



National
Qualifications

Design and Manufacture

Assignment

General assessment information

This pack contains general assessment information for centres preparing candidates for the Assignment Component of National 5 Design and Manufacture Course assessment.

It must be read in conjunction with the specific assessment tasks for this Component of Course assessment, which may only be downloaded from SQA's designated secure website by authorised personnel.

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Introduction

This is the general assessment information for National 5 Design and Manufacture assignment.

This assignment is worth 90 marks out of a total of 150 marks. This is 60% of the overall marks for the Course assessment. The Course will be graded A-D.

Marks for all Course Components are added up to give a total Course assessment mark which is then used as the basis for grading decisions.

This is one of two Components of Course assessment. The other Component is a question paper.

This document describes the general requirements for the assessment of the assignment Component for this Course. It gives general information and instructions for assessors.

It must be read in conjunction with the assessment task for this Component of Course assessment.

The assessment task will be set and externally verified by SQA, and conducted, marked and internally verified in centres under the conditions specified by SQA.

Equality and inclusion

This Course assessment has been designed to ensure that there are no unnecessary barriers to assessment. Assessments have been designed to promote equal opportunities while maintaining the integrity of the qualification.

For guidance on assessment arrangements for disabled candidates and/or those with additional support needs, please follow the link to the Assessment Arrangements web page: www.sqa.org.uk/sqa/14977.html

Guidance on inclusive approaches to delivery and assessment in this Course is provided in the *Course and Unit Support Notes*.

What this assessment covers

This assessment contributes 60% of the total marks for the Course.

The assessment will assess the skills, knowledge and understanding specified for the assignment in the *Course Assessment Specification*. These are:

- ◆ To apply skills, knowledge and understanding to solve a design task in a given context. The assignment assesses the candidate's ability to communicate, generate and refine ideas and apply practical skills in producing a potential solution.

Assessment

Purpose

The purpose of this assessment is to generate evidence for the added value of this Course by means of an assignment.

Assessment overview

The assignment is a meaningful and appropriately challenging task, which should clearly demonstrate application of knowledge and skills, at an appropriate level, from both the *Design* and *Materials and Manufacturing Units* (as defined in the 'Further mandatory information on Course coverage' section of the *Course Assessment Specification*).

The assignment is designed to allow candidates to demonstrate their ability to work independently, as they are required to do in the other Component of the Course assessment, the question paper.

The assignment is set by SQA. A bank of tasks will be provided and centres may select from the bank.

In this assignment marks will be awarded for designing and for practical skills.

For design skills, 45 marks will be available and will be allocated in four areas:

- ◆ Generation of ideas 12 marks
- ◆ Development of ideas 18 marks
- ◆ Application of communication techniques 9 marks
- ◆ Evaluation of proposal 6 marks

For practical skills, 45 marks will be available and will be allocated in four areas:

- ◆ Measuring and marking out 9 marks
- ◆ Using hand and machine tools 18 marks
- ◆ Assembly of components 9 marks
- ◆ Finishing 9 marks

The assessment task will be set and externally verified by SQA and conducted, marked and internally verified in centres under the conditions specified by SQA.

Full instructions for candidates are contained within each assessment task.

Assessment conditions

Assessors must exercise their professional responsibility in ensuring that evidence submitted by a candidate is the candidate's own work.

This assessment will be carried out over a period of time. Candidates should undertake the assessment at an appropriate point in the Course. This will normally be when they have completed most of the work on the other Units in the Course.

This assessment requires time for preparation of materials, setting up of equipment, and researching and gathering information which is likely to happen as part of learning and teaching for the Course assessment.

There are no restrictions on the resources to which candidates may have access.

Although candidates are expected to work independently when undertaking assessment, reasonable assistance may be given to them throughout the process. The requirements of the assessment should be made clear to candidates at the outset. Assessors can clarify with candidates how to approach the assessment and to guide them in producing their response. Assessors may also prompt candidates where appropriate to clarify the requirements of the assessment but should not direct them as to any specific response. For example, assessors should not provide specific advice on how to improve responses or provide model answers.

