



## Higher National Graded Unit specification

### General information for centres

This Graded Unit has been validated as part of the HNC Shipbuilding award. Centres are required to develop the assessment instrument in accordance with this validated specification. Centres wishing to use another type of Graded Unit or assessment instrument are required to submit proposals detailing the justification for change for validation.

**Graded Unit title:** Shipbuilding: Graded Unit 1

**Graded Unit code:** F521 34

**Type of Graded Unit:** Examination

**Assessment Instrument:** Examination

**Credit points and level:** 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7\*)

*\*SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from National 1 to Doctorates.*

**Purpose:** This Graded Unit is designed to provide evidence that the candidate has achieved the following principal aims of the *HNC Shipbuilding*.

- 1 Developed knowledge and understanding of Shipbuilding and Naval Architecture principles to HN Standard.
- 2 Demonstrated the ability to analyse a range of problems related to Shipbuilding and Naval Architecture.

**Recommended prior knowledge and skills:** It is recommended that the candidate should have completed or be in the process of completing the following Units relating to these specific aims prior to undertaking this Graded Unit:

DR2F 34	<i>Shipbuilding Principles: Planning, Production and Assembly</i>
DR2E 34	<i>Shipbuilding Principles: Advanced Hull and Associated Technologies</i>
F503 34	<i>Ship Stability within Naval Architecture: An Introduction</i>
F0LF 34	<i>Naval Architecture Ship Construction</i>
F43F 34	<i>Ship Systems: Auxiliary systems</i>
F43G 34	<i>Ship Systems: Propulsion</i>
F43E 34	<i>Shipbuilding: Fitting out</i>

## General information for centres (cont)

**Core Skills:** There are opportunities for candidates to gather evidence towards the following Core Skills embedded in this Graded Unit specification:

- ◆ Numeracy at SCQF level 6
- ◆ Problem Solving at SCQF level 5
- ◆ Communication at SCQF level 5

**Assessment:** This Graded Unit will consist of a written examination of 3 hours. It is closed-book and should be conducted under controlled, supervised conditions.

## Administrative Information

**Graded Unit code:** F521 34  
**Graded Unit title:** Shipbuilding: Graded Unit 1  
**Original date of publication:** August 2008  
**Version:** 02

### History of changes:

Version	Description of change	Date
02	Update of Conditions of Assessment	03/08/18

**Source:** SQA

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**FURTHER INFORMATION:** Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000.

## **Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates**

### **Graded Unit title:** Shipbuilding: Graded Unit 1

#### **Conditions of assessment**

The assessment will be based on a written examination paper lasting 3 hours. It will be a closed-book examination with the exception of a formula sheet which will be provided by the centre and will contain all the formulae found in the mandatory Shipbuilding/Naval Architecture related Units.

Section A will consist of 20 short answer questions providing coverage of all mandatory Units.

This section will be worth 40% of the total marks available overall.

#### **The candidate must attempt all of section A.**

Section B will consist of 7 extended response questions. Candidates must answer **four** from the **seven** questions. 15% of the total marks available will be awarded for each question, resultantly, this section will potentially account for 60% of the candidate's final score.

The examination should be unseen and the assessment should be conducted in controlled and invigilated conditions.

At all times, the security, integrity and confidentiality of examinations must be ensured.

Reasonable assistance is the term used by SQA to describe the difference between providing candidates with some direction to generate the required evidence for assessment and providing too much support, which would compromise the integrity of the assessment. Reasonable assistance is part of all learning and teaching processes. In relation to the assessment of Higher National Examination-based Graded Units, assessors may provide advice and guidance on examination technique and clarification on the meaning of command words which may appear within an examination paper, prior to the formal examination.

Remediation is not allowed in Examination-based Graded Unit assessments.

Any candidate who has failed their Higher National Examination-based Graded Unit or wishes to upgrade their award must be given a re-assessment opportunity, or in exceptional circumstances, two re-assessment opportunities. This must be done by using a substantially different examination.

The final grading given must reflect the quality of the candidate's evidence at the time of the completion of the graded unit. Candidates must be awarded the highest grade achieved, whether through first sitting or through any re-assessment.

## Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

### Instructions for designing the assessment task:

The examination should be designed to assess the candidate's knowledge and understanding of the topics and specific aims to which this Group Award/Graded Unit relates.

The questions and corresponding tasks should be designed in accordance with the ranges indicated in the table that follows. The total overall marks for the examination are 40% and 60% for sections A & B respectively giving an aggregate percentage out of 100.

