

# Higher National Graded Unit Specification

## General Information for Centres

This Graded Unit has been validated as part of the **HNC Nautical Science**. 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:** Nautical Science: Graded Unit 1

**Graded Unit Code:** F13B 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 Access 1 to Doctorates.*

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

- ◆ Enables candidates to obtain a Certificate of Competency as a Deck Officer.
- ◆ Prepares candidates for the responsibility of keeping a watch at sea and in port.
- ◆ Develops skills to enable candidates to effectively navigate a vessel by traditional and modern means.
- ◆ Develops skills to enable candidates to operate a vessel in a safe and effective manner.
- ◆ Develops skills to enable candidates to work with others in a safe and effective manner.
- ◆ Develops skills to deal with emergency situations.
- ◆ Develops awareness of current maritime legislation.
- ◆ Prepares candidates for the MCA written and Oral examinations.

**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:

FOLD 34 *Ship Stability: An Introduction*

FOLR 34 *Bridge Watchkeeping*

FOLF 34 *Naval Architecture: Ship Construction*

FOLM 34 *Marine Cargo Operations*

## General Information for Centres (cont)

**Core Skills:** There are opportunities to develop the following Core Skills in this Unit:

Communication: Written	SCQF level 5
Communication: Reading	SCQF level 5
Numeracy: Using Number	SCQF level 5
Numeracy: Using Graphical Information	SCQF level 5
Problem Solving: Critical Thinking	SCQF level 5

Although there is no automatic certification of Core Skills or Core Skills components.

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

## Administrative Information

**Graded Unit Code:** F13B 34

**Graded Unit Title:** Nautical Science: Graded Unit 1

**Original date of publication:** August 2006

**Version:** 01

### History of Changes:

Version	Description of change	Date

**Source:** SQA

© Scottish Qualifications Authority 2006

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Graded Unit specification (if sourced by the Scottish Qualifications Authority), can be purchased from the Scottish Qualifications Authority. Please contact the Customer Contact Centre for further details, telephone 0845 279 1000.

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

**Graded Unit Title:** Nautical Science: Graded Unit 1

### Conditions of Assessment

The assessment is based on an **open-book** examination lasting three hours.

If a candidate does not achieve a pass or if a candidate wishes to upgrade, this must be based on a significantly different examination from that given originally. A candidate's grade will be based on his/her achievement on the new event using a significantly different examination.

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

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

The assessment is based on an examination paper consisting of a practical ship loading problem, involving the candidates solving problems covering the following HN Units:

*Ship Stability: An Introduction*

*Marine Cargo Operations*

*Bridge Watchkeeping*

*Naval Architecture: Ship Construction*

The paper should be designed to thoroughly test the candidates ability to carry out the duties of the Officer of the Watch whilst in charge of loading or discharging a cargo vessel.

The examination should consist of three sections as follows:

Section A: This section should cover the content of the following Units:

*Ship Stability: An Introduction*

*Naval Architecture: Ship Construction*

Candidates should answer all questions in this section which should contribute a maximum mark of 40% of the overall total.

Section B: This section should cover the content of the following Unit:

*Marine Cargo Operations*

Candidates should attempt all questions in this section, which should contribute a maximum mark of 50% of the overall total.

Section C: This section should cover the content of the Unit:

*Bridge Watchkeeping*

The maximum mark allocated to this section should be 10% of the overall total.

Candidates will require access to MCA approved data tables and approved formulae sheets.

## 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 critical knowledge and understanding of the topics relating to the specific aims which this Graded Unit is designed to cover. The questions and corresponding marks should be designed in accordance with the ranges indicated in the table that follows. However, the overall total mark for the examination is 100.

Key Topics	Level of demand	Percentage weighting for each topic
<b>Section A</b>		
Apply the principles of transverse and longitudinal stability to a typical ship loading problem	Perform stability calculations to ensure the vessel complies with intact stability requirements	30%
Identify structural features of cargo vessels	Draw and describe the main structural features of a vessel	10%
<b>Section B</b>		
Loading, discharging and stowage of cargoes	Explain procedures and perform cargo calculations	50%
<b>Section C</b>		
Duties of the Officer of the watch in port	Identify and explain procedures to ensure the safety of the vessel	10%

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)

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
<p>Is a seamless, coherent piece of work or exam script which consistently:</p> <ul style="list-style-type: none"> <li>◆ Shows the candidate can perform calculations to the required level of accuracy and is completely at ease with stability concepts</li> <li>◆ Shows a comprehensive understanding of the structural features of typical cargo ships by means of fully detailed and annotated sketches/diagrams</li> <li>◆ Provides evidence of the candidate's ability to think critically about cargo operations in progress and demonstrates a full awareness of the safety considerations that should be taken into account</li> <li>◆ Demonstrates that the candidate has a complete understanding of the legislation applicable to cargo related operations</li> <li>◆ Demonstrates that the candidates have a full understanding of the contents of Chapter 8 Section of STCW 95</li> </ul>	<p>Is a co-ordinated piece of work or exam script which:</p> <ul style="list-style-type: none"> <li>◆ Shows the candidate is competent to perform stability calculations</li> <li>◆ Shows a comprehensive understanding of the structural features of typical cargo ships by appropriate sketches and diagrams</li> <li>◆ Provides evidence of the candidate's ability to monitor and control cargo operations at an operational level</li> <li>◆ Demonstrates that the candidate has an awareness of the legislation applicable to cargo related operations</li> <li>◆ Demonstrates that the candidate has a working knowledge of the contents of Chapter 8 Section of STCW 95</li> </ul>

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

### **Support Notes**

The assessment should be set at the operational level as designated by the IMO Convention on Standards of Training and Certification for Watchkeepers (STCW 95).

There are opportunities to develop the following Core Skills in this Graded Unit

Communication: Written, Reading at SCQF level 5 can be developed by candidates having to read through complex legislation and summarising this in assessment responses.

Numeracy: Using Number, Using Graphical Information at SCQF level 5 can be developed by candidates having to perform calculations involving a number of interrelated variables and by producing clear annotated diagrams relating to ships, structural features.

Problem Solving: Critical Thinking at SCQF level 5 can be developed by structuring questions such that candidates will have to consider how much of the supplied information is absolutely necessary to the solution. Candidates will have to select and apply the relevant information and reject information which is not material to the solution.

### **Candidates with Disabilities and/or Additional Support Needs**

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering special alternative assessment arrangements. For information on these, please refer to the SQA document *Guidance on Alternative Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs*, which is available on SQA's website: [www.sqa.org.uk](http://www.sqa.org.uk).

## **General information for candidates**

This Graded Unit is designed to ensure that you can draw together the knowledge and skills across the range of HN Nautical Science Units.

The format of the assessment is an open-book examination in which you will have access to MCA approved data and formulae sheets. Programmable calculators will not be permitted in the examination.

Questions will be structured so that they are, as far as possible, relevant to the actual responsibilities which you will take on in the role of the Officer of the Watch, whilst keeping a deck watch in port, when the vessel is working cargo.

You may be required to interpret information presented in graphical format and you will be asked to produce sketches. Sketches should be clear and in the correct proportion.

In the case of calculations all working should be shown and intermediate steps should be shown. Draughts should be calculated to the nearest millimetre.