Assessor input and advice on the selection of a task is appropriate before the candidate starts the task.

Candidates may seek clarification regarding the wording of a brief or specification or instructions for the assessment if they find them unclear. In this case, the clarification should normally be given to the whole class.

Assistance may readily be given on those activities, eg in the workshop, where assistance would normally be required due to the complexity of the activity, eg gluing and clamping, setting up equipment.

Assessors should put in place mechanisms to authenticate candidate evidence. For example:

- regular checkpoint/progress meetings with candidates
- short spot-check personal interviews/discussions
- checklists which record activity/progress
- photographs, film or audio authentication

Groupwork approaches as part of the preparation for assessment can be helpful to simulate real-life situations, share tasks and promote team-working skills. However, groupwork is not appropriate once formal work on assessment has started.

Evidence to be gathered

The following candidate evidence is required for this assessment:

- ◆ A design folio – not exceeding 6* x A3-sized pages including the evaluation
- ◆ A manufactured prototype
- ◆ Evidence of skills and processes demonstrated during manufacture/production that cannot readily be judged on the basis of the manufactured prototype – eg paper-based photographs and/or detailed observation notes

*the following guidance should be applied when designing:

- Ideas (1-2 x A3-sized page)
- Development of ideas including planning for proposal (3-4 x A3-sized pages)
- Evaluation (0.5 x A3-sized page)

This evidence must be retained for quality assurance purposes.

Marking Instructions

General marking principles

Assessors should allocate a mark in each of the stages, by following the instructions given below, and record this mark on a candidate assessment record, with a comment justifying why each mark was awarded.

Marks for internally-assessed Components must be submitted to SQA by your centre. Evidence for this assessment should be retained in the centre for SQA quality assurance purposes. Further information on this will be provided by SQA.

For each of the stages, the assessor should select the band descriptor which most closely describes the evidence gathered.

Once the best fit has been selected:

- ◆ where the evidence almost matches the level above, award the highest available mark from the range
- ◆ where the candidate's work just meets the standard described, award the lowest mark from the range
- ◆ otherwise, award an appropriate mark from the middle of the range

If the evidence completely matches the highest level band descriptor for the stage, and has been produced by the candidate working independently, then the highest mark should be awarded.

Where the candidate's work does not meet the lowest level band descriptor, or where no evidence is provided, then zero (0) marks should be awarded.

In this assignment marks will be awarded for designing and for practical skills. For design skills, 45 marks will be available and will be allocated in four areas:

- | | |
|---|----------|
| ◆ Generation of ideas | 12 marks |
| ◆ Development of ideas | 18 marks |
| ◆ Application of communication techniques | 9 marks |
| ◆ Evaluation of proposal | 6 marks |

For practical skills, 45 marks will be available and will be allocated in four areas:

- | | |
|--------------------------------|----------|
| ◆ Measuring and marking out | 9 marks |
| ◆ Using hand and machine tools | 18 marks |
| ◆ Assembly of components | 9 marks |
| ◆ Finishing | 9 marks |

Detailed Marking Instructions for design skills: generation and development of ideas, communication and evaluation

The statements within the band indicate the features which may be displayed in the evidence. It should be noted that every statement need not be met to achieve marks within a band. This is to allow for the different types of approach candidates may take. In all cases, where the candidate's work does not meet the lowest range statement, or where no evidence is provided, then zero marks should be awarded.