Key topic	Themes	Weighting/Mark allocation
<b>Section A — Short Answer Section</b>	Each question is worth up to a maximum of 2%	
Coverage of all technical mandatory Units — excluding Communications and Mathematics.	20 short answer questions should be taken from all shipbuilding/naval architecture mandatory Units.	40% maximum for Section A
<b>Section B — Extended Response Section</b>	Candidates select four from a bank of seven questions. Each question chosen is worth up to 15% of the overall mark for the paper.	four out of seven questions giving a maximum of 60% for section B
Shipbuilding Principles	Shipbuilding planning and production control.  Modern hull construction.  Methods of launching large hull vessels.	<b>15%</b>
Hull and Associated Technologies	The general arrangements requirements of large vessels.  Hull reinforcement and structural design features of large vessels.  Docking various large vessels.  Ship commissioning work during outfitting and seat trials of large vessels.	<b>15%</b>

**Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)**

Key topic	Themes	Weighting/Mark Allocation
Ship Stability	<p>Statical stability and GZ curves.</p> <p>Transverse stability and list calculations.</p> <p>Longitudinal stability and draught calculations.</p>	<b>15%</b>
Ship Construction	<p>Significant features of a ship's structure.</p> <p>Salient features of a range of ship types.</p> <p>Ship stresses and use of ship stress calculations.</p>	<b>15%</b>
Ship Propulsion	<p>Systems for producing and transmitting propulsion power onboard a vessel.</p> <p>Systems installed in a ship to provide directional control.</p>	<b>15%</b>
Auxiliary Ship Systems	<p>Key performance requirements for a range of ships' auxiliary fluid systems (pump duty, pipe size etc.).</p> <p>Functional requirement for machinery and auxiliary systems onboard a vessel.</p> <p>Heating, ventilation and air conditioning (HVAC) requirements onboard a vessel.</p> <p>Writing of Specifications for equipment.</p>	<b>15%</b>

## Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

Key topic	Themes	Weighting/Mark allocation
Ship Fitting Out	Stages of fitting out.  Modularisation of fitting out.  Methods by which fitting out requirements are communicated to the build yard.	<b>15%</b>

The examination will be marked out of 100. Assessors will aggregate the marks achieved by the candidate to arrive at an overall mark for the examination. Assessors will then assign a grade to the candidate for this Graded Unit based on the following grade boundaries:

- ◆ A = 70% — 100%
- ◆ B = 60% — 69%
- ◆ C = 50% — 59%

## Higher National Graded Unit specification: instructions for designing the assessment task and assessing candidates (cont)

### Guidance on grading candidates

Candidates who meet the minimum Evidence Requirements will have their achievement graded as a C (competent), A (highly competent), or B (somewhere between A and C). The grade related criteria to be used to judge candidate performance for this Graded Unit is specified in the following table:

Grade A	Grade C
Is a seamless, coherent piece of work or exam script which consistently: <ul style="list-style-type: none"><li>◆ Achieve an overall combined score across both section A and section B that is in excess of 70%</li></ul>	Is a co-ordinated piece of work or exam script which: <ul style="list-style-type: none"><li>◆ Achieves an overall combined score across both section A and section B of the paper within the band 50–59%</li></ul>

### Support notes

Section A of the paper should comprise 20 short answer questions each of which is worth up to a maximum of 2% giving an overall potential maximum of 40% for the section.

This part of the paper is to provide evidence that the candidate has a grasp of the basic principles involved in all of the ship related/naval architecture mandatory Units but excludes the Mathematics and Communications Units. The questions within this section should not require elaborate calculations nor have any dependencies on other questions within the section. Each question should be typically answerable with a simple single sentence answer, simple diagram or basic calculation. Typically each question should not take the candidate more than 3 minutes to answer.

Section B of the paper gives the candidate the opportunity to demonstrate a far greater depth of understanding with the themes that he/she selects. The candidate should choose four from a bank of seven questions. Each question in section B covers a different theme drawn from the mandatory Shipbuilding/Naval Architecture Units but excludes the Mathematics and Communications Units.

Section B extended response questions are to be more elaborate than those in section A and should give the candidate the opportunity to show a greater depth of understanding for the themes they have selected to answer. The questions in this section could centre on short case studies and have a number of interdependencies associated with them. Therefore a Section B question may have a number of stages to it with each stage dependent upon an earlier answer within the question. Typically a candidate would be expected to spend no more than 30 minutes answering a question within Section B.

Good practice within section B of this paper would make use of ‘real themes’ identified by the colleges/industrial shipbuilding partners and translated into a number of mini exam orientated case studies which would form the basis for the extended response questions in Section B of the Graded Unit examination paper.

### Equality and inclusion

This graded unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website [www.sqa.org.uk/assessmentarrangements](http://www.sqa.org.uk/assessmentarrangements).