

Craft and Design

Design Assignment Guidance for Higher

For use in National Qualifications Higher Courses in and after 2003

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Introduction

This document details the assessment criteria, parameters and marking schedule of the Higher Design Assignment. To help candidates prepare appropriate material, the document also offers guidance on the nature, scope and presentation of material for a Design Assignment.

This document must be used in conjunction with the *Craft and Design, Higher* (December 1999) Arrangements document. Reference should also be made to the SQA annually published *Conditions and Arrangements* and *Guidance on generating evidence for National Course Estimates and Assessment Appeals* documents.

This document supersedes *Craft and Design, Design Assignment Guidance, Higher*, published by SQA in September 2002.

Higher Craft and Design Course

The Higher Craft and Design Course have been designed to articulate with and provide progression from Standard Grade and Intermediate 2 Craft and Design. The Course is set in the context of products for the market place which are produced by commercial design and manufacture.

In the Course, candidates look at the design process and the strategic decisions that have to be made, as well as considering the materials that may be used and manufacturing processes undertaken. The knowledge and understanding acquired is consolidated by undertaking practical design activities. The external assessment of the Higher Craft and Design Course consists of:

- ◆ An examination paper testing candidates' knowledge and understanding of the content of the Course. The examination is of two and a half hours duration and is allocated 80 marks out of the total 200 marks available for external assessment.
- ◆ A Design Assignment folio which develops a solution from a design brief. The Design Assignment is allocated 120 marks out of the total 200 marks available for external assessment.

Further information on the specifications, content and context can be obtained in the Higher Craft and Design Course Arrangements document.

Design Assignment 'Topics' for session 2003/2004

Centres have already been advised that for session 2003/2004, candidates must choose **one** of the following three topics for their Design Assignment:

- ◆ The Kitchen
- ◆ Japan
- ◆ Lighting

All material presented in individual Design Assignments **must** be the candidate's own work. Candidates may individually select a topic, or be directed as a 'whole class' to a topic. If a 'whole class' approach is adopted, however, special care must be taken to ensure that **all material presented in individual Design Assignments is entirely the candidate's own work.**

Please note that candidates must select a Design Assignment product that is suited to **commercial manufacture** and not school workshop manufacture.

Design Assignments must be submitted to the SQA by 30 April for external marking.

Relationship with Units

It is acceptable for Unit work (based on the same topic) to be used in the Design Assignment and vice versa. Integrated assessment encourages work at Unit level to be taken forward and enhanced for presentation in the Design Assignment. It also allows for Design Assignment work to be used for the re-assessment of any outstanding Unit work.

Design Assignment material used for Unit assessments **must** be marked in accordance with the criteria given in 'Marking Guidelines' of the relevant NAB, and in accordance with cut-off scores.

If a candidate uses the same piece work for both Unit and Course evidence, the original should be submitted with the Design Assignment with photocopies being retained for Unit moderation purposes.

To gain a Course award, candidates must pass both internal Unit and external Course assessments. Furthermore, it should be noted that a well-presented Design Assignment folio does not necessarily mean that all the assessment criteria of NABs have been met.

Conduct of Assessment

The responsibility for setting annual 'topics' lies with SQA. Completion of Design Assignments must be carried out under controlled conditions within centres. This must be adhered to for two reasons:

- ◆ candidate work must be authenticated
- ◆ as an external assessment, the integrity of the Design Assignment must be guaranteed

As a component of the external assessment, work produced for the Design Assignment must be produced by candidates working independently. While appropriate advice and guidance may be given by the teacher/lecturer, candidates are solely responsible for producing their own Design Assignments.

No annotations should be made on a Design Assignment by anyone other than the candidate preparing the folio. Design Assignments must remain in centres prior to being sent to SQA for assessment purposes. Candidates must not be allowed to remove their Design Assignments from centres prior to assessment being carried out. Throughout the production of Design Assignments, candidates must store their work securely within the centre in a manner which ensures that material is not allowed to deteriorate or be damaged in any way.

Structure of the Design Assignment

A typical Higher Design Assignment should contain between 20 – 27 pages (A3 preferred). A separate flyleaf, which must be used to authenticate the candidate's work, will be made available to centres. The flyleaf must be used by candidates to reference the page numbers of their Design Assignment folios against the relevant Parts of the Design Assignment Guidance.