Assignment stage (design)	Design and Manufacture activity	Max marks	TOTAL: 12 are marks allocated to generation of ideas. Judgements should be made on the candidate's ability to generate a range of creative ideas and add useful information.		
			1 marks	2 marks	3 marks
Generation of Ideas	Producing a range of alternative ideas	3	The range of ideas is limited and has few real differences between them.	The range of ideas is good and some ideas exhibit clear differences.	The range of ideas is very good with many exhibiting clear differences.
			1-2 mark	3-4 marks	5-6 marks
	Producing creative ideas	6	Ideas are generated, however they lack creativity.	Ideas are generated and they are generally creative.	Ideas are generated and they are very creative.
			1mark	2 marks	3 marks
	Adding useful information	3	Ideas have few valid annotations which add clarity.	Ideas have adequate annotations which add clarity.	Ideas have detailed annotations which add clarity.
Further information for assessing – 'Generation of ideas'					
When awarding marks the following should be noted:					
<ul style="list-style-type: none"> ◆ Ideas may be shown through graphics and/or models. ◆ Ideas may appear throughout the folio. ◆ At the early stage, ideas may be rough and may not fully address the specification. ◆ Ideas which are copies of existing products will not allow a candidate to achieve marks above the bottom band for creativity. ◆ Annotations must add clarity and not simply describe what is already evident in a sketch or model. ◆ Very detailed sketches may reduce need for annotations. 					

Assignment stage (design)	Design and Manufacture activity	Max mark	TOTAL: 18 marks are allocated to development of ideas. Judgements should be made on the candidate's exploration and refinement of ideas as they evolve towards a design proposal; including the application of knowledge and understanding of materials and manufacturing design issues and review and justification of decisions.		
			1-2 marks	3-4 marks	5-6 marks
Development of ideas	Exploring and refining of ideas towards a design proposal	6	Ideas being developed show limited exploration and refinement towards a design proposal.	Ideas being developed show adequate exploration and refinement towards a design proposal.	Ideas being developed show thorough exploration and refined towards a design proposal.
			1-2 marks	3-4 marks	5-6 marks
	Applying knowledge and understanding of materials and manufacturing	6	There is limited application of knowledge and understanding of materials and manufacturing to inform next steps.	There is adequate application of knowledge and understanding of materials and manufacturing to inform next steps.	There is effective application of knowledge and understanding of materials and manufacturing to inform next steps.
			1 mark	2 marks	3 marks
	Applying knowledge and understanding of design issues	3	There is limited application of knowledge and understanding of design issues to inform next steps.	There is adequate application of knowledge and understanding of design issues to inform next steps.	There is effective application of knowledge and understanding of design issues to inform next steps.
			1 mark	2 marks	3 marks
Reviewing and justifying decisions	3	There is limited review and justification of decisions.	There is adequate review and justification of decisions.	There is clear review and justification of decisions.	

Further information for assessing – ‘Development of ideas’

When awarding marks the following should be noted:

- ◆ Exploration may be of a range of areas, eg aesthetics, materials or assembly. A proposal which is essentially the same as the original idea, will not allow a candidate to achieve marks above the bottom band.
- ◆ Refinement should lead to detail which will allow manufacture of the proposal. A proposal with little detail, will not allow a candidate to achieve marks above the bottom band.
- ◆ Knowledge and understanding of materials and manufacturing must be used to explore and refine ideas to gain marks. Generic statements of facts about materials and manufacturing should not be awarded mark.
- ◆ Knowledge and understanding of appropriate design issues must be used to explore and refine ideas to gain marks. Generic statements of facts about design issues should not be awarded marks.
- ◆ The review and justification of decisions may be evident as annotations or brief summaries and must be valid, eg referenced against specification or based on sound knowledge to gain marks.

Assignment stage (design)	Design and Manufacture activity	Max mark	TOTAL: 9 marks are allocated to communication. Judgements should be made on the candidate's application of communication techniques.		
			1-3 marks	4-6 marks	7-9 marks
Application of communication techniques	Applying communication techniques	9	<p>There is limited use of graphics and/or modelling to communicate the proposal and its development.</p> <p>The use of graphics and/or modelling communicates limited detail about the proposal and its development.</p>	<p>There is adequate use of graphics and/or modelling to communicate the proposal and its development.</p> <p>The use of graphics and/or modelling communicates adequate detail about the proposal and its development.</p>	<p>There is effective use of graphics and/or modelling to communicate the proposal and its development.</p> <p>The use of graphics and/or modelling communicates appropriate detail about the proposal and its development.</p>
Further information for assessing – 'Application of communication techniques'					
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ Appropriate communication techniques should be used, eg a candidate may achieve marks in the top band without the use of models if the proposal and its development are communicated effectively through graphics. ◆ Marks are awarded for the use of communication techniques, not the quality. The type and quality of the technique should be appropriate to its purpose, eg early sketches may be produced very quickly and be 'rough'. ◆ The communication techniques must be used for a purpose to gain marks, eg models should not be produced where a graphic has already served the same purpose. ◆ The communication techniques must convey enough detail to allow manufacture to gain marks in the top band. 					

Assignment stage (design)	Design and Manufacture activity	Max mark	TOTAL: 6 marks are allocated to evaluation. Judgements should be made on the candidate's evaluation in terms of its depth and validity.		
			1-2 marks	3-4 marks	5-6 marks
Evaluation of proposal	Evaluating the design proposal	6	<p>There is limited evaluation of the design proposal.</p> <p>There is limited reference to the specification.</p>	<p>There is adequate evaluation of the design proposal.</p> <p>There is adequate reference to the specification.</p>	<p>There is clear and valid evaluation of the design proposal.</p> <p>There is clear reference to the specification.</p>
Further information for assessing – 'Evaluation of proposal'					
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ To gain marks in the top band the evaluation must be based on valid evidence, eg comparison against specification, testing or opinions of others. ◆ An evaluation which is brief personal opinion will not allow a candidate to achieve marks above the bottom band. 					

Detailed Marking Instructions for practical skills: measuring and marking out, using hand and machine tools, assembly of components, and finishing

Assignment stage (practical skills)	Design and Manufacture activity	Max mark	TOTAL: 9 marks are allocated to measuring and marking out. Judgements should be made on the candidate's skills in measuring, marking out, and the consistency demonstrated.		
			1-3 marks	4-6 marks	7-9 marks
Measuring and marking out	Measuring and marking out	9	<p>A limited level of skill is demonstrated in measuring and marking out.</p> <p>Limited evidence of accurate measuring and marking out.</p>	<p>A good level of skill is demonstrated in measuring and marking out.</p> <p>Good evidence of accurate measuring and marking out.</p>	<p>A high level of skill is demonstrated in measuring and marking out.</p> <p>Strong evidence of accurate measuring and marking out.</p>
Further information for assessing – 'Measuring and marking out'					
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ The level of skill may be demonstrated by using a range of measuring and marking out tools or by measuring and marking out complex or intricate components. ◆ Marks may be awarded if the candidate has displayed measuring and marking out skills in producing a template or jig used to the manufacture the prototype. ◆ Marks cannot be awarded for computer generated templates. ◆ The accuracy of the measuring and marking out can be checked against sizes taken from a dimensioned drawing or sketch. The fit of any joints may also provide evidence of accuracy of measuring and marking out. ◆ The level of complexity of the prototype must be taken into account, eg a very simple prototype, although skilfully and accurately marked out will not allow a candidate to achieve marks above the bottom band. ◆ Assistance given to the candidate must be taken into account. 					

Assignment stage (practical skills)	Design and Manufacture activity	Max marks	TOTAL: 18 marks are allocated to using hand and machine tools. Judgements should be made on the candidate's skills in using tools to remove and form materials			
			1-4 marks	5-9 marks	10-14 marks	15-18 marks
Using hand and machine tools	Using hand and machine tools	18	A limited level of skill is demonstrated in the use of hand and machine tools.	A fair level of skill is demonstrated in the use of hand and machine tools.	A good level of skill is demonstrated in the use of hand and machine tools.	A high level of skill is demonstrated in the use of hand and machine tools.
			A limited level of skill is demonstrated in the removal of material.	A fair level of skill is demonstrated in the removal of material.	A good level of skill is demonstrated in the removal of material.	A high level of skill is demonstrated in the removal of material.
			Limited evidence of accurate work.	Fair evidence of accurate work.	Good evidence of accurate work.	Strong evidence of accurate work.
			A limited level of skill is demonstrated in forming materials.	A good level of skill is demonstrated in forming materials.	A good level of skill is demonstrated in forming materials.	A high level of skill is demonstrated in forming materials.
Further information for assessing – ‘Using hand and machine tools’						
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ The level of skill may be demonstrated by using a wide range of hand and machine tools or by using fewer tools for intricate or complex work. ◆ The level of complexity of the prototype must be taken into account, eg a very simple prototype with material skilfully and accurately removed will not allow a candidate to achieve marks above the bottom band. ◆ Accuracy may be demonstrated in shaping of component parts or in the cutting and fit of any joints. It may also be demonstrated in the forming of component parts. ◆ It is the candidate's practical skill which is being assessed and therefore marks cannot be awarded for CNC produced components. ◆ Assistance given to the candidate must be taken into account. 						

Assignment stage (practical skills)	Design and Manufacture activity	Max mark	TOTAL: 9 marks are allocated to assembly of components. Judgements should be made on the candidate's ability to select and prepare resources for assembly and assembly of the prototype.		
			1-3 marks	4-6 marks	7-9 marks
Assembly of components	Preparing for assembly and assembling the prototype	9	Resources are prepared and used guidance. Limited evidence of accurate and sound assembly.	Resources are prepared and used some guidance. Good evidence of accurate and sound assembly.	Resources are prepared and used with minimal guidance. Strong evidence of accurate and sound assembly.
Further information for assessing – 'Assembly of components					
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ The level of complexity of the prototype must be taken into account, eg a very simple prototype with few parts will not allow a candidate to achieve marks above the bottom band. ◆ Accuracy may be demonstrated by the assembly being square, level, true and secure. ◆ Assistance given to the candidate must be taken into account. However, there may be occasions when a candidate cannot assemble a prototype without assistance. Marks should not be deducted on these occasions. 					

Assignment stage (practical skills)	Design and Manufacture activity	Max mark	TOTAL: 9 marks are allocated to finishing. Judgements should be made on the candidate's ability to prepare for and apply a quality finish.		
			1-3 marks	4-6 marks	7-9 marks
Finishing	Preparing surfaces, application techniques and final finishing	9	<p>There is limited evidence appropriate surface preparation.</p> <p>There is a limited level of skill demonstrated in application techniques.</p> <p>There is a limited level of skill demonstrated in final finishing.</p>	<p>There is good evidence appropriate surface preparation.</p> <p>There is good level of skill demonstrated in application techniques.</p> <p>There is a good level of skill demonstrated in final finishing.</p>	<p>There is strong evidence of appropriate surface preparation.</p> <p>There is high level of skill demonstrated in application techniques.</p> <p>There is a high level of skill demonstrated in final finishing.</p>
Further information for assessing – ‘Finishing’					
<p>When awarding marks the following should be noted:</p> <ul style="list-style-type: none"> ◆ The level of complexity of the prototype must be taken into account, eg a very simple prototype with few parts will not allow a candidate to achieve marks above the bottom band. ◆ High quality of the surface preparation will be indicated by the removal of marking, cutting, shaping and forming marks or glues. ◆ The level of skill in applying the finish will be indicated by use of appropriate techniques and the care with which it is applied. ◆ High quality of the surface finish will be indicated by absence of runs, uneven layers of finish, uneven lustres or glosses, numerous bristles or deep brush marks. ◆ Assistance given to the candidate must be taken into account. 					

Administrative information

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History of changes

Version	Description of change	Authorised by	Date
1.1	Clarifications to 'Evidence to be gathered'	Qualifications Development Manager	July 2013
2.0	Revisions made throughout the document.	Qualifications Manager	September 2015

Security and confidentiality

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