A statement of the design need.	**0-1**
• extract from verbal, visual and statistical information the essential problems to be solved;	Some consideration of the design need or the intended user/users leading to a design brief for the product.	**2**
• identify the range of users and the market for which the product is intended;	Consideration of both the design need and the intended user/users leading to a clear design brief for the product.	**3-4**
• develop a design brief for a marketable product which is innovative and might involve some degree of risk taking.	Detailed description 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 the Design Brief which results in a Specification for the design of the Product	Level of Response	Mark Range
Candidates will need to: • examine the intended purpose of the product; • identify and collect data relevant to the product(s) and its users; • identify opportunities for developing new and innovative products to improve upon the weaknesses of existing products; • understand the issues that expand and 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.	Limited research of intended use.	**0-1**
	Intended use of product examined with some data identified or collected.	**2-3**
	Intended use of product examined with important data identified and collected.	**4-5**
	Intended use of product examined with all significant data identified and collected.	**6-7**
	Cursory examination of the function of the product.	**0-2**
	Examination of the function of the product.	**3-4**
	Full examination of the function of the product addressing some user issues.	**5-6**
	Full examination of the function of the product addressing user issues thoroughly.	**7-8**
	Specification identifying some basic requirements.	**0-2**
	Specification identifying some key features.	**3-4**
	Specification identifying all key features.	**5-6**
	A detailed and justified specification.	**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, show flair and imagination; • consider user needs and issues when developing ideas; • appraise design ideas for suitability, value and consequence; • consider Aesthetics, Ergonomics and Function; • 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) • identify, with reasons for selection/rejection, the chosen design proposal(s) for prototype manufacture; • check that the design proposal meets legislative standards. Consider patents and copyrights; • have control on developing the product for manufacture, 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)	One or more solutions proposed showing little innovation or flair.	**0-5**
	Several solutions proposed showing some innovation or flair.	**6-12**
	A range of ideas leading to the development of a solution showing innovation and flair.	**13-18**
	A range of ideas leading to the development of a full and thorough solution showing much innovation, flair and some risk taking	**19-25**
	Little consideration given to Aesthetics, Ergonomics or function.	**0-3**
	Some consideration of Aesthetics, Ergonomics and function.	**4-5**
	Consideration of Aesthetics, Ergonomics and function.	**6-7**
	Appropriate consideration given to Aesthetics, Ergonomics and function.	**8-10**
	Little or no evaluation of designs against specification and product standards.	**0-2**
	Cursory evaluation of designs against specification and product standards.	**3-4**
	Design proposal chosen, supported by clear evaluation against the specification and product standards.	**5-6**
	Design proposal chosen as a result of detailed evaluation against the specification and product standards.	**7-8**
	Work displays a low standard of communication technique.	**0-2**
	Communication will be of a reasonable standard but using a limited range of techniques.	**3-4**
	Communication will demonstrate clarity, be of a high standard and employ a range of appropriate techniques.	**5-6**
	Communication will demonstrate clarity and confidence, be of a high standard and employ a wide range of appropriate techniques.	**7-8**
	Use of ICT limited to word or data processing and simple drawing.	**0-3**
	Use of ICT includes basic CAD or other computer applications.	**4-5**
	ICT includes good use of CAD or other computer applications.	**6-7**
	ICT includes work which fully demonstrates the use of appropriate CAD or other computer applications.	**8-10**
	Maximum mark	**61**

Internal Assessment Objective 4 **TOTAL MARKS 55**

Protype manufacture	**Level of Response** Digital images/photographs of the completed prototype product must be available for moderation (in the marketing presentation) for any marks to be awarded for this objective.	**Mark Range**
Candidates will need to: • make a 3D prototype using appropriate media. The prototype to have working features to demonstqrate how the product will function; • select and use the appropriate tools, equipment and processes effectively and safely to make products that match the specification; • use CAM where appropriate; • economically prepare materials; • select and use appropriate pre-manufactured components; • be prepared to adapt working procedures in response to changing circumstances; • purposefully deploy a range of skills and techniques appropriate to the task including those necessary to ensure realism of the prototype product.	Has used a limited range of appropriate materials	**0-4**
	Has overcome problems as they arise using appropriate materials	**5-8**
	Has made economic and efficient use of materials	**9-11**
	Resourceful and adaptable with materials	**12-14**
	With frequent prompting uses basic skills and techniques appropriate to the task. Little understanding of safe working practices.	**0-4**
	With some guidance has used a range of skills and techniques appropriate to the task. Reasonable understanding of safe working procedures.	**5-8**
	With a normal level of supervision, has combined a range of skills and techniques appropriate to the task. Good understanding of safe working procedures.	**9-11**
	Has independently combined a range of skills and techniques appropriate to the task. High understanding of safe working procedures.	**12-14**
	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.	**5-11**
	The product will exhibit a good standard of outcome, will be complete and will function as intended.	**12-19**
	The product will be completed to a high quality and will fully meet the requirements of the final product specification.	**20-27**
	Maximum mark	**55**

Internal Assessment Objective 5 TOTAL MARKS 35

Testing, Evaluating and Marketing	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: • test and evaluate prototype product against the Design criteria; • give details of any review processes and necessary modifications to improve the product prototype • consider how the design prototype could be manufactured in quantity by either batch, repetitive flow, continual flow or other production system; • produce a marketing presentation to either a prospective manufacturer, supplier, company buyer (not end user/consumer), or retailer of the product. Marketing presentation must contain points 1-6: 1. Digital images/ photographs of the prototype product providing evidence of important stages of manufacture and the candidates making skills; 2. User evaluation including evidence of testing the product prototype; 3. Details of any necessary modifications to improve the product prototype; 4. Opportunities for quantity manufacture; 5. A design concept page, which includes a detailed specification; 6. Opportunities for packaging, and presentation of the prototype product to the customer.	Superficial evidence of evaluation with no reference to the Design Specification.	**0-2**
	Evidence of evaluation with some reference to the Design Specification.	**3**
	Evidence of testing by a user and evaluation with reference to the Design Specification	**4-5**
	Evidence of thorough testing by a user and full evaluation with reference to the Design Specification.	**6-7**
	Design modifications are suggested with some detail.	**0-2**
	Design modifications are suggested but lack detail.	**3-4**
	Design modifications presented with reasonable detail.	**5**
	Design modifications presented in full detail.	**6-7**
	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 addresses some of the points.	**0-3**
	Marketing presentation addresses most of the 6 points but is dull and uninspiring.	**4-7**
	Marketing presentation addresses all 6 points and uses a persuasive approach.	**8-12**
	Marketing presentation is thorough, addresses at least all 6 points in detail and uses an innovative and persuasive approach.	**13-16**
	Maximum mark	**35**