There is no need to include a separate contents page or use presentation graphics other than those which attract marks under the relevant Sections.

Allocation of marks

The allocation of marks and recommended number of (A3) pages is as follows:

Section	Marks	Recommended number of pages
1 Problem Analysis and Specification	24	6 – 7 pages
2 Generation of Ideas	23	3 – 4 pages
3 Development and Synthesis	38	6 – 8 pages
4 Modelling	6	1 – 2 pages
5 Outline Planning for Manufacture	23	3 – 5 pages
6 Evaluation	6	1 page
Total	120 marks	20 – 27 pages

Candidate Guidance

Candidates should be familiar with the assessment criteria and guidance offered for each Section of the Design Assignment. **There is no restriction on copying this document for candidates.**

The purpose of the Guidance Note attached to each Part is to provide useful and relevant information for the benefit of candidates. It is recommended that candidates refer to the guidance notes when producing their Design Assignments. Centres may include additional guidance to candidates as appropriate.

Section 1 — Problem Analysis and Specification

Available marks: 24

Recommended number of pages: 6 – 7

Candidates must carry out a thorough analysis and investigation, culminating in the production of a design specification. Candidates should clearly **state the chosen topic from those supplied by SQA**. Candidates must:

(a) State the problem and target market **2 marks**

Guidance note — It is expected that the work for this part will consist of up to one page of material. One mark will be awarded for a clear statement of the problem in relation to the topic selected and one mark for clearly identifying the target market (the purchaser and end user).

(b) Identify and justify the relevance of four appropriate design factors related to the topic or problem **8 marks**

Guidance note — It is expected that the work for this part will consist of one page of material. One mark will be awarded for each statement which shows why a factor is relevant and justified to the topic or problem. **Simply including a factor without any justification will not attract marks**, as the candidate should demonstrate knowledge of why the factor is relevant to either the topic or the problem. Candidates will not be disadvantaged for identifying more than four factors. Candidates may wish to place more emphasis on one factor, if it is considered that it has a greater relevance to the topic, and credit will be given for this.

Candidates may find it useful to consider primary and secondary function(s), choice of materials, safety, durability, value for money, ease of maintenance, running costs, aesthetics, ergonomics, environmental concerns, etc.

(c) Research the design factors identified in relation to the topic or problem **10 marks**

Guidance note — It is expected that the work for this part will consist of three to four pages of material. This should be an information gathering exercise where the candidate will source, investigate, extract and then present relevant material.

Specific information **must** be annotated or highlighted and its inclusion justified as relevant to the topic, problem or factors. The research **must** provide information which will assist with the production of the design specification and be beneficial in later stages in the generation of ideas and concepts. Included information which has no relevance, or has not been explained, will not be awarded marks. Candidates may wish to research one individual factor in some detail, if it is considered that it has a greater relevance, and credit will be given for this.

Candidates should extract information from consumer and trade magazines, professional journals, anthropometric data tables, the internet, technical literature, etc. This activity **should not be a time consuming exercise**, however, the detail and quality of material should show that a breadth of relevant information has been considered. Candidates may choose to evaluate similar products prior to producing their own ideas and concepts.

(d) Produce a design specification **4 marks**

Guidance note — It is expected that the work for this part will consist of one page of material. Candidates should produce a series of statements which define what the design must achieve. This should draw on the work from Parts (a) and (c) above. Marks will be awarded for a range of relevant statements. Vague or general statements unrelated to the problem will not attract marks.

Section 2 — Generation of Ideas

Available marks: 23

Recommended number of pages: 3 – 4

It is expected that the evidence for Parts (a), (c) and (d) will be contained within the three to four pages of work for Part (b).

In generating ideas, **candidates must continually make reference to the design specification.** Candidates must:

(a) Use appropriate creative thinking technique(s) for generating ideas **2 marks**

Guidance note — To gain full marks for this Section, candidates must make use of one of the following techniques: morphological analysis, analogy, technology transfer, lateral thinking, or brain storming. No marks be awarded for simply including a description of a particular creative thinking technique.

Please note that a mindmap is an analysis tool and its use in this part will not attract marks.

(b) Produce a variety of initial ideas **12 marks**

Guidance note — It is expected that the work for this Part will consist of three to four pages of material. An example of work may include 12 **initial** ideas which are simple or six which are more detailed. Candidates should **keep all ideas rough and simple at this stage** and leave scope for development in Section 3.

Candidates should convey their ideas using annotated sketches and diagrams as appropriate. To score well, the variety of ideas must be diverse, distinct from each other and not simply a cosmetic change from a previous idea.

(c) Reference ideas against the design specification **4 marks**

Guidance note — Candidates should show that their ideas are based upon the design specification on **at least four** separate occasions. This should be conveyed via annotations on the sketches. For clarity, references to the specification should be **highlighted or underlined**. Repetition will not be awarded further marks. One mark will be awarded for each appropriate reference to the design specification.

(d) Produce appropriate graphics **5 marks**

Guidance note — Marks will be awarded for the quality and appropriate use of graphics in the three to four pages of this Section. Candidates should make effective use of colour, line, texture, tone, shape, form etc, in the sketching and rendering of their ideas. The use of one graphic technique throughout will not attract full marks.

Section 3 — Development and Synthesis

Available marks: 38

Recommended number of pages: 6 – 8

Candidates must demonstrate that detailed consideration has been given to the initial ideas generated. Candidates must:

(a) Evaluate initial ideas against the design specification **4 marks**

Guidance note — It is expected that the work for this Part will be no more than one page of work. Candidates must provide four **valid** statements which show evaluation against the design specification and which justify the ideas chosen for development. Candidates may find it useful to summarise information using a table or grid to support their concluding statements, however, this alone will only attract one mark.

(b) Develop ideas **12 marks**

Guidance note — It is expected that the work for this Part will be three to four pages of material. Candidates should develop the ideas chosen in Part (a) above. An example of work may include two ideas with six significant changes or improvements. Alternatively, one idea could be developed in considerable detail or three to four ideas with a proportional number of significant changes. It should be noted that choosing to develop a greater number of ideas may result in candidates having to spend more time and carry out further work during the synthesis stage. Candidates should consider areas such as how it looks and how it is used. One mark will be awarded for each **significant** change or improvement.

(c) Synthesise the best aspects of developed ideas towards a solution **12 marks**

Guidance note — It is expected that the work for this Part will consist of two to three pages of material. Synthesis is **the bringing together of the key aspects** of the ideas developed in Part (b) above. Candidates should highlight or reference which aspects of the developed ideas they have chosen or combined in their final solution. Candidates who have used clear referencing techniques, and who can show clear pathways of how and where developed ideas have been synthesised in the final solution, are likely to score well.

Candidates must consider the advantages and disadvantages of standard components, materials, methods of manufacture, mechanisms, finish etc. Candidates should synthesise **at least 12 aspects or features**, and one mark will be awarded for each.

(d) Use graphics which include a presentation drawing **10 marks**

Guidance note — Candidates must consider the use of colour, line, texture, tone, shape, form, etc, in the sketching and rendering of their ideas. The use of one technique throughout will not attract full marks. Five marks will be awarded for the quality of sketching and rendering in Parts (b) and (c) and five marks for a presentation drawing.

Section 4 — Modelling

Available marks: 6

Recommended number of pages: 1 – 2

Candidates must use modelling techniques **in at least one stage of the design process** and demonstrate results. Candidates must:

(a) Explain the purpose, materials and techniques used to create the model(s) 2 marks

Guidance note — Candidates must include a detailed description of appropriate modelling techniques in at least one stage of the design process. The description should include information on the purpose of the model for one mark. A further explanation of the materials and techniques used will be awarded an additional mark. The information must be specifically related to the product, or part of the product, which is being modelled, and cannot be a general definition of the purpose of modelling. Modelling of the entire product, or a component part of the product, is acceptable.

(b) Explain how the model(s) influence design decisions 2 marks

Guidance note — Candidates should include a range of justified statements that explain how modeling helped in reaching decisions or where it helped with the development and/or evaluation of ideas.

(c) Show evidence of modelling 2 marks

Guidance note — Evidence of modelling is likely to include photographs or printed material, sketches or computer generated 3D solid modelling evidence. Evidence may be annotated or highlighted to convey the information required in Parts (a) and (b). **Actual models must not be included.**

Section 5 — Outline Planning for Manufacture

Available marks: 23

Recommended number of pages: 3 – 5

Candidates must plan for the **commercial manufacture** of the product. In this Section, commercial manufacture is defined as **the process by which a product is produced in quantity, in a commercial environment**. Planning for a one-off production is not acceptable and will not attract marks in Part (b). Candidates must:

(a) Include an orthographic, General Arrangement drawing **6 marks**

Guidance note — The orthographic General Arrangement drawing should include the main dimensions and appropriate scale. The drawing should contain at least two appropriately orientated orthographic views. It is expected that the work for this Part will be one to two pages.

(b) Include an outline plan for the manufacture of the product with assembly details and parts list giving reasons for all choices made **12 marks**

Guidance note — Information included could be the identification of materials, joining methods, finish, the sequence of operations, etc which would convey sufficient detail to indicate how it could be commercially or industrially manufactured. Sketches of jigs, templates etc, should be included as appropriate.

Methods of construction should be shown. Sectional drawings and exploded views may also be used to increase clarity. Candidates should use a variety of graphical techniques including sketches, drawings with instruments, computer-generated graphics, etc. Candidates should consider the implications of the manufacturing processes chosen, CAD/CAM, standard components, etc. It is expected that the work for this Part will be two to three pages of material. Any information which relates to the manufacture of the product by the candidate in the workshop will not attract marks.

(c) Communicate using appropriate graphics **5 marks**

Guidance note — To score well, candidates must be able to show that a **variety** of graphical techniques have been used throughout Part (b). Marks will be awarded for sketching, rendering ability and for the effective communication of information. Candidates should pay close attention to the clarity and quality of graphics produced, and ensure that conventions are adhered to, as appropriate. Candidates must consider the use of colour, line, texture, tone, shape, form, etc, in the sketching and rendering of their manufacturing methods.

Section 6 — Evaluation

Available marks: 6

Recommended number of pages: 1 page

Candidates must justify the design solution with reference to the design specification. Candidates must:

(a) Justify the proposed solution with reference to the design specification **6 marks**

Guidance note — It is expected that the work for this Part will consist of one page of material. Candidates should summarise and justify their proposed solution. There should be clear evidence that the proposed solution satisfies the design specification. One mark will be awarded for each relevant point which is justified.

**Craft and Design Higher
Design Assignment**
Candidate name _____

Teacher/Lecturer Initials _____ Submission date to SQA _____

Appendix 1 — Sample flyleaf

Assessment Criteria	Page Number(s) (of evidence presented)	Recommended Number of Pages	Marks Available
Section 1. Problem Analysis and Specification		6 – 7 pages	24
(a) State the problem and target market		1 page	2
(b) Identify and justify the relevance of four design factors		1 page	8
(c) Research the design factors identified in relation to the topic or problem		3 – 4 pages	10
(d) Produce a design specification		1 page	4
Section 2. Generation of Ideas		3 – 4 pages	23
(a) Use appropriate creative thinking technique(s) for generating ideas		The four parts of Section 2 should be between 3 – 4 pages.	2
(b) Produce a variety of initial ideas			12
(c) Reference ideas against the design specification			4
(c) Produce appropriate graphics			5
Section 3. Development and Synthesis		6 – 8 pages	38
(a) Evaluate initial ideas against the design specification		1 page	4
(b) Develop ideas		3 – 4 pages	12
(c) Synthesise the best aspects of developed ideas towards a solution		2 – 3 pages	12
(e) Use graphics which include a presentation drawing		For use of graphics throughout Section 3(b) and 3(c)	10
Section 4. Modelling		1 – 2 pages	6
(a) Explain the purpose, materials and techniques used		For evidence of modelling throughout Section 4	2
(b) Explain how the model(s) influenced design decisions			2
(c) Show evidence of modelling			2
Section 5. Outline Planning for Manufacture		3 – 5 pages	23
(a) Include an orthographic, General Arrangement drawing		1 – 2 pages	6
(b) Outline for manufacture with assembly details and parts list		2 – 3 pages	12
(c) Communicate using appropriate graphics		For use of graphics throughout Section 5(b)	5
Section 6. Evaluation		1 page	6
(a) Justify the proposed solution with reference to the design spec		1 page	6
Total:		20 – 27 pages	120

For SQA use only		Marker Number:	
Mark Awarded	Marker Comments		For SQA Use Only
1			
2			
3			
4			
5			
6			
Total